National Oceanic and Atmospheric Administration

Information Exchange for Marine Educators

Archive of Educational Programs, Activities, and Websites

Environmental and Ocean Literacy

Environmental literacy is key to preserving the nation's natural resources for current and future use and enjoyment. An environmentally literate public results in increased stewardship of the natural environment. Many organizations are working to increase the understanding of students, teachers, and the general public about the environment in general, and the oceans and coasts in particular. The following are just some of the large-scale and regional initiatives which seek to provide standards and guidance for our educational efforts and form partnerships to reach broader audiences. (In the interest of brevity, please forgive the abbreviations, the abbreviated lists of collaborators, and the lack of mention of funding institutions). The lists are far from inclusive. Please send additional entries for inclusion in future newsletters.

Background Documents

Environmental Literacy in America - What 10 Years of NEETF/Roper Research and Related Studies Say About Environmental Literacy in the U.S.
http://www.neetf.org/pubs/index.htm

The U.S. Commission on Ocean Policy devoted a full chapter on promoting lifelong ocean education, *Ocean Stewardship: The Importance of Education and Public Awareness.* It reviews the current status of ocean education and provides recommendations for strengthening national educational capacity.
http://www.oceancommission.gov/documents/full_color_rpt/08_chapter8.pdf

Environmental and Ocean Literacy and Standards

Mainstreaming Environmental Education – The North American Association for Environmental Education is involved with efforts to make high-quality environmental education part of all education in the United States and has initiated the National Project for Excellence in Environmental Education. Here are some of the products and initiatives:

- *National EE Certification Initiative* - NAAEE and EETAP are collaborating to explore development of a national certification program for environmental educators.
- *NCATE/NAAEE Program Standards for the Initial Preparation of Environmental Educators* – (in development) to be used by NCATE in their accreditation process of college/university teacher education programs across the country.
- *Higher Education Faculty and Program Directory Development* - electronic directory of EE programs and faculty in the college and university setting (with the National Council for the Accreditation of Teacher Education) - on-line in 2006.
- *Resource Review Program* for educational resources

- Guidelines, including *Environmental Education Materials, Nonformal Environmental Education Programs, Preparation and Professional Development of Environmental Educators,* and more.

http://naaee.org/

Science Content and Standards for Ocean Literacy is a product of workshops sponsored by National Geographic, NOAA, COSEE, NMEA, and the College for Exploration. It describes and presents essential principles and fundamental concepts for creating an ocean literate world and aligns them with the National Science Education Standards.
http://www.coexploration.org/oceanliteracy/index.html

Charting the Course for Ocean Science in the United States: The National Science and Technology Council Joint Subcommittee on Ocean Science and Technology is developing *Charting the Course for Ocean Science in the United States: Research Priorities for the Next Decade*, a draft document that outlines the national ocean research priorities for the United States for the next ten years. The document will describe a vision for U.S. ocean science and technology, highlight key areas of interaction of our society and the ocean, and identify critical ocean research priorities.
http://ocean.ceq.gov/about/sup_jsost_orpp_outreach.html

Collaborations and Networks

American Zoo and Aquarium Association members are providers of animal care, conservation, and public education about wildlife, providing the highest standard of animal care while offering events and activities to help visitors understand how everyone can help keep our oceans and waterways safe.
www.azasweb.com

The Centers for Ocean Sciences Education Excellence is a network of seven regional centers that act locally and regionally, as well as think and act nationally. The goals of COSEE are to promote partnerships between research scientists and educators; to disseminate effective ocean sciences programs; and to promote ocean education to create a more scientifically literate workforce and citizenry.
http://www.cosee.net/

Coastal America's designated Coastal Ecosystem Learning Centers (CELCs) comprise a network of informal education institutions. Federal partners provide CELCs with information, expertise, and research vessel access for community education programs. The CELCs educate and involve the public in protecting our ocean ecosystems and coordinate community action projects.
http://www.coastalamerica.gov

The Environmental Education and Training Partnership is a consortium of leading national EE organizations, delivering environmental education training and support to education professionals for the purpose of increasing public knowledge about environmental issues, and enhancing the critical thinking skills necessary for individuals and their communities to make responsible environmental decisions.
http://eetap.org/

The Federal Task Force on Environmental Education, chaired by the EPA, facilitates communication and collaboration among federal agencies and departments that have common interests in supporting and implementing EE programs with emphasis on

supporting joint interagency EE projects that leverage both federal and non-federal dollars.
http://www.epa.gov/enviroed/ftfee.html

The Global Learning and Observations to Benefit the Environment (GLOBE) is a worldwide network of students, teachers, and scientists working together to study and understand the global environment.
http://www.globe.gov/globe_flash.html

National Geographic Oceans for Life Internet Network - this website offers education resources, news, discussion and more on ocean literacy and bringing the ocean into the classroom.
http://www.ngsednet.org/oceans

National Marine Educators Association, affiliated with NSTA and the American Association for the Advancement of Science, brings together those dedicated to teaching and learning about the world of water, providing a focus for marine and aquatic studies world-wide. NMEA members are educators and scientists from K-12 classrooms, colleges and universities, museums, aquariums, research science centers, government agencies, and conservation organizations from 17 regional U.S. chapters and from 13 other countries. NMEA promotes awareness, appreciation, and conservation of our aquatic environment.
http://www.marine-ed.org/

National Oceanic and Atmospheric Administration's mission is to provide science, service, and stewardship to meet the nation's economic, social, and environmental needs. Creating an environmentally literate public is vital to NOAA meeting its mission and supports numerous educational materials and programs for students of all ages.
www.education.noaa.gov

The National Oceanographic Partnership Program is a collaboration of fifteen federal agencies to provide leadership and coordination of national oceanographic research and education initiatives. Since 1997, NOPP has invested $150M to support over 90 research and education projects involving roughly 200 public and private institutions, with comparable in-kind support from the research and education community.
http://www.nopp.org/

The Ocean Project works with its broad network of zoos, aquariums, museums and other conservation-oriented organizations to enhance ocean awareness among the public; change attitudes and behaviors for conservation; increase civic involvement in community conservation activities; and generate regional and national policy-focused action. Using values-based communications strategies and tools, their *Seas the Day* initiative promotes ocean awareness and encourages people to take action.
http://www.theoceanproject.org/

Ocean.US, the National Office for Integrated and Sustained Ocean Observations was created by NOPP to coordinate the development of an integrated ocean observing system, and includes education and outreach.
http://www.ocean.us

The United Nations Decade of Education for Sustainable Development - the overall goal is to integrate the principles, values, and practices of sustainable development into all aspects of education and learning to encourage changes in behavior that allow for a more sustainable and just society for all.
http://portal.unesco.org/education/en/ev.php-URL_ID=27234&URL_DO=DO_TOPIC&URL_SECTION=201.html

Web Portals
The Bridge, supported by Sea Grant and an official partner of COSEE and NMEA, is a clearinghouse for K-12 ocean science education websites. It includes professional development, lesson plans, ocean science research data, links to aquariums and research institutions, and career information.
http://www.marine-ed.org/bridge

The Digital Library for Earth System Education is an online library of web-based resources at all educational levels for teaching and learning about the Earth as a system. It can be searched by keyword, grade level, resource type, collection, and by national standards, both NSES and National Geography standards.
http://www.dlese.org

EE-Link from NAAEE provides electronic access to environmental education programs, professional development, jobs, events, organizations and other resources.
http://eelink.net/

NASA's OceanLiteracy.Org website is dedicated to helping those interested in the development of a populace knowledgeable about our oceans, to find resources that will assist toward that goal.
http://www.oceanliteracy.org/

The National Science Digital Library is an online library for education and research in science, technology, engineering, and mathematics.
http://nsdl.org/

Regional Initiatives
From Sea to Shining Sea: Priorities for Ocean Policy Reform
A national ocean policy action plan for Congress, *From Sea to Shining Sea: Priorities for Ocean Policy Reform*, developed at the request of a bipartisan group of ten influential Senators, was delivered to Capitol Hill on June 13, 2006. The report calls for Congress to adopt a statement of national ocean policy that acknowledges in legislation the importance of the ocean to the nation's economic and ecological health and establishes a framework for all other ocean legislation.
http://www.jointoceancommission.org/press/press/release0613_assets/seareport.pdf

The Online Guide to Environmental Education in Georgia provides EE lesson plans based on state standards, a searchable database of Georgia's EE organizations and the resources they offer, a statewide calendar of EE events, monthly e-newsletter, and easy-to-access facts about Georgia's environment. A customized web system for seven additional southeastern states is in development.
http://www.EEinGeorgia.org

Minnesota's Environmental Literacy Scope and Sequence provides a systems approach to environmental education in Minnesota for pre-K through adult learners. The SEEK website provides a directory of environmental education resources.
http://www.seek.state.mn.us/eemn_c.cfm

Ocean Revolution is a bilingual, international youth-oriented program designed to connect and inspire a new wave of ocean advocates.
http://www.oceanrevolution.org

Public ocean literacy for southern California - The Aquarium of the Pacific, in partnership with CORE, has begun a project to identify and prototype the best strategies to engage the public in learning about the ocean through a regional initiative based at the aquarium. Initial workshops have been held with scientists and educators, with the workshop findings to be used to engage the general public through education, exhibitry, and the media. Contact Adam Lau at alau@lbaop.org

Educational Programs

3D Topographic and Wave Simulations
ForgeFx is an interactive 3D simulation and visualization company. Their website showcases several useful interactive simulations, including a topographic map and 3D wave simulation. Students can see immediate changes online resulting from their variable input.
www.forgefx.com/casestudies/prenticehall/ph/topo/topo.htm

4-H Goes to Sea
4-H Goes to Sea is a pilot curriculum project for 4-H youngsters aged 6 - 13. University of New Hampshire marine docent volunteers partner with 4-H leaders to help with the curriculum. There are six modules: open ocean, Gulf of Maine and watersheds, sandy beaches, rocky shores, salt marshes, and estuaries. Field experiences introduce the module and the leaders are asked to use the curriculum in interim meetings.
Sharon.Meeker@unh.edu

4empowerment
4empowerment is dedicated to making a positive difference in the lives of individuals, communities, and our environment. They offer e-learning programs that provide the means for educators, communities, organizations, and companies to research, learn, collaborate, and take action on issues affecting their world. The *Cyberways and Waterways Program* offers a bi-lingual supplemental science program that integrates technology into the classroom through inquiry-based learning activities and lesson plans.
http://www.4empowerment.com/en/index.jhtml

5K Race for the Planet "Seahorse Sprint"
The Fort Fisher Green Team is out to prove that you can host a sustainable 5K race and fun family-oriented event, April 19, 2009 in Kure Beach, North Carolina. While competing in another area race, Green Team members were disappointed to see Styrofoam cups and trash cans filled with plastic bottles. Inspired to set an example for the racing community, the Green Team is co-sponsoring the aquarium's first "Seahorse Sprint". Contact Samantha Herbert for information to set up similar events, at Samantha.Herbert@ncmail.net.

http://www.ncaquariums.com/5k-race-for-the-planet-seahorse-sprint

7 Generations
The 7 Generations manual, *Addressing Village Environmental Issues for the Future Generations of Alaska*, is designed for people in rural Alaska who want to accomplish environmental planning and management using a community based approach. This downloadable manual was written to assist communities to be more self reliant, and to take responsibility for their own environmental issues. It includes planning process, surveys, funding sources, and more.
http://www.7generations.us/page2.html

AAAS Atlas of Population and the Environment
The AAAS Atlas of Population and Environment provides maps, text, and graphics that quantify and illustrate the broader links between population dynamics and the environment. Analyses of individual topics bring together what is known about the ways in which people impact the Earth's environment. Lastly, the atlas contains six case studies that look at population-environment relationships in selected areas.
http://atlas.aaas.org/ .

AAAS Launches Public Outreach Initiative Focused on Science Literacy
Science. It's Everywhere is a public outreach initiative by the American Association for the Advancement of Science through the Partnership for Science Literacy. Designed to help parents and families play a more active role in their children's science education, it includes multi-media advertising along with a web site, in English and Spanish, to help motivate parents and families to take action in helping their children learn science.
http://www.tryscience.org/parents/parent.html

Aboriginal Canada Portal
Learning about native peoples in Canada has never been so easy as with this website created by the government of Canada, in partnership with the Assembly of First Nations and other stakeholders. Visitors can search the entire site's contents through a search engine on the homepage, or select thematic areas as education, environment and natural resources, and more. Check out the links to kid-friendly games, traditional ecological knowledge, conservation and protection, and much more.
http://www.aboriginalcanada.gc.ca/acp/site.nsf/en/index.html

Above and Below the Waves: Coastal and Oceanic Treasures Conserved in the National Park System
The National Park Service established the Ocean Park Stewardship Plan, with goals and priorities to restore and maintain the tremendous biological and recreational values of ocean and coastal resources across the National Park System, in collaboration with state and federal agencies and park stakeholders. Examples of successful joint stewardship programs can serve as models for managing marine resources that attract academic interest.
http://www.nps.gov/pub_aff/oceans/conserve.htm

ABCs of Ecology
The ABCs of Ecology®: An Educator's Guide to Learning Outside is useful for those looking for outdoor activities and lesson plans to help children understand the world in which they live, and includes chapters and background information on geology, climate,

forest, ABCs of ecology, and watersheds. The lessons are geared for 3rd - 8th grade levels
http://www.fbes.org/store/ABCsoEcologyFlyer.pdf

Act Green
Scholastic has launched ACT GREEN!, an educational website designed to motivate and empower kids to take action in school, at home, and in their community to preserve the environment. The multi-media website provides kids, parents, and teachers with customized green plans, expert tips, short films provided by Live Earth, and a "Greenroom" to share ideas with other kids.
http://www.scholastic.com/actgreen/

Activities for the Changing Earth System
Ohio State University offers an online version of their Earth Systems Education Program publication, Activities for the Changing Earth System, with information and activities including ice core importance, contributions of volcanoes to climate change, and more. There are ten middle school and ten high school activities.
http://earthsys.ag.ohio-state.edu/project/pubs/ACES.html

Adaptation 2009
Adaptation 2009: Safeguarding Fish, Wildlife and Natural Systems in the Face of Climate Change, was convened by the Wildlife Habitat Policy Research Program and the National Wildlife Federation in February 2009. The conference breakouts were organized around four natural systems: forests, grasslands and shrublands, freshwater ecosystems, and coasts and estuaries. Presentations are available for viewing or via audio from the website, along with summaries and other materials.
http://ncseonline.org/WHPRP/NWF/Adaptation2009/

Adaptations from the Depths
The Flower Garden Banks National Marine Sanctuary offers its *Adaptations from the Depths* curriculum, downloadable from the web. This curriculum introduces elementary students to animal adaptations as they relate to the octopus. The full curriculum text, including reproducibles, or a separate document with just the handout masters are available. Additional materials can be mailed to you upon request, at no charge. Send an email with your mailing address to flowergarden@noaa.gov to request the supplemental materials. Check out the website for other resources.
http://flowergarden.noaa.gov/document_library/ed_documents.html

Adopt-A-Beach School Assembly Program for Los Angeles Watershed
The Malibu Foundation offers a comprehensive environmental program designed to motivate teachers and K-12 students to care about beaches and oceans. The *Adopt-A-Beach School Assembly Program* demonstrates how beaches and oceans get dirty and provides hands-on opportunities to make a difference by recycling, reducing litter, and cleaning up the beaches.
http://www.malibufoundation.org/tmffe004.htm

Advanced Field Oceanography
The University of Washington, School of Oceanography's course, Oceanography 444, is a five-credit undergraduate course. This year, their research has been aboard the *R/V Thomas G. Thompson* near the Galapagos Islands. In addition to planning, performing, and writing up their own research, the students were responsible for much of the cruise

planning. This is a good site for your students to get a feel for oceanography and research from the students' perspective.
http://courses.washington.edu/ocean444/

Advanced Placement Environmental Science Course – Online
Based on curriculum developed for California schools, the Advanced Placement Environmental Science course developed by the University of California College Prep initiative is now available through the Encyclopedia of Earth website. The online course includes 25 chapters on topics ranging from energy flows to environmental laws and regulations; the chapters may be used independently as a resource for teachers and students or sequentially as a full course.
http://www.eoearth.org/article/AP_Environmental_Science_Online_Course

Aegean and Black Sea 2006 Expedition
NOAA's Ocean Explorer offers information and educational materials for the 2006 Aegean and Black Sea expedition, the first mission of a multi-year geological and archaeological study in the Sea of Crete. An interdisciplinary research team of archaeologists and oceanographers will pursue major mission goals of finding well-preserved marine archaeological sites, studying ancient maritime trade, and exploring the history of the Thera volcano. The Ocean Explorer Expedition Education Module includes a summary of the purpose of this expedition; lesson plans designed specifically for this expedition; interactive multimedia presentations and Learning Activities on Plate Tectonics, Mid-Ocean Ridges, and Subduction Zones; profiles of scientists representing careers featured during this mission; and a list of other resources and links related to the 2006 Aegean and Black Sea mission. Immersion Presents featured numerous live broadcasts during the expedition; log onto their website and click on "Channel" to view the following:

- Ancient Eruptions; June 3-June 8, 2006; 30-minute shows from the Aegean Sea
- Updates from the Sea of Crete; June 10-June 15, 2006; featuring expedition scientists

www.uri.edu/endeavor
www.uri.edu/endeavor/thera/index
http://www.oceanexplorer.noaa.gov/explorations/06blacksea/welcome.html
http://www.immersionpresents.org

***After the Storm* Television Special about Watersheds**
The Environmental Protection Agency and the Weather Channel co-produced *After the Storm*, a television special about watersheds. *After the Storm* shows the connection between weather and watersheds and the importance of watershed protection. Key scientists, water quality experts, and citizens involved in local and national watershed protection efforts provide insight into the problems as well as solutions to today's water quality crisis. DVD copies of the half-hour television special about watersheds, After the Storm, are now available at no charge. In addition to free DVD copies, the video is available for downloading, complete with on-video text transcript.
http://www.epa.gov/weatherchannel/

Amphibian Alert! Curriculum
This downloadable curriculum aims to teach children what amphibians are and why amphibian population declines are important to scientists and communities throughout the world. The curriculum targets age groups from grades 2-5 but is adaptable to other grades.

http://eeingeorgia.org/net/content/go.aspx?s=67749.0.68.4863

El Agua Es Importante
El Agua Es Importante: guia de maestro sobre recursos de agua, Volumen 3, available free, includes a teacher's guide and posters created by the U.S. Geological Survey's Water Resources Education Initiative. Designed to help primary and middle school teachers satisfy National Science Education Standards and promote query-based, hands-on learning, topics include oceans and coastal hazards, watersheds, and more.
http://www.epa.gov/ncepihom/ordering.htm

Agua Pura Curriculum
The *Agua Pura: Exploring Salmon and Steelhead in California Communities* curriculum teaches children about salmon and steelhead biology, and the critical relationship these fish have to healthy watersheds. Using real-life investigation and problem solving skills, participants investigate the natural history of their local salmon or steelhead populations, find out how human activities have impacted these populations in local rivers and streams, and work with other community members to enhance salmon and steelhead habitat within the community. The worksheets and the parents' letter are available as English or as side-by-side English/Spanish versions.
http://www.sns.ucdavis.edu/

Aiming for Excellence: An Evaluation Handbook for Interpretive Services in California State Parks
This handbook provides measures and measurement tools for assessing the quality of educational and interpretive services. It includes visitor evaluation, performance appraisals, evaluation forms and a bibliography. It is available for downloading from the website.
http://www.parks.ca.gov/default.asp?page_id=21700

Air – Here, There, Everywhere!
The Chemists in the Library Working Group of the American Chemical Society has compiled electronic and print resources about climate for further exploration of Chemists Celebrate Earth Day: Air - here, there, everywhere! The resources have been classified by grade level and annotated. The website includes basic characteristics of the Atmosphere, Understanding Weather, Climate, and many resources for further information.
http://library.stanford.edu/depts/swain/hosted/earthday/2005/index.html

Air and Waste Management Association Lesson Plans
The Air and Waste Management Association offers Environmental Education Resource Guides on CD, with background information, fact sheets, glossaries, and 50 lesson plans for grades K-5 on several air and water pollution topics. The website offers four of the lesson plans free for downloading, about nonpoint source pollution and air quality.
http://www.awma.org/education/freelessons.asp

Alabama Learning Exchange
The Alabama Learning Exchange is a project of the Alabama Department of Education, designed to index and share many types of educational materials and information through a one-stop resource for educators, parents, and students. The resources include lesson plans, web links, and interactive activities. Be sure to check out the distance education and professional learning sections.

http://alex.state.al.us/index.php

Alaska Coastal Calendar
Explore Alaska's climate—past, present, and future—with Alaska Sea Grant's 2008 Alaska Coastal Calendar. The calendar celebrates the International Polar Year, and features photos and detailed narratives describing the changing climate and scientific research being done to better understand the effects of change on Alaska's coast, people, and wildlife. Each month is devoted to a different theme around which lessons can be centered.
http://seagrant.uaf.edu/bookstore/pubs/SG-ED-58.html

Alaska CoastWatch Manual
The Center for Alaskan Coastal Studies offers a downloadable Alaska CoastWatch manual and other online resources for identification of Alaskan seaweeds and fishes, in the teacher and community resource sections on their website.
http://www.akcoastalstudies.org/teacherresources.htm

Alaska Department of Fish and Game Website
The Alaska Department of Fish and Game's mission is to manage, protect, maintain, and improve the fish, game and aquatic plant resources of Alaska. The website contains many resources of interest to marine and coastal educators, including the Alaska Wildlife Curriculum, the Wildlife Notebook Series, and links to refuges, critical habitats, and sanctuaries.
http://www.sf.adfg.state.ak.us/region2/ie/Teacher_Resources/html/teachres.stm

Alaska Fisheries Science Center Cold Water Coral Video and Science Resource Guide On-Line
Journey deep beneath the cold waters of the Aleutian Island archipelago from your computer and explore the rich abundance of life on the sea floor. The "Coral Gardens of the Aleutians" streaming video is set up for either Broadband or dial-up connection. Also available from Alaska Fisheries is a down-loadable Science Resource Guide to help students understand the work of NOAA Fisheries.
http://www.afsc.noaa.gov/abl/MarFish/coral_gardens_video.htm
http://www.afsc.noaa.gov/sep/ResGuide_TOC.htm

Alaska Islands & Ocean Visitor Center
The Alaska Islands & Ocean Visitor Center, in Homer, Alaska, recently opened. This interpretive, educational, & research facility is a partnership of the Alaska Maritime National Wildlife Refuge and the Kachemak Bay Research Reserve, dedicated to the understanding and conservation of the marine environment. The facility offers visitors a window into the world of seabirds and other marine animals, as well as their islands and ocean habitats.
http://www.islandsandocean.org/index.html .

Alaska Native Perspectives on Earth and Climate
Teachers' Domain has launched a new collection of media resources that looks at earth sciences from the perspective of the people of Alaska. In this collection, students learn both Native ways of knowing nature, and ongoing scientific research about Alaska's unique geology, and how climate change and development are affecting the region.
http://www.teachersdomain.org/special/ean/

Alaska Seas and Rivers Curriculum
Visit Alaska Sea Grant's website to download the new online Alaska Seas and Rivers marine/aquatic curriculum. Developed by Alaskan teachers, the curriculum offers units for use by teachers and homeschoolers, interpreters, youth groups, and others.
http://seagrant.uaf.edu/marine-ed/curriculum/

Alaska Small Press Catalogue
Wizard Works publishes a variety of titles through the Alaska Small Press Catalogue for the US Fish and Wildlife Service, including *Arctic Nesting Shorebird Guide*, *Wetlands and Wildlife,* and *Teach About Geese*. In addition, they publish the Alaska Wildlife Curricula for the Alaska Department of Fish & Game. This includes *Alaska's Ecology*, *Alaska's Forests & Wildlife*, *Alaska's Tundra & Wildlife*, *Wildlife for the Future*, and the *Alaska Ecology Cards*.
http://www.xyz.net/~wizard/home.htm .

Algae: The Forgotten Treasure of Tidepools
Hosted by the Department of Biology at Sonoma State University, this very informal website introduces browsers to the world of algae through a small collection of different alga images. The website's three galleries feature seaweeds of the Green (Chlorophyta), Red (Rhodophyta), and Brown (Phaeophyta) varieties, accompanied by brief and easily read text. The home page links to more extensive resources for those who have become intrigued by algae and want more information.
http://www.sonoma.edu/biology/algae/algae.html

Algalita Marine Research Foundation Materials
The Algalita Marine Research Foundation is dedicated to the protection of the marine environment and its watersheds through research, education, and restoration. They offer K-12 education programs which include cirriculums and/or DVDs set to California's science standards. In addition, they have downloadable materials on plastic debris, a watershed companion curriculum, research articles, and more. Some materials are available in Spanish.
http://www.algalita.org/education.html

All About Birds
Brought to you by the Cornell Lab of Ornithology, this site includes an on-line guide to birdwatching, sound files of bird songs, a video gallery, and links to a variety of sites where you can report your observations. The conservation section highlights bird conservation success stories. Other information includes habitat management, an educator's guide to bird study, and how to get involved.
http://www.birds.cornell.edu/programs/allaboutbirds/ .

All About Wetlands Newsletter
"All About Wetlands" is a new newsletter published quarterly by Environmental Concern Inc, publishers of the peer-reviewed publication, *Wetland Journal*, from 1993 to 2001. "All About Wetlands" contains articles covering a wide array of wetland topics and issues from around the world. Join Environmental Concern, Inc. to receive a copy of the newsletter.
www.wetland.org .

All the Way to the Ocean
All the Way to the Ocean is a children's book about two friends' discovery of the harmful effects of ocean pollution. This story deals specifically with storm drain run-off that travels directly into our natural bodies of water. The book's colorful illustrations and simple text should help educate readers and inspire them to fight pollution.
http://www.allthewaytotheocean.com/

Altered Oceans
Altered Oceans is a five-part series on the crisis in the seas published on-line by the Los Angeles Times on latimes.com. Part one, *A Primeval Tide of Toxins*, discusses cyanobacteria. The second part, *Sentinels Under Attack*, is about toxins affects on marine mammals. The remaining parts discuss marine debris, changing ocean chemistry, and algae blooms. Links are also provided for more in-depth information.
http://www.latimes.com/news/local/oceans/la-oceans-series,0,7842752.special

Alternatives for Coastal Development: One Site, Three Scenarios
This website, *Alternatives for Coastal Development: One Site, Three Scenarios,* illustrates three different development scenarios created for a residential area in coastal Georgia. The website includes maps and details of three different designs; comparisons of environmental, economic, and social indicators; three-dimensional views of each; detailed project methodology; and growth and development-related information.
http://www.csc.noaa.gov/alternatives/ .

America Recycles Day
America Recycles Day is November 15, 2005. The America Recycles Day website offers background information through *Recycling 101*, a contest (entry deadline is America Recycles Day), and an easy-to-use search function for recycling activities in your state. For example, a Trash to Treasure Kid's Fair in Culver City, California on November 19, 2005 includes a recycled art competition (see http://www.ecostation.org/).
http://www.americarecyclesday.org/home.html

America's Underwater Treasures
Jean-Michel Cousteau: Ocean Adventures returns this September with the series finale, a two-part special investigation about the 13 National Marine Sanctuaries. America's Underwater Treasures will air on two consecutive Wednesdays at 8 p.m. on September 20 and 27, 2006 on PBS. Visit the website for more information and downloadable lesson plans.
http://www.pbs.org/oceanadventures

American Field Guild
PBS has collected over 1400 video clips that enable you to experience America's wilderness firsthand. Browse through their selections on animals, ecosystems, plants, and more. Hike the Tijuana Estuary, go on a whale watch, or follow Glacier Bay rangers perform their unique duties in some of the world's most beautiful surroundings. Teacher resources include lesson plans that weave segments of video together into units of inquiry around specific topics.
http://www.pbs.org/americanfieldguide//index.html

American Indian Tribal Portal
The American Indian Environmental Office developed this tribal portal to help American Indian communities and supporters locate tribal related information within EPA and other government agencies. The website offers links to basic information, grants and funding, laws and regulations, programs, and contact. News, maps, education and training, and more are also available.
http://www.epa.gov/tribalportal/

American Museum of Natural History Science Bulletins
The American Museum of Natural History's Science Bulletins are online videos which feature the latest developments in the fields of astrophysics, human biology, biodiversity, and evolution. The website offers additional resource links, educator resources, and an educators' guide to help incorporate the materials into classroom work. The bulletins are categorized in sections that include Astro, Earth, Bio, and Human, with further subcategories of features, visualizations, and snapshots.
http://www.amnh.org/sciencebulletins/

American Trails Magazine Online
American Trails Magazine has gone digital. Check out the latest issue in its quick-loading, page-turning format. The format also offers a search feature and the ability to print the issue for those who prefer to pass the paper around.
http://www.myvirtualpaper.com/doc/americantrails/Spr09ATM/2009040801/

American Wetlands Month
May is American Wetlands Month; this year's theme is *It Pays to Save Wetlands*. The Environmental Protection Agency partners with other federal, state, and local agencies and private organizations in celebration. Events are scheduled across the country to educate, involve and engage Americans who want to better understand the value of one of Earth's most important ecosystems.
http://www.epa.gov/owow/wetlands/awm/

American Zoo and Aquarium Association National Awareness Campaign
AZA's National Awareness Campaign will create a unified voice to position the collective member institutions in the minds and hearts of the public as safe and fun family experiences that are also meaningful. They aim to be perceived as trusted experts and a powerful collective voice on animal care, wildlife conservation, and public education about wildlife and wild habitats.
http://www.aza.org/Publications/2004/03/March04NACTheme.pdf

America's Climate Choices
The National Academies have launched America's Climate Choices, a suite of studies designed to inform and guide responses to climate change across the nation. Experts representing various levels of government, the private sector, nongovernmental organizations, and research and academic institutions have been selected to serve on four panels and an overarching committee.
http://www.americasclimatechoices.org/index.shtml

AmeriCorps Signature Project with Coastal America
AmeriCorps National Civilian Community Corps has selected Coastal America for its Signature Project for 2005/2006. Coastal Ecosystem Learning Centers are developing project proposals that involve AmeriCorps conservation corps volunteers in their

Learning Center and community programs. Coastal America's federal partners are also submitting proposals through their regional implementation teams.
Contact Marguerite Duffy at marguerite.duffy@usda.gov

Amphibian Poster
Omaha's Henry Doorly Zoo, together with other zoos and organizations, has launched the Amphibian Conservation Initiative to address amphibian extinctions on a global scale. A downloadable poster includes activities on the back.
http://www.omahazoo.com/exhibits/index.asp?page=/exhibits/amphibiancrisis.htm

AmphibiaWeb
AmphibiaWeb is an online system created in conjunction with the Digital Library Project at the University of California, Berkeley, enabling search and retrieval of information relating to amphibian biology and conservation. Their goal is to establish a "home page" for every species of amphibian in the world; they hope to accomplish this with the help of volunteers and specialists. The website offers general background information about amphibians, species vulnerability, links to additional websites, and more.
http://elib.cs.berkeley.edu/aw/index.html

An Inconvenient Truth DVD for Teachers
50,000 copies of the documentary about global warming, *An Inconvenient Truth*, were donated on a first come, first serve basis to teachers across the country interested in using the film as a teaching tool in classrooms. A free curriculum guide is also available for download on the website. The website also hosts teacher comments about the materials by way of a blog.
http://www.participate.net/educators/

Anatomy of Sea Turtles
The Anatomy of Sea Turtles is available for downloading in English and Spanish. The manual provides background information, reference photos of normal anatomy, and diagrams. Species identification, standard dissection techniques, standard measurements, and basic anatomy are covered with a diverse audience in mind. Hard copies in English are no longer available, and only a limited number of Spanish hard copies remain.
English http://www.sefsc.noaa.gov/PDFdocs/TM_470_Wyneken.pdf
Spanish http://www.sefsc.noaa.gov/PDFdocs/TM_470_Wyneken_spanish.pdf

And the Winners Are...Ocean Art
The Hawaiian Islands Humpback Whale National Marine Sanctuary has posted the winners from the 2009 Humpback Whale Month Ocean Contest. Winning art, poetry, and essays from the K-8 participants can be found on the website. Perhaps these will inspire additional waves of young poetry, story-telling, and artistry?
http://hawaiihumpbackwhale.noaa.gov/news/stories/newsocwinners09.html

Animal Diversity Web
The Animal Diversity Web is an online database of animal natural history, distribution, and classification sponsored by the University of Michigan with thousands of individual species accounts. Each account may include such features as extended descriptions, pictures of each species, and recordings of sounds and short movies. The site has a virtual museum which includes a number of representative photographs of various

animal species, and several hundred virtual reality movies of skulls.
http://animaldiversity.ummz.umich.edu/site/index.html

Animal Sounds from the Macaulay Library
The Macaulay Library (formerly the Library of Natural Sounds) is the world's largest archive of animal sounds. The library is a principal source of sound recordings for basic research, education, conservation, habitat assessment, media, and commercial projects. The Library also archives and preserves an exhaustive sampling of the behaviors of each animal species using digital video and audio recordings. Their marine collection includes over 3000 recordings. http://www.birds.cornell.edu/MacaulayLibrary/About/

Animal Welfare Information Center
The USDA's Animal Welfare Information Center website contains everything from current animal issues to workshops for those in industries that utilize animals to licensing forms. Specifically, the center is designed to regulate and improve care of animals in research, testing, teaching, and exhibition.
http://awic.nal.usda.gov/nal_display/index.php?info_center=3&tax_level=1

Annenberg Media Interactives
Annenberg Media uses media and telecommunications to advance excellent teaching in American schools. This mandate is carried out chiefly by the funding and broad distribution of educational video programs with coordinated Internet and print materials for the professional development of K-12 teachers, encouraging more effective ways to share ideas and knowledge. The website includes a variety of Interactives, including Dynamic Earth, Garbage, Weather, and more.
http://www.learner.org/interactives/

Antarctic Journal
Allan Miller, Albert Einstein Distinguished Educator Fellow at the National Science Foundation and a NASA Educator Astronaut finalist, has returned from a tour of duty in and around Antarctica. Miller chronicled his experience in an expedition - the first of at least 30 - that allows classroom teachers to travel to field research sites in the Arctic and Antarctic and work with scientists engaged in many different types of polar research throughout the upcoming International Polar Year
http://www.polartrec.com/allanmillerjournal

Antarctic Quest Challenge
NASA Quest Challenges are free, web-based, interactive explorations designed to engage students in authentic scientific and engineering processes related to issues encountered daily by NASA personnel. Students in grades 5-14 will develop a research question and debate the value of studying the chosen Antarctic feature. Students become scientists and propose Antarctic research using a new tool called LIMA, Landsat Image Mosaic of Antarctica. The LIMA web site is designed as part of the International Polar Year to familiarize people with Antarctica, to explore the richness of its features, to learn about why Antarctica matters to us all, and to explain and demonstrate how scientists use satellite imagery to study the continent.
http://quest.nasa.gov/challenges/lima/about.html

Antarctic Summer
Two young scientists spending six months in Antarctica will share their experiences and different perspectives with students and teachers. Alex's blog is focused on the science

they're doing (he recently got his Ph.D. in oceanography), while Elizabeth (a registered nurse by training) is blogging more about life in Antarctica. They are also looking for volunteer educators to help develop new activities and lesson plans in whatever subjects or grades that interest you.
http://coseenow.net/forum/?wpforumaction=viewforum&f=4.0
http://rucool.marine.rutgers.edu/antarctica/

Antarctica: Signs of the Great Thaw
The Chicago Tribune offers this portrait of the effects of global warming on and around Antarctica. Visitors can view the ways in which the thawing sea ice is taking its toll on the Adelie penguins, learn about how scientists are attempting to reconstruct the history of various global climate changes, take a 360-degree look around the South Pole, and listen to the voices of people who live and work on Antarctica.
http://www.chicagotribune.com/news/nationworld/chi-antarcticamain-html,1,567386.htmlstory

Applied Environmental Education and Communication
Applied Environmental Education and Communication is an international peer-reviewed quarterly for both academics and practitioners. It features articles, a discussion and editorial section, and books and materials reviews. A special themed issue on environmental education and communication for biodiversity will be published in 2004.
http://www.aeec.org/submission/submission.asp .

Applied Math and Science Education Repository
Internet Scout offers the Applied Math and Science Education Repository (AMSER). AMSER serves up information about applied math and science resources in an easy-to-use format. Users can find a wide assortment of materials, from large web sites focusing on an individual applied science or math topic to animations that demonstrate specific science or math principles in action.
http://amser.org

Aquakids
The premise of this half-hour TV show is that by using young people, the "Aqua Kids", to teach other young people about the diversity and beauty of the marine environment and its potential destruction by pollution and carelessness of human populations, they can spread the message of ocean preservation to their peers. Each episode presents a lesson on conservation of the water environments of the world.
http://www.aquakids.tv/index2.html

Aquarium of the Pacific Celebrates Halloween
Discover the creepy creatures lurking in the depths of the Pacific at the Scarium of the Pacific, October 23 and 24, 2004, Long Beach, California. Pick up the creepy creature map/scavenger hunt at the aquarium information booth to begin your haunted holiday. The first 4,000 children through the door received a special Scarium of the Pacific souvenir. Check out the Aquarium of the Pacific's many educational programs.
http://www.aquariumofpacific.org/NEWS_EVENTS/10_04/scarium04.htm .

Aquatic Invasive Species: An Educator's Information and Materials Guide
This guide is a compilation of selected educational materials on aquatic invasive species, including curricula, posters and print materials, videos, books and compact discs, and web sites. The guide is available for down-loading at

http://www.seagrant.umn.edu/exotics/ais_guide.pdf . But for more information, make sure you check out the rest of this extensive website, at http://www.seagrant.umn.edu/exotics/ .

Aquarium Video Library - Online
The Monterey Bay Aquarium Website Video Library includes over 30 videos about animals, exhibits, and conservation research programs at the aquarium. The videos are in QuickTime© or Windows Media Player©. The site also offers activities, materials for the classroom, and marine science career information.
http://www.mbayaq.org/efc/video_library/video_library.aspx

ARC Centre
The ARC Centre of Excellence for Coral Reef Studies undertakes integrated research for sustainable use and management of coral reefs. This research center is headquartered at James Cook University, in Townsville, Australia. The website includes links to hundreds of coral-related publications, many with full text available. Check out the educational resources links.
http://www.coralcoe.org.au/index.html

Archaeology Channel Video Guide
Based in Oregon, The Archaeological Legacy Institute was founded to bring the benefits of archaeology to a wider constituency. Check out their collection of video programs, which include Queen Anne's Revenge Overview, The River has Many Stories, The Shipwreck at Playa Damas, and many more. In addition to the videos, each offers web links for further information. While on the website, check out the extensive links to teacher resources and lesson plans from the main Archaeology Channel webpage.
http://www.archaeologychannel.org/content/videoguide.asp

Archeology and Ethnography Program
The National Park Service Archeology Program has launched a series of new webpages. "The Public Benefits of Archeology" offers a unique perspective for different segments of the public. Through narrative scenarios, case studies, and additional reading, visitors to the webpage can learn about ways that archeology can benefit them. The website includes links for teachers and kids, lesson plans, distance learning, and career information.
http://www.cr.nps.gov/aad/PUBLIC/INDEX.HTM

Archipelago Exhibit – Hawai'i
"Archipelago: Portraits of Life in the World's Most Remote Island Sanctuary" will be on exhibit at the Maui Ocean Center for the month of February. This photographic exhibit on the flora and fauna of the Northwest Hawaiian Islands and conservation efforts to protect them showcases images from the new book "Archipelago" by photographers David Liittschwager and Susan Middleton.
http://www.mauioceancenter.com/home.html

Arctic and Antarctic
This NSF website looks at research being conducted in the two polar regions of the earth. These inhospitable environments provide natural laboratories for scientists to study basic questions such as, Is earth's climate changing? What are the limits of life in extreme environments? The website includes interactives about ongoing and future research along with links to classroom resources.

http://nsf.gov/news/overviews/arcticantarctic/index.jsp

Arctic and Antarctic Activity Book
NOAA's National Centers for Coastal Ocean Science offers the Arctic and Antarctic Activity Book in their ongoing series of regional children's activity books. This activity book, produced for the International Polar Year of 2007-2008, is for K-5th graders. The 25 page book is filled with information about both poles, along with facts, drawings, mazes, find-a-word puzzles, connect-the-dots, and other activities about organisms and life in the coldest areas of the world.
http://www.coastalscience.noaa.gov/education/welcome.html

Arctic Theme Page
NOAA's Arctic Theme Page provides access to Arctic data and information for scientists, students, teachers, academia, managers, and others. The Gallery links to images of ice, animals, ships, and more. Links to education include an arctic primer, information abuot arctic change, polar ecosystems, glaciers, and much more. Check this site out for FAQs, data, maps, information, and images.
http://www.arctic.noaa.gov/index.shtml

ARKive – Images of Life on Earth
ARKive gathers together into a centralized digital library films, photographs, and audio recordings of the world's species, creating a record of the world's biodiversity. The website features photographs of endangered and protected species worldwide, and includes information on habitat, status, descriptions, threats, and biology. It also features lesson plans (UK standards).
http://www.arkive.org/ .

Armada Project Classroom Activities
The Armada Project, funded by the National Science Foundation, provides K-12 teachers an opportunity to actively participate in ocean, polar, and environmental science research. Their website offers downloadable classroom activities and background information about sea level rise, population ecology, benthic infauna, and more.
http://www.armadaproject.org/downloads.htm

Animals in Curriculum-based Ecosystem Studies
Animals in Curriculum-based Ecosystem Studies (ACES) is a classroom based curriculum program in which students use Earth imagery to explain the movement of animals that are tracked by NOAA's operational satellites. Follow seabirds, sea turtles, marine mammals, and fish as they migrate. Students study aspects of the animal's life history, conservation status, food web, connections to ocean processes and remote sensing data, environmental issues the animals face, and more.
http://www.signalsofspring.net/aces/

Artist Boat
Artist Boat is dedicated to promoting awareness and preservation of coastal margins and the marine environment through collaborations between marine scientists and artists in order to develop environmental literacy. They utilize tools of the sciences and the arts to bring people to places of awareness and reflection while visiting these habitats. While sections of their website are under development, it includes links to educational materials, a downloadable pdf of upcoming events, and youth program descriptions.

http://www.artistboat.org/

ARTNC (North Carolina Museum of Art)
The North Carolina Museum of Art provides online educational resources featuring nature and science activities that can be used in environmental education. The website includes K-12 lesson plans and activities searchable by region, subject, and grade. While none specifically address the marine environment, concepts include animal behavior and adaptation, weather and climate, ecosystems, and more relevant topics.
http://www.ncmoa.org/artnc/

Ask Dr. Global Change
From the U.S. Global Change Research Information Office, "Dr. Global Change" offers a searchable collection of answers to questions about global warming, ozone depletion, greenhouse gases, and other issues related to climate change. Students can also submit questions of their own and explore related links. This reference service also assists researchers, educators, resource managers, and others in finding information relevant to global environmental change.
http://gcrio.custhelp.com/cgi-bin/gcrio.cfg/php/enduser/home.php .

Assessing and Monitoring Floatable Debris
Assessing and Monitoring Floatable Debris is designed to provide guidance in assessing and monitoring floatable debris as directed by the BEACH Act of 2000. A copy of can be found on EPA's website.
http://www.epa.gov/owow/oceans/debris/floatingdebris/

At Sea – A Cruise and Virtual Expedition to the Oculina Banks
Scientists and students explored deepwater coral reefs of the Oculina Banks, stretching 30 miles offshore from Ft. Pierce to Cape Canaveral, Florida. This remote MPA is designated a habitat of particular concern, and is a model for efforts underway to create new MPAs throughout southeast U.S. waters and the Gulf of Mexico. The team used a Remotely Operated Vehicle to study the current health of coral on the banks.
http://oceanica.cofc.edu/Oculina2003/home.htm

At Sea Newsletter
The University of Delaware College of Marine Studies and the Delaware Sea Grant College Program have launched a new e-newsletter, At Sea. It provides information on the marine research, education, and outreach activities at the University of Delaware. The website also has links to educational resources.
http://www.mis4.udel.edu/deptnews/deptnews.html?3501 .

At Work in the Ocean
This CD-ROM contains material mapped to science standards created during a series of live interactive Internet events and from education and outreach material developed during the 1999 and 2000 field seasons of the National Geographic Society's Sustainable Seas Expeditions. The three curriculum units on this CD feature clips, web chat questions and answers, labs, activities, and related resource materials. The units are monitoring a habitat, tools for exploring the ocean, and oceanography careers.
http://www.dlese.org/dds/catalog_NASA-ESERevProd374.htm

Atlantic and Gulf Rapid Reef Assessment Database
The Atlantic and Gulf Rapid Reef Assessment (AGRRA) database is now available in Microsoft Access©. The database hosts data for 737 sites that were surveyed during the 35 assessments conducted between 1997 and 2003 in the Caribbean, Gulf of Mexico, Florida and the Bahamas.
http://www.agrra.org/

Atlantic and Gulf Rapid Reef Assessment Program Report
The Atlantic and Gulf Rapid Reef Assessment (AGRRA) Program is a joint program of the University of Miami's Rosenstiel School of Marine and Atmospheric Science and The Ocean Research and Education Foundation. A comprehensive survey of coral reefs in 20 areas of the Western Atlantic can be used to compare the current health of one reef to that of another, and to evaluate future changes.
http://www.coral.noaa.gov/agra/index.html

Atlas of Extratropical Storm Tracks
From the NASA Goddard Institute for Space Studies comes information about midlatitude storm systems, including maps of storm frequency and intensity as well as plots of individual storm paths. Maps are available as monthly and seasonal means for the years 1961 through 1998 in either global or hemispheric projections.
http://www.giss.nasa.gov/data/stormtracks/

Atlas of the Biosphere
The Center for Sustainability and the Global Environment's *Atlas of the Biosphere* contains numerous maps documenting environmental phenomena across the globe, such as water resources, ecosystems, land use patterns, and human impact, at a variety of scales. The Atlas also contains the data sets that were used to generate these different thematic maps.
http://atlas.aos.wisc.edu/maps.php

Atlas of Our Changing Environment
One Planet, Many People: Atlas of Our Changing Environment, from the United Nations Environment Programme (UNEP), provides a comparative picture of our environment 30 years ago with the present day. The atlas contains photographs, satellite images, maps, and narratives that provide insights into the many ways people around the world have changed, and continue to change, the environment.
http://na.unep.net/OnePlanetManyPeople/index.php

Atlas of Science Literacy
The Atlas of Science Literacy is a two-volume collection of conceptual strand maps, and commentary on those maps, that show how students' understanding of the ideas and skills that lead to literacy in science, mathematics, and technology might develop from kindergarten through 12th grade. The atlas is part of a coordinated set of tools developed by the American Association for the Advancement of Science's Project 2061, to help educators understand and use specific goals for student learning.
http://www.project2061.org/publications/atlas/default.htm

Atlas of Wetlands in the St. Lawrence Valley
The *Conservation Atlas of Wetlands in the St. Lawrence Valley* from Environment Canada, an interactive GIS mapping site, pinpoints the location of some 20,000 wetlands. It provides definitions of the various wetlands and their roles, statistical and

descriptive data for specific areas, and conservation options. Users can create their own maps from the original database.
http://lavoieverte.qc.ec.gc.ca/faune/AtlasTerresHumides/AtlasTerresHumides.html

Audio Guide to Urban Birds: By Students, For Students
Learn more about common urban birds with this project, written and narrated by high school students from Boston, Massachusetts. The Urban Bird Sounds Project features recordings and descriptions of birds, tips for remembering their songs and calls, and short quizzes to test your skills. The website allows you to download audio and teaching materials, take online quizzes, and more. There is also a step-by-step guide to producing a similar project.
http://www.urbanbirdsounds.org/Site/Welcome.html

Audubon Lesson Plans On-Line
Wild Republic's Learning Adventure features lesson plans about nature, animals and their habitat; this year's focus is on birds. Educators at Audubon provided the necessary content for the 2003-2004 lesson plans, including Puffins, upwelling, coastal food webs, and more. Each unit is designed to enrich students' knowledge and understanding of birds, their characteristics and habitats.
http://www.wildrepublic.com/lessonplans/2003/index.html .

Australian Biological Resources Study
The mission of the Australian Biological Resources Study is to document which plants and animals are found in Australia, map their locations, and provide information this information to the general public. The website includes material on research activities and administration, and offers a series of online databases, including fauna, flora, species bank, and more.
http://www.deh.gov.au/biodiversity/abrs/

Australian Marine Environment Protection Association Educational Materials
The Australian Marine Environment Protection Association offers a variety of educational web pages and materials. Topics include marine stormwater pollution, the effects of climate change on coral bleaching, marine pest and threat, and much more. Check out the flash versions and downloadable teacher resources.
http://www.ausmepa.org.au/home/

Australian Museum Online
The Australian Museum has a long tradition of educational outreach; this website affords users access to materials created for this website and materials culled from *in situ* exhibits. The *Features* section contains exhibits ranging from explorations of the Great Barrier Reef to everything you want to know about sea slugs. *Explore* allows users access to fact sheets and educational materials. *Research and Collections* offers users the ability to learn more about the museum's different departments, including marine ecology, biodiversity, fishes, and much more.
http://www.amonline.net.au/

AUVfest 2008 – Online
AUVfest 2008 took place May 12-23, 2008, hosted by and based at The Naval Undersea Warfare Center in Newport, Rhode Island, co-sponsored by the Office of Naval Research and NOAA's Office of Ocean Exploration and Research. This was a unique opportunity to demonstrate and test the applications of autonomous underwater vehicles

for both mine countermeasures and archaeological research. Check the website for lesson plans (Grades 5-12), videos, background information, and more.
http://oceanexplorer.noaa.gov/explorations/08auvfest/welcome.html

Avian Index
Teachers, students, and others can find useful resources through the Avian Index, from Environment for the Americas. Curriculum, workshops, books, speaker's lists, and more, are available through this easy-to-search database.
http://www.birdiq.com/learn/Resource_Dir/index.php#

Avibase – The World Bird Database
Avibase is an extensive database information system about birds of the world, containing over 1.4 million records about 10,000 species and 22,000 subspecies of birds, including distribution information, taxonomy, conservation status, and more. This site is hosted by Bird Studies Canada, an affiliate of Birdlife International.
http://www.bsc-eoc.org/avibase/avibase.jsp .

Back the Brookie Learning Module
The *Back the Brookie* Learning Module was created by Tennessee educators and includes a DVD and teacher packet for use in grades 7-12. The module helps students learn about clean air and clean water, and their effects on brook trout habitat as well as on humans. It includes information on brook trout biology, watersheds, acid rain, the water cycle, pH, and how students can help participate in conservation efforts. The teacher packet is complete with a pre/post test, activity suggestions, notes, and more.
http://www.eeintennessee.org/net/content/go.aspx?s=56894.0.0.37935

Back to the Sea of Cortez: Sailing with the Spirits of John Steinbeck and Ed Ricketts
A team of scientists will embarks on a 73-foot fishing boat to retrace the historic expedition that John Steinbeck and Edward F. "Doc" Ricketts made to explore the Sea of Cortez in 1940. Their journey was immortalized in a book they wrote together, *The Log from the Sea of Cortez*. A science writer will travel with the expedition and post a daily log of the journey online. Students and teachers in Baja California will join the expedition for different days of studying life in the tide pools.
www.seaofcortez.org and www.mardecortes.org .

Bad Science
This website identifies some scientific phenomena which are persistently presented incorrectly by teachers and writers, and provides scientifically correct explanations. The author hopes “to sensitize students, teachers, and writers to the horrors of such glib explanations or representations.” The website includes Bad Meteorology, Bad Chemistry, and more.
http://www.ems.psu.edu/~fraser/BadScience.html

Barging Down the Mississippi
The Wyland Foundation is traveling down the Mississippi River on its third public education tour. *Barging Down the Mississippi* will take place throughout the month of October, 2006. From the headwaters of the Mississippi River watershed to the Gulf of Mexico, this program of classroom study and live events uses art as a gateway for the promotion of aquatic resource science and environmental education.
http://www.wylandoceanchallenge.org/index.cfm?do=tourabout

Barrier Island EcoTours – South Carolina
Explore South Carolina's Coastal Habitats while meeting national and state science standards. Field trips may be tailored to meet the interests and knowledge levels of students from kindergarten through college. Scientific process and inquiry skills are promoted and reinforced throughout the field trip as students learn about organisms, habitats, communities, and ecosystems, as well as the physical, chemical, geological and historical factors that influence them.
http://nature-tours.com

Barrier Islands: To Build or Not to Build?
This Internet WebQuest Science website offers a task for students along with research resources and a teacher page. Students are tasked with developing an educated opinion as to whether or not people should build permanent structures on barrier islands. They learn about the geological and physical nature of barrier islands, and how barrier islands change over time.
http://www.glencoe.com/sec/science/webquest/content/barrierisland.shtml

Bay Grasses in Classes
The Bay Grasses in Classes project is a joint partnership with the Maryland Department of Natural Resources and the Chesapeake Bay Foundation. Since its inception in 1998, over 1,269 classes and 32,000 students have been involved with Bay Grasses in Classes. During this time students have planted over 2.5 acres of bottom surface in the Bay with the 425,000 plants grown in their classrooms. The website includes maps, photos, and classroom activities.
http://www.dnr.state.md.us/bay/sav/bgic/grass_class.html

Bay and River Sojourns
The Alliance for the Chesapeake Bay 2009 River Sojourns are multi-day expeditions down the Patuxent, James, and Susquehanna Rivers of the Chesapeake watershed. Various trips are offered; see the website for details in upcoming days.

- Patuxent River – June 18-22, 2009
- North Branch Susquehanna – June 18-23, 2009
- Lower Susquehanna – June 24-28, 2009
- James River – July 10-14, 2009

http://www.acb-online.org/2008Sojourns.cfm

BBC Science
BBC Radio 4 offers downloadable archives of broadcasts, including a wide variety of science shows. Programs include *Arctic Meltdown*, the *Goldilocks Planet* (a search for an earth-like planet), *Wild Blue Britain* and much more.
http://www.bbc.co.uk/radio4/science/

Be Water Wise!
National Environmental Education Week (EE Week), April 12-18, 2009, promotes the understanding and protection of the natural world by actively engaging students and educators of all subjects in a week of environmental learning and service before Earth Day. This year's EE Week theme is *Be Water Wise!* The website offers a water-themed Nature Journaling blog, lesson plans, and more.
http://www.eeweek.org/

Be Water Wise in School
Presented by The Groundwater Foundation, this newly developed guide brings education and action together. Written as a complete guide ready for implementation in the classroom, it contains background information for teachers, lesson plan instructions, pre- and post-tests, vocabulary lists, website links for further student research and service-learning project ideas. *Be Water Wise in School* is completely hands on and has been correlated to National Science Education Standards.
http://www.groundwater.org/shop/proddetail.asp?prod=1114d

Beach Chair Scientist
The purpose of this website and blog is to bring a simplified perspective to the questions one might have while relaxing on the beach.
http://www.beachchairscientist.com/

Beach Water Quality Monitoring System
This partnership effort between Earth 911, Oceana, and participating states and communities provides information regarding the most recent water quality conditions at local beaches. This application is currently being expanded in several communities and will soon be available nationwide. The site also provides links to learn more about beach water monitoring, waste disposal, stormwater, rip currents, and more.
http://southcarolina.earth911.org./usa/WaterQuality/index.asp

Beachcomber's Companion© Cards
Woods Hole Sea Grant has developed Beachcomber's Companion© cards, an alternative to the traditional field guide. The cards feature user-friendly information for 50 Atlantic coast marine invertebrates, perfect for beachcombers of all ages. The cards cover marine invertebrates common to the Atlantic Coast. They help beachcombers identify a specimen by size, shape, features, and coloration; where to look for it; and interesting facts about the creature.
www.beachcomberscompanion.net

Becoming Whales
From the Evolution and the Nature of Science Institutes, this website contains a 45-minute lesson about evolutionary links between whales and terrestrial mammals. Experience discoveries of whale evolution, or, as the website states, "The thrill of discovery…The loss of de feet." Downloadable materials for the lesson are provided as well. The site also includes a useful collection of extensions and resources.
http://www.indiana.edu/~ensiweb/lessons/whale.ev.html

Before and After Disasters: Federal Funding for Cultural Institutions
This guide is intended to help cultural institutions prepare for emergencies and disasters that may strike their regions. The latest version of the report, prepared by FEMA and the National Endowment for the Arts, provides summary descriptions and contact information for 15 federal grant and loan programs and additional sources of federal assistance for preparedness, mitigation, and response.
http://www.arts.gov/pub/DisasterRecovery.pdf

Bentham Open
Bentham Publishers is launching more than 200 peer-reviewed open access journals during this year, under the banner of Bentham OPEN. The journals will cover all major

disciplines and are exclusively open access publications. Browse the subject list for Earth Science, Environmental Science, Geology, and more.
http://www.bentham.org/open/

Benthic Assemblages in the Twilight Zone Expedition
Join scientists aboard the NOAA Ship *Nancy Foster* for the Benthic Assemblages in the Twilight Zone Expedition as they embark on the expedition to characterize mesophotic benthic assemblages 50-200 meters deep in the Gulf of Mexico. They will be using the Phantom II remotely operated vehicle to collect samples on a few banks along the continental shelf break. The expedition was scheduled to start August 25 but was delayed.
http://flowergarden.noaa.gov/science/nancyfoster08.html

Benthic Habitats and the Effects of Fishing
This book from the American Fisheries Society Symposium 41 offers an understanding of the effects of fishing activities on benthic habitats necessary to address the issues of habitat alteration that challenge managers, practitioners, and ocean scientists. Free copies may be available while they last from the National Marine Fisheries Service, Office of Habitat Conservation; contact Dr. James Thomas at james.thomas@noaa.gov. They are available for purchase from the American Fisheries Society.
http://www.fisheries.org/html/publications/catbooks/x54041.shtml

"Best" Lists
Larry Ferlazzo, a high school English Language Learners teacher in California, has compiled lists of "best" websites, including websites to introduce environmental issues into the classroom, science websites for students and teachers, articles about education, and more.
http://larryferlazzo.edublogs.org/2008/07/19/the-best-sites-to-introduce-environmental-issues-into-the-classroom/

Best Practices in Boating, Fishing, and Aquatic Stewardship Education Tools
The Recreational Boating and Fishing Foundation developed Best Practices in Boating, Fishing, and Aquatic Stewardship Education, as well as accompanying tools to facilitate implementation. The document includes guidelines in program development, research, and evaluation and is supported by 11 papers on topics ranging from effective minority outreach to program evaluation.
http://www.rbff.org/educational/bestpractices.cfm .

Beyond the Moon
James Greig McCully, author of *Beyond the Moon: A Conversational, Common Sense Guide to Understanding the Tides*, offers a comprehensive explanation of the tides on earth that is both simple enough for students and solid enough for their professors. This book describes how the cyclical motion of the near solar system acts upon the earth's oceans, and how the hydraulics over the continental shelf and the geography of the coastline orchestrate this rhythm into the variety of tide patterns seen around the globe.
http://www.worldscibooks.com/environsci/6015.html

Beyond Penguins and Polar Bears
Beyond Penguins and Polar Bears, from Ohio State University and partners, is a new online magazine to help elementary school teachers develop their knowledge of the Arctic and Antarctica and organize science and literacy instruction around polar themes.

Issues provide lessons and readings on data collection and representation, map skills, comparing the Arctic and Antarctica, paleontology and archaeology, and more. Book recommendations are included.
http://beyondpenguins.nsdl.org/

Blick on Flicks
We love watching movies, but we also love science. And sometimes the two don't mix. To help sort the good science from the bad in movies and other visual media, the NSTA website hosts audio and written reviews, providing expert commentary, pointing out where the physics is twisted, the chemistry fudged, or the biology stretched on behalf of the story, without losing sight of the fact that movies are meant to entertain. Blick helps make "bad science" into teachable science for middle level and high school students.
http://www.nsta.org/publications/blickonflicks.aspx

Big Blue Bus from Fisheries and Oceans Canada
The Big Blue Bus is Fisheries and Oceans Canada's Kids Corner with all kinds of activities, contests, and facts. This site has features such as the Water Wizards Club, the Creature Feature, Small Fry Club, a monthly contest, vocabulary, and much more. Among the many offerings, kids can learn about clean water sources, climate change, invasive species, and marine protected areas.
http://www.dfo-mpo.gc.ca/canwaters-eauxcan/bbb-lgb/index_e.asp .

Big Green Help
The Big Green Help from Nickelodeon is a global kid-led initiative that provides information and tools to help explain climate change to kids, and educates and empowers kids to make a difference by connecting them to earth-friendly activities in their everyday lives.
http://www.biggreenhelp.com/

Bilko
Supported by UNESCO, Bilko is a system for learning and teaching remote sensing image analysis skills. Current lessons teach the application of remote sensing to oceanography and coastal management, but Bilko routines may be applied to the analysis of any image in an appropriate format, and include a wide range of standard image processing functions. Bilko is available to registered users for free. The website offers PC-based software, tutorials, thematic modules, and more.
http://www.noc.soton.ac.uk/bilko/

Billfish Film Documentary
As part of programming around Earth Day in April, a new documentary, *Billfish: A Challenge for Survival,* is being aired and distributed by the Public Broadcasting Service. Copies of the show, on either VHS or DVD, will be available through each PBS station at the conclusion of the broadcast. In the U.S., viewers can call 1-800-533-8321 to purchase a copy. International distribution to foreign television markets will proceed after six months of U.S. telecasts.
http://www.billfishdocumentary.com

Bilingual Publication for Recreational Users of Coral Reefs
The Coral Reef: Precautions for Recreational Users in Puerto Rico and the U.S. Virgin Islands

El Arrecife de Coral: Precauciones para los Usuarios Recreativos en Puerto Rico y las Islas Vírgenes Estadounidenses
NOAA's National Marine Fisheries Service has produced this recreational users guide that explains what coral reefs are and measures that can be taken to protect them. The guide is distributed through the NMFS Habitat Conservation Division Caribbean Field Office in Puerto Rico.
Contact Dr. Lisamarie Carrubba at 787-851-3700 or lisamarie.carubba@noaa.gov

BioBlitz - California
BioBlitz is a 24-hour event in which teams of scientists, volunteers, and community members join forces to find, identify, and learn about as many local plant and animal species as possible. A BioBlitz will take place in the Santa Monica Mountains National Recreational Area, May 31-32, 2008. Educators are encouraged to have their students participate. National Geographic and the U.S. National Park Service are planning a series of ten annual BioBlitzes around the country – check the website for future sites.
http://www.nationalgeographic.com/field/projects/bioblitz.html

BioBlitz - Indiana
BioBlitz is a 24-hour event in which teams of scientists, volunteers, and community members join forces to find, identify, and learn about as many local plant and animal species as possible. A BioBlitz will take place at Indiana Dunes National Lakeshore on May 15-16, 2009. Educators are encouraged to have their students participate, and educational materials are available for download from the website.
http://www.nationalgeographic.com/field/projects/bioblitz.html

BioBlitz – Rhode Island
Sponsored by the Lincoln Land Trust and the Blackstone River Watershed Council, BioBlitz 2006 will be held June 9-10, 2006 in Cumberland, Rhode Island. The BioBlitz will involve scientists and volunteer naturalists who will tally as many species as possible in a 24-hour period to increase awareness of the variety of life on even the most mundane-looking land.
http://www.uri.edu/ce/rinhs/bioblitz.htm

Biodidac
Biodidac is a bank of digital images, video, and animations that can be used and adapted for teaching biology. They have black and white illustrations that are free for educators; registration is required. Illustrations are included from Eubacteria, Protista, Fungi, Plantae, Animalia, Human Biology, and Histology. The website is available in French and English.
http://biodidac.bio.uottawa.ca/

Biodiversity and Agriculture
The Convention on Biological Diversity supports teachers in guiding students through an exploration of biodiversity issues with the launch of its first educational module for children and teachers on biodiversity and agriculture. The module consists of an online educational web portal for primary school students, and five accompanying lesson plans for educators. The module has been designed to engage students in a variety of exercises reflecting the principles of education for sustainable development.
https://www.cbd.int/ibd/2008/resources/teaching/

Biodiversity and Conservation
This book is by Peter J. Bryant of the School of Biological Sciences, University of California, Irvine. The book covers the origin, nature and value of biological diversity, threats to its continued existence, and approaches to preserving what is left. The book itself is on-line, and most of the links leave the book in order to take advantage of documents produced and updated elsewhere. Ocean resources are covered, with chapters on whaling and fishing, endangered aquatic habitats, and islands.
http://darwin.bio.uci.edu/~sustain/bio65/Titlpage.htm

Biodiversity Counts
The *Biodiversity Counts* website offers a resource collection for middle school students, which takes students into the field and engages them in life science research - the inventory of plants and arthropods outside their own backdoors. Materials include lesson plans, profiles of scientists and museum staff, essays, and interactives that help students explore, analyze, and apply their field observations.
http://www.amnh.org/education/resources/biocounts/
http://www.amnh.org/nationalcenter/it_takes_all_kinds/

Biodiversity Education Network
The Biodiversity Education Network is a coalition of organizations dedicated to enhancing local, regional, and national efforts to educate people of all ages about biodiversity. It was created to promote networking among those organizations and individuals who are working in biodiversity education. The website provides a searchable database of biodiversity materials, a calendar of events, and an outline for developing an education program along with links to additional resources.
http://www.bioednet.org/

Biodiversity Facts And Figures
The Science and Development Network Biodiversity pages have an updated Biodiversity Facts and Figures Section. Here, you will find the latest data on the extent and the distribution of the world's biodiversity. It also includes the most recent estimates of extinction threats for different groups of species, as well as facts and figures on the value of biodiversity and efforts to conserve it.
http://www.scidev.net/ms/biofacts/

Biodiversity Heritage Library
Ten major natural history museum libraries, botanical libraries, and research institutions have joined to form the Biodiversity Heritage Library Project. The group is developing a strategy to digitize the published literature of biodiversity held in their respective collections and make it available through a global “biodiversity commons.” The participating libraries have over two million volumes of biodiversity literature collected over 200 years; over 1.124 million pages of key taxonomic literature are already on-line.
http://www.biodiversitylibrary.org/

Biodiversity Information Center
The Convention on Biological Diversity offers this website to facilitate access to and exchange of information on biodiversity related publications, bibliographies, and other resources. There are currently over 3000 monographs, reports, and serials available from the website. In addition, there are links to a variety of glossaries, case studies, and information on biosafety.
http://www.biodiv.org/doc/info-centre.shtml

Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge
This book offers twenty-eight chapters from dozens of international legal and scientific experts, complete with thorough references. It examines biodiversity, what are we losing, why, and looks at what is to be done; addresses biotechnology; examines traditional knowledge; and looks at ethnobotany and bioprospecting and offers practical lessons from the diverse experiences of the contributors.
http://styluspub.com/books/BookDetail.aspx?productID=151824

Biodiversity Guide for Developing Countries
SciDev.Net is an organization devoted to providing news and promoting debate on science and technology issues relevant to the needs of developing countries. The online guide to the biodiversity challenges facing developing countries looks at the issues surrounding the need to protect global biodiversity in developing countries and the need to promote social and economic growth.
www.scidev.net/biodiversity

BioEd Online
The Baylor University College of Medicine offers the BioEd Online website for educators, students, and parents. The website includes streaming video presentations, a slide library, science news updates from the journal *Nature*, and virtual workshops. Check out the Ready-to-Go Lesson, The Water Cycle and Global Warming; presentations on the diversity of life; the K-5 Resource, Create a Lasting Water Cycle; and more.
http://www.bioedonline.org/

Bioimages
The Bioimages database has been developed by the Department of Biological Sciences at Vanderbilt University in cooperation with other participating institutions and agencies. The image databases cover a wide range of biogeographical regions and their associated flora.
http://www.cas.vanderbilt.edu/bioimages/

BioLEARN
BioLEARN (Linking Educators As a Resource Network) is an on-line collection of biology education materials created for and by Wisconsin high school and middle school biology teachers, coordinated by the Center for Biology Education at UW-Madison. The website includes teaching activities and resources aligned with Wisconsin Model Academic Standards and incorporating standards-based student performance measures. Sample activities are included in ecology, classification, botany, and more.
http://www.wisc.edu/cbe/biolearn/index.html

Biological ESTEEM
The Biological ESTEEM (Excel Simulations and Tools for Exploratory, Experiential Mathematics) Collection is a project of the BioQUEST Curriculum Consortium. The project offers sample applications of mathematics across the spectrum of activity-based general biology curricula. Particular attention is paid to equations that have significantly transformed contemporary biological practice and that are widely used in classroom, laboratory, and field activities through use of simulations, tools, and databases.
http://mathdl.maa.org/mathDL/3/?pa=content&sa=viewDocument&nodeId=623

Biology Corner
This virtual biology website is maintained and updated by science educator and high school teacher, Shannan Muskopf. The website offers labs, worksheets, and various classroom activities. Lesson plans include Biodiversity of Ponds, Comparing Ecosystems, and more. There are online quizzes and links to other science education resource websites.
http://www.biologycorner.com/

BiologyBrowser
Biology Browser is a free website offering resources for the life sciences information community. You can browse by organism, subject, and geography. The Guide to the Animal Kingdom offers a simplified (and somewhat abbreviated) classification scheme for the whole animal kingdom. A searchable database offers links to information and resources for educators and students.
http://www.biologybrowser.org/

Biology Classroom Resources
The National Science Digital Library offers links to lessons and resources about biology from one convenient location. Learn about cells, slugs, whales and dolphins, turtles, biodiversity, and more. Find online references, images, and interactive games on evolution and the animal kingdom.
http://www.nsf.gov/news/classroom/biology.jsp

BioMEDIA Associates
BioMEDIA ASSOCIATES produces multimedia programming for life science instruction for middle school, high school, and college students that captures the diversity of the living world. The website offers a large amount of overview information and vibrant illustrations, including a series of free posters.
http://www.ebiomedia.com/

Biomes of the World
This website from the Missouri Botanical Garden offers an introduction to the biomes of the world, including land, freshwater, and marine ecosystems. It offers insight into wetlands, shorelines, temperate and tropical oceans. One example is the barrier islands website with a simple diagram and basic introductory information. Good links to additional websites allow you to delve deeper into subjects of interest.
http://mbgnet.mobot.org/

BiosciEdNet
BiosciEdNet, the BEN Collaborative is composed of professional societies and coalitions for biology education. BEN Collaborative is the Biological Sciences Pathway for the National Science Digital Library (NSDL), a program of the National Science Foundation. The BEN portal provides searchable access to the digital library collections of its partners to provide users with accurate and reliable biology education resources. Subjects include marine biology, oceanography, and more.
http://www.biosciednet.org/portal/

Bioscience Lesson Directory
ActionBioscience.org provides original peer-edited lessons, written by science educators, to specifically accompany peer-reviewed articles on the ActionBioscience website. Each lesson contains questions related to the article, as well as a variety of

student activities that promote active learning and inquiry into current issues in the biosciences. Topics include biodiversity, alien species, ecosystem value, water issues, and more.
http://www.actionbioscience.org/lessondirectory.html

Bioscience Literacy
This educational resource of the American Institute of Biological Sciences is designed to promote bioscience literacy. It highlights articles in English and Spanish by scientists, science educators and science students on issues related to seven bioscience challenges, including the environment, biodiversity, and bioscience education. In addition, the website provides lessons and resources to enhance bioscience teaching.
http://www.actionbioscience.org/

Birch Aquarium at Scripps – Teacher Open House
The Birch Aquarium at Scripps Institution of Oceanography is hosting a free Teacher Appreciation and Open House, October 14, 2008 in La Jolla, California.
http://aquarium.ucsd.edu/Education/For_Schools/For_Teachers/Professional_Development/Appreciation_and_Open_House_Events/

Birdcinema.com
Birdcinema.com is a website for people to post bird videos, dedicated to the sharing of birding videos, pictures, and resources. They seek both amateurs and professionals willing to share their bird videos and a little about the bird, the video, or whatever else they feel is relevant. The channels section allows for grouping of videos such as inland water birds, education, and more. Education offers background and other information.
http://www.birdcinema.com/

BirdLife International Database
You can find full accounts of all globally threatened birds on this web database. The accounts include a distribution map and an illustration of each bird. There is a concise account and extended report which gives all of the data held in the BirdLife World Bird Database.
http://www.birdlife.org/datazone/search/species_search.html .

BirdNote
BirdNote is a radio series about the intriguing ways of birds. Each show is scheduled to coincide with the time of year when you can see or hear the featured bird, to help you be able to exclaim, “Oh, that’s what that is!” BirdNote shows are two-minute vignettes that incorporate sounds of birds with stories that illustrate their interesting or intriguing abilities. The radio shows are archived on the website for downloading. Links are also provided to BirdWeb for more information.
http://www.birdnote.org/kplu-archive.cfm

Birds Without Borders
Birds Without Borders - Aves Sin Fronteras® Landowner Recommendations manual, is the result of a research, education, and conservation project that has been studying birds in both Wisconsin and Belize since 1997. It provides information on habitats and plants found to be important to birds, along with many pictures of birds and plants so that the reader can easily identify them. The manual aims to conserve Belize's birds, both resident and Neotropical migratory birds that link Belize and Wisconsin.
http://www.zoosociety.org/Conservation/BWB-ASF/BelizeLandowner.php

Black Sea Shipwreck Expeditions
Dr. Ballard and his team return to the Black Sea from August 18-24, 2007, to document two Byzantine-era shipwrecks. Explore alongside the scientists with live updates from the expedition. Ask questions of the scientists before the broadcasts; they may be answered live at Thunder Bay National Marine Sanctuary's Great Lakes Maritime Heritage Center in Alpena, Michigan.
http://www.immersionpresents.org

Blue Planet Run
The book *Blue Planet Run* provides readers with a look at the water problems facing humanity and some of the solutions being pursued by large and small companies, by entrepreneurs and activists, and by nongovernmental organizations and foundations. The book may be purchased or downloaded (beware: large file, 122 pages) from this website. All royalties from the book will be used to provide clean water to people around the world.
http://www.amazon.com/Blue-Planet-Run-Provide-Drinking/dp/160109017X/ref=cm_taf_title_featured?ie=UTF8&tag=tellafriend-20

Blue Whales
National Geographic offers an interactive article on blue whales, derived from a March, 2009 feature in the print edition of National Geographic magazine. The website offers an in-depth look into the recovery of the blue whale population off the coast of Costa Rica in recent years, a quiz on these creatures, and an online video.
http://ngm.nationalgeographic.com/2009/03/blue-whales/brower-text

Blue World
Segments to the Blue World underwater adventure television series can now be viewed online. Each 8-10 minute segment also has a downloadable teacher's guide.
http://www.blueworldtv.com/

Bonaire 2008: Exploring Coral Reef Sustainability with New Technologies Expedition
NOAA Ocean Exploration has launched the *Bonaire 2008: Exploring Coral Reef Sustainability with New Technologies Expedition* web page. The expedition, January 7-30, 2008, presented an opportunity to follow the journey to one of the few coral reefs that seems to have escaped the recent coral reef crisis. The website offers expedition and background information, lesson plans, career connections, multimedia resources, and more.
http://oceanexplorer.noaa.gov/explorations/08bonaire/welcome.html

Bonneville Power Administration's Resources for Teachers
The Bonneville Power Administration offers lessons on energy conservation, water and electricity, stream environments and stream health, aquatic macroinvertebrates, and the life cycle of salmon. High school students can conduct an energy audit of their school. The website must have undergone a recent update – note that some of the links aren't working, but a Google™ search finds the materials.
http://www.bpa.gov/Corporate/KR/ed/page6.htm

BookletChart
NOAA's Office of Coast Survey is testing a potential new product named the BookletChart™. This product will enable recreational boaters to print charts at home for no charge. It has been created to help recreational boaters better navigate and practice safer transportation on the water. The BookletChart™ is a form of nautical chart that has been reduced in scale and divided into a series of pages for convenience, but retains all the information of the full-scale nautical chart.
http://www.nauticalcharts.gov/bookletcharts/

Border-Wide EE Coalition
The Border-Wide EE Coalition Web site is a rich source of environmental education information for the US-Mexico border region. The portal provides a calendar and live search feature on every page, lists bilingual publications, hundreds of organizations, contacts, events, and more.
http://redeafronteriza.net/ (Spanish)
http://bordereeweb.net/ (English)

Boston Harbor Islands Curriculum
The Boston Harbor Islands, part of the National Park System, include 34 islands that lie within Boston Harbor. The national park area extends seaward 11 miles from downtown Boston. The landmass of the Boston Harbor Islands is between 1,600 - 3,100 acres, depending on the tides. In addition to maps and visitor information, the website includes downloadable curriculum for teachers and on-line quizzes for students.
http://www.bostonislands.org/learn/index.html .

Breaking Waves
The World Ocean Observatory offers Breaking Waves, an online ocean news service. Features and articles on ocean and water-related issues are chronologically compiled from daily searches of more than 150 news and information sources around the globe. Don't forget to check out the World Ocean Observatory's education offerings under Ocean Classroom and the information about maritime history and culture under Cultural Ocean.
http://www.thew2o.net/oceanForum.html

Bridge Data Analysis Teaching Activities
Data Analysis Teaching Activities (DATAs) utilize online scientific data from research projects all over the country, presented in an organized, controlled format, which allows for easier analysis and comprehension. By working with real data, students better understand basic scientific concepts and learn about the issues most prevalent in today's lakes, rivers, and oceans. Currently, the DATA series contains over 65 activities in biology, human activities, ecology, physics, chemistry, climate, and geology.
http://www.marine-ed.org/bridge/index_archives.html

The Bridge Facebook Page
The Bridge Facebook page identifies when and where the next Bridge presentations will be, introduces new sites as they are added to the Bridge, posts pictures from sessions and exhibits, and holds discussions concerning resources you all would like to see added to the Bridge and which Data Analysis Teaching Activities (DATAs) you all like the best and how you have modified them.
http://www.facebook.com/pages/Gloucester-Point-VA/The-Bridge/34259244804?ref=s
http://www.marine-ed.org/bridge

The Bridge to Highlight NOAA Education Resources
During 2006-2007, the Bridge will work to bring NOAA education products to the forefront by highlighting them as a special collection of reviewed websites for educators. This collection will be featured on a special gateway page which will include annotated links to NOAA education resources that have been evaluated through the Bridge's Teacher Reviewer of On-Line Learning (TROLL) program.
http://www.marine-ed.org/bridge

Bridge's NOAA Collection
The Bridge now offers a special NOAA collection with more than 145 resources which have been reviewed by our Teacher Reviewers of On-Line Learning (TROLLs). The collection includes a roll-over navigation menu and a search engine. The navigation menu is arranged by topic, including all science disciplines, habitat, virtual expeditions, and more. Each resource in the collection features the link to the resource, a brief description, the grade levels for which the resource is appropriate, and a related image.
http://www2.vims.edu/bridge/noaa/

briefCAISE
The premier issue of briefCAISE, the newsletter of the Center for Advancement of Informal Science Education (CAISE), offers news, educational links, information about opportunities, and more. CAISE is devoted to advancing and improving the practice of informal science education, including film and broadcast media, science centers and museums, zoos and aquariums, botanical gardens and nature centers, digital media and gaming, and youth, community, and after-school programs.
http://insci.org/resources/

Bringing Coastal Issues to the Public Eye
Here are a couple of initiatives that bring ocean and coastal issues closer to the broader public eye:

- Ohio License Plate: Ohio drivers can purchase a new *Fish Lake Erie* license plate. A portion of its sale will support research and education programs of Ohio Sea Grant and Stone Lab. http://bmv.ohio.gov/vehicle_registration/fish_lake_erie.htm
- National Marine Sanctuary Foundation is now included in the upcoming Combined Federal Campaign, number 9255.
- The July 9 issue of the Sunday comic, *Mark Trail*, focused on the threats to coral reef ecosystems. http://coralreefwatch.noaa.gov/marktrail/index.html

The Broad Benefits of Restoring the Great Lakes
The Great Lakes account for 90 percent of the United States' and 20 percent of the world's surface fresh water and represent an enormous economic and cultural resource to the region. The Brookings Institution offers this paper addressing the benefits of restoring the Great Lakes ecosystem from numerous threats, summarizing the major findings of a more in-depth study, *Developing America's North Coast: A Benefit Cost Analysis of a Great Lakes Infrastructure Program*.
http://www3.brookings.edu/metro/pubs/20070904_gleiecosystem.pdf

Broadcasts from Monterey Bay
Dr. Robert Ballard's Immersion Presents will broadcast live from the Monterey Bay National Marine Sanctuary in California from March 2-7, 2008. Live video feeds and educational materials will be available on the OceansLive.org web portal as the

expedition team explores many of Monterey Bay's ecosystems, including estuaries, kelp forests, and deep submarine canyons.
http://www.oceanslive.org/portal/

Build a Squid
Nothing but fun! Build your own squid, set it free, and then check out what yours and all the other squids have been up to.
http://squid.tepapa.govt.nz/build-a-squid/interactive

Building a Presence for Science
The mission of NSTA's *Building a Presence for Science* initiative is to end the isolation of classroom science teachers and to provide them with professional development opportunities and science teaching resources. The goals of the program are to identify a point of contact for standards-based science teaching and learning in every school; establish an electronic network of science educators, and create an infrastructure of partners who are advocates for effective science teaching and learning.
http://www.cabap.org/
http://ecommerce.nsta.org/bap/mission.asp .

Burning Issues
Burning Issues in Wildhorse Basin is an online interactive wildland fire education curriculum for grades 5-9 addressing fire and ecosystems in the west. This website deals with issues not specific to fire management along the coasts, but includes much pertinent information and easy-loading graphics to teach about the critical role fire plays in ecosystem management. The website includes activities, an educator's guide, vocabulary, and more.
http://www.blm.gov/education/whb/#In

BVI Marine Awareness Guide
The British Virgin Islands Ministry of Natural Resources and Labour and the Conservation and Fisheries Department are encouraging BVI residents to learn more about International Year of the Reef. They have launched a Marine Awareness Guide which includes information about the island's marine habitats, species, laws, and more. An on-line version is available for downloading from the SailDiveBVI website.
http://www.saildivebvi.com/paper/marine-awareness-08.pdf

C-Side
C-Side - Coastal Studies, Information and Data for the Ecosystem is a comprehensive Gulf Coast Storm Information Center, providing direct linkage to local, state and federal information as it pertains to severe weather preparation and monitoring across the Gulf of Mexico coastal region. Find recommendations for home preparation and evacuation as well as time-sensitive data, weather products, and storm surge information. Post-storm assessments on the ecosystem, response and recovery products, environmental data and information, and remotely sensed data and imagery for affected areas will be available for response and recovery efforts.
http://ecowatch.ncddc.noaa.gov/c-side

Calendar of Events from NSTA
The National Science Teachers Association (NSTA) hosts a searchable online calendar of events in the world of science and science education: events, awards and competitions, conferences, exhibits and films, and more. You can search according to

your area of interest, by grade level, and by region of the United States or Canada.
http://www.nsta.org/main/calendar/events.php

2006 Calendars
Check out the following calendars for your holiday gift-giving, and support the education and outreach of these organizations. Don't forget to check out other favorite organizations for their holiday offerings.

- Mangrove Action Project: http://www.earthisland.org/map/calendar_2006.html
- Seas the Day: http://seastheday.theoceanproject.org/seastheday/order/
- National Marine Sanctuary Foundation: http://www.ideas4adv.com/nmsf/catalog.cfm
- Watchable Wildlife: http://secure.watchablewildlife.org/tek9.asp?pg=products&specific=jnqmqsd0

California Center for Ocean Science Excellence in Education (CA COSEE)
CA COSEE is dedicated to creating environments in which collaborations among ocean scientists and K-12 educators flourish, with the goal of enhancing the general public's understanding and appreciation of the ocean. The Center marshals the resources of UC San Diego's Scripps Institution of Oceanography, Marine Advanced Technology Education (MATE) Center at the Monterey Penninsula College, the Marine Activities Resources and Education (MARE) Program at UC Berkeley's Lawrence Hall of Science, and California Sea Grant.
http://www.cacosee.net/index.html .

California Climate Change Extension
The California Climate Change Extension website offers scientific information about climate change in California. Interviews with leading climate change researchers are posted as 20-30 minute downloadable audio segments; they are also separated by topic into 2-3 minute short videos under Quick Topics. Transcripts of the interviews are also available for downloading. Additional links are provided to many resources for California climate change information.
http://groups.ucanr.org/CAClimateChangeExt/

California Climate Change Portal
This website combines information on the impacts of climate change on California and the state's policies relating to global warming. The website includes background information, news, and information about policies and initiatives.
http://www.climatechange.ca.gov/index.html

California Coastweeks
Join the California Coastal Commission's Public Education Program in celebrating Coastweeks from September 17 to October 9, 2005. The Commission will feature the events of participating organizations in a special section of their website, and conduct targeted outreach to publicize it. The deadline for submitting information is July 28, 2005. Follow the link on the left side to Coastweeks for more information.
http://www.coastal.ca.gov/publiced/pendx.html

California Coastweeks 2006
Join the California Coastal Commission's Public Education Program in celebrating Coastweeks from September 16-October 8, 2006. The Commission features the events

of participating organizations in a special section of their website, and conducts targeted outreach to publicize it with an on-line calendar of events. The kickoff for the celebration is Coastal Cleanup Day.
http://www.coastal.ca.gov/publiced/coastweeks/coastweeks.html

California Current Marine Laws Database
All of the laws pertaining to the management of the California Current ecosystem have been compiled into a single, searchable, online database, publicly accessible through the Governance of the California Current Large Marine Ecosystem website. The data includes state laws from Washington, Oregon, and California, along with federal laws from the United States and Mexico.
http://www.cclme.org/index.php

California Derelict Fishing Gear Removal Project
California Derelict Fishing Gear Removal Project is a partnership between the California State Coastal Conservancy, the Northwest Straits Commission, and the National Fish and Wildlife Foundation. Anyone who loses fishing gear or observes derelict fishing gear underwater is encouraged to report their sighting. This project does not assess fault or blame, but rather encourages ocean users to report the presence of derelict gear, and hires experienced and certified SCUBA divers to remove gear from near-shore waters in a safe and environmentally sensitive manner.
http://www.derelictfishinggear.org

California Regional Environmental Education Community
Find out the latest environmental education news and resources in California with the CREEC (California Regional Environmental Education Community) Networks' electronic newsletters, tailored to the different regions of California. Topics include community events, educational resources, training and professional development opportunities, grants/contests and more. Also, visit the website to access the free resource directory to find out about the other resources provided by local, state and federal agencies.
http://www.creec.org

California Roots & Shoots Festival
The daylong event is designed to increase young people's awareness of their role as the Earth's caretakers. In addition to student exhibits, the program will include live animals, multicultural music and dance, international children's art, craft activities, storytelling and displays by local conservation groups such as TreePeople and Heal the Bay.
http://www.huntington.org/ .

Canadian Environmental Literacy Project
The Canadian Environmental Literacy Project (CELP) is developing a series of Canadian-focused educational modules, available on their website. The modules, oriented to introductory classes in environmental studies and environmental science in universities, colleges, and senior high-schools, include lectures, calculation exercises, and materials in support of discussion-type seminars. CELP currently has two modules with a marine focus which look at the ecological sustainability of aquaculture.
http://www.celp.ca .

The Canary Project
The Canary Project uses visual media, events, and artwork to visualize global warming in compelling ways, investigate questions about current ecological crises, and cultivate media attention.
http://www.canary-project.org/

Carbonrally
Carbonrally is a web-based activism platform offering individuals and groups a simple and social way to have a measurable impact on climate change. The website is a place where many people can commit to small, positive actions over time. People can propose ideas for reducing carbon dioxide emissions, and the community chooses the best ideas to pursue as a team.
http://www.carbonrally.com/

Career Guides List
This one-page website from the Scripps Institution of Oceanography Library offers a list of resources for those looking for information about careers in oceanography, marine science, and marine biology. The directory is divided into three sections: general guides for oceanography and marine science; guides for marine biology, marine mammals, zoos and aquariums; and other guides covering all of science.
http://scilib.ucsd.edu/sio/guide/career.html

Caribbean Birds Festival
The Caribbean Endemic Bird Festival runs from April 22nd, Earth Day, until May 22nd, International Biodiversity Day, and is coordinated by the Society for the Conservation and Study of Caribbean Birds. Activities range from exhibitions of drawings and paintings by local schoolchildren, public lectures, photographic exhibitions, church services, bird-watching excursions, and theatrical productions in celebration of the region's rich bird life.
http://www.birdlife.org/news/news/2006/04/cebf.html

Caribbean Coral Data Center
The Caribbean Coastal Data Centre is the data archiving and management unit of the Centre for Marine Sciences at the University of the West Indies, Mona. The center provides a variety of monitoring data archives, including Reef Check, fish survey, and the annual Caribbean Coastal Marine Productivity (CARICOMP) monitoring data on coral reef communities, seagrass ecosystems and mangrove ecosystems.
http://www.ccdc.org.jm/mission%20statement.htm .

Caribbean Coral Reef Ecosystem Monitoring Program
This online database from the National Centers for Coastal Ocean Sciences' Biogeography Program presents ecosystem monitoring data gathered over the last five years from field studies in southwestern Puerto Rico and the U.S. Virgin Islands. You can query the database to provide specialized reports on species biomass, richness, abundance, and diversity. In addition to the data products, the website includes monitoring protocols, habitat maps, and links to some audiovisual materials.
http://biogeo.nos.noaa.gov/projects/reef_fish/

Caribbean Coral Videos in Spanish
The NOAA Central Library includes downloadable videos and documents. Three videos from the National Marine Fisheries Service, Office of Habitat Conservation, Caribbean

Field Office, have been added to its catalog. They are: (1) Explorando los ecosistemas marinos de Puerto Rico; (2) Los corales y tu comunidad (Corals and your community); and (3) Programa de arrefices de coral (Coral Reef Initiative Program). Access the videos by visiting the library website, clicking on NOAA Library Catalog (NOAALINC).
http://www.lib.noaa.gov/

Caribbean Endemic Bird Festival
The 6th Caribbean Endemic Bird Festival was from April 22-May 22, 2007, with a theme of Global Warming. The purpose of the festival was to increase public awareness of the region's high endemism and rich bird life through activities such as talks, nature and birdwatching walks, the distribution of educational materials about birds, and more. The website offers a downloadable festival poster, suggestions for activities, and links to resources on global warming and impacts on birds and wildlife.
http://www.scscb.org/

Caribbean Natural Resources Institute
The Caribbean Natural Resources Institute seeks to create avenues for the equitable participation and effective collaboration of Caribbean communities and institutions in managing the use of natural resources. *Marine Protected Areas and Sustainable Coastal Livelihoods* is based on research and includes guidelines on developing effective management partnerships that involve local stakeholders; dealing with conflicts between the tourism and fisheries sectors, and sustaining fishery-based livelihoods.
http://www.canari.org/mpa.htm

Caribbean Volcano Forecast
The *Holocene Volcanic Activity in the Caribbean Plate Margins: Forecast and Risk Assessment* is available from R.B. Trombley, principal research volcanologist for the Southwest Volcano Research Centre in Apache Junction, Arizona. The website will be will be updated as appropriate. Additional Caribbean plate information is also posted.
http://www.ig.utexas.edu/CaribPlate/forum/volcanoes/

The Case of the Wacky Water Cycle
The NASA SCIence Files™ series is a distance learning initiative to integrate and enhance the teaching of mathematics, science, and technology in grades 3-5. Each episode includes hands-on classroom and home activities, virtual field trips, subject matter experts, a video broadcast, educator's guide and web-based activities and materials. *The Case of the Wacky Water Cycle* began airing October, 2004.
http://scifiles.larc.nasa.gov/

Catalog of Conservation Social Science Tools
The Society for Conservation Biology's Social Science Working Group is a global community of conservation scientists and practitioners. The group is dedicated to strengthening conservation social science and its application to conservation practice. The website offers a catalog designed for conservation practitioners, planners, students and researchers interested in the social dimensions of conservation.
http://www.conbio.org/WorkingGroups/SSWG/catalog/index.cfm

Catch the SEACOOS Wave!
Visit the Southeast Atlantic Coastal Ocean Observation System (SEACOOS) Virtual Waves Classroom and learn about the properties of waves through the glossary and other resources on this website. The website includes information about research,

news, and a *Community and Classrooms* link to the waves classroom and teacher workshop information. The site provides access to real time wave data, lessons plans, and a four-color *Making Waves* poster.
www.seacoos.org

Catchment to Reef
The Catchment to Reef poster and booklet offer an understanding of connections between land, sea, and reef, highlighting ecological and physical connections and impacts affecting the coastal waters of the Great Barrier Reef. It outlines the key freshwater connections and processes and describes the impacts of human activities on the freshwater environments of catchments and the consequences for the marine environment. Materials can be downloaded from the website.
http://www.catchmenttoreef.com.au/Start.html

Cayman Islands Twilight Zone
From May 20-June 10, 2007, a scientific team will study coral reefs of the "twilight zone" in the Caribbean Sea between Jamaica and Cuba. This shore-based mission will employ new diving techniques that allow scientists to personally visit deep-water ecosystems without the need for expensive submersibles. NOAA's Ocean Explorer website coverage for this mission includes Biotechnology, Technical Diving, and Biodiversity content essays written especially for this mission.
http://oceanexplorer.noaa.gov/explorations/07twilightzone/welcome.html

Center for Improved Engineering and Science Education (CIESE)
CIESE at the Stevens Institute of Technology sponsors and designs interdisciplinary projects that teachers throughout the world can use to enhance their curriculum and learn problem-solving through use of the Internet. The *Virtual Gulf Stream Voyage* is a allows students to access real time ocean & atmospheric data and historical primary source materials to explore real world problems, and *The Stowaway Adventure--Adventures on the High Seas,* offers Language Arts and Social Studies activities.
http://www.k12science.org/currichome.html .

Center for International Earth Science Information Network
The Earth Institute at Columbia University hosts The Center for International Earth Science, specializing in on-line data and information management, spatial data integration and training, and interdisciplinary research related to human interactions in the environment. The collection includes climate change resources for the New York metropolitan area, GIS training opportunities, links to educational resources, and, especially, data resources.
http://www.ciesin.columbia.edu/

Center for Remote Sensing of Ice Sheets
The Center for Remote Sensing of Ice Sheets (CReSIS) focuses on topics related to global climate change and remote sensing. The center combines the expertise of researchers from universities and businesses in order to study and conduct research that will result in the technology necessary to achieve a better understanding of the mass balance of the polar ice sheets and its contribution to global climate change. The website includes an extensive section on K-12 education.
http://www.cresis.ku.edu/EducationIndex.htm

Census of Marine Life
The Census of Marine Life is a global network of researchers in more than 80 nations engaged in a 10-year scientific initiative to assess and explain the diversity, distribution, and abundance of life in the oceans. Each Census project has an education and outreach initiative. These include Arctic Ocean Biodiversity, Abyssal Marine Life, Natural Geography In Shore Areas, and more.
http://www.coml.org/

Census of Marine Life
The Census of Marine Life assesses the diversity, distribution, and abundance of ocean life and to explain how it changes over time. The different elements include: Initial Field Projects; History of Marine Animal Populations; Ocean Biogeographic Information System; Future of Marine Animal Populations; Scientific Committee on Oceanic Research Working Group; and Known, Unknown and Unknowable.
www.coml.org

Center for Alaskan Coastal Studies
The Center for Alaskan Coastal Studies (CACS), based in Homer, Alaska, provides spring school field trip programs during April and May to diverse rocky beaches with extreme tides that range from +24 feet to –5 feet, a salt marsh, bog, lake, coastal forest trail system and sites of archaeological and geological interest. CACS has coastal education curriculum units for grades 4-12, along with many other educational programs.
http://www.akcoastalstudies.org

Census of Marine Life
The Census of Marine Life international web portal is constantly growing. This global network of researchers in more than 70 nations is engaged in a ten-year initiative to assess and explain the diversity, distribution, and abundance of marine life in the oceans -- past, present, and future. Active websites include Arctic and Antarctic, abyssal, shore areas, deep-water chemosynthetic ecosystems, and more.
http://www.coml.org/descrip/nagisa.htm

Center for Environmental Education Online
The Center for Environmental Education Online is a dynamic resource for educators and students. The Curriculum Library includes reviewed curriculum and lesson plans on topics ranging from the water cycle to sustainable economics. Additional resources include Educating for Sustainability and an easy-to-read online newsletter which includes environmental education information, upcoming events, and grant opportunities.
http://www.ceeonline.org/default.cfm

Center for International Environmental Law
The Center for International Environmental Law works to solve environmental problems through a variety of advocacy and education programs. The sections, including Biodiversity, Human Rights & Environment, Climate Change, and more, contain links to calendar events, full-text publications, and information about their goals for each topical area. The website also includes information about available fellowships, internships, and potential job opportunities
http://www.ciel.org/

Center for North American Herpetology
The Center for North American Herpetology serves as a data bank for information about North American amphibians, turtles, reptiles, and crocodilians, and promotes their study and conservation. There are links to websites for information, on-line collections, publications, and much more.
http://www.cnah.org/

Center for Ocean Solutions
Stanford University, the Monterey Bay Aquarium, and the Monterey Bay Aquarium Research Institute have joined forces to create the Center for Ocean Solutions. In addition to developing new knowledge to solve ocean challenges, they will reach out to decision-makers to translate the results of marine science and policy research into action; offer educational and research opportunities; highlight these issues in the media; and sponsor outreach programs .
http://www.centerforoceansolutions.org/

Centre for Evidence-Based Conservation
The Centre for Evidence-Based Conservation conducts and widely disseminates systematic reviews of evidence pertaining to questions identified by decision-makers in the conservation and environmental sectors. The Centre aims to investigate the effectiveness of a diverse variety of actions, from practical site management to national and international policy. In addition, the center seeks to provide training in conducting, interpreting, and utilizing the results of systematic reviews.
http://www.cebc.bangor.ac.uk/index.php.en?menu=0&catid=0

CERMES Guides
The mission of the Centre for Resource Management and Environmental Studies at the University of the West Indies is to make a significant contribution to sustainable development. The *Information and Reports* section of the website includes a variety of manuals, including the downloadable *Reef Watchers Under H2O Guides, The Junior Coral Reef Ambassador Training Manual*, and more.
http://www.cavehill.uwi.edu/cermes/folkestone_info.html

Cetacean Curriculum
The American Cetacean Society offers a downloadable teacher's guide to introducing and using whales, dolphins, and porpoises in the classroom. The curriculum contains basic background information on cetaceans and offers ideas for activities to engage students. The website also includes individual cetacean fact sheets.
http://www.acsonline.org/education/curriculum/index.html

Changing Habitats...Vanishing Species
Harvard@Home produces web-based video programs with in-depth exploration of topics of general interest to the Harvard community and the broader public. *Changing Habitats…Vanishing Species* presents video clips and slides from a symposium presented in November 2004 about how environments are changing and why species are being lost. Presentations discuss the root causes, including climate and land use change, and their impact on species' habitats.
http://athome.harvard.edu/dh/chvs.html

Channel Islands Argonauts Program
For the third year in a row, several local organizations are teaming up to provide an opportunity for 20 outstanding middle school students to become members of an elite group—the Channel Islands Argonauts. This group will have a chance to explore the Channel Islands region with researchers and staff from the Channel Islands National Marine Sanctuary and National Park, as well as compare and contrast the islands with the wetlands of the bayou as part of the JASON Expedition: Disappearing Wetlands.
http://channelislands.noaa.gov/edu/shoretosea.html .

Chesapeake Bay Interpretive Buoy System
The NOAA Chesapeake Bay Interpretive Buoy System is a sensor-to-user information delivery system focused on the Chesapeake Bay and its surrounding estuarine environment. "Talking buoys" will serve as interpretive guide posts, linking trail visitors—whether they be right next to the buoy in a kayak or at home on their computer—with information about the buoy location and nearby history and culture via cell phone or Internet-accessible devices.
http://www.buoybay.org/site/public/

Children and Nature
This special edition of Fish & Wildlife News provides a glimpse of what U.S. Fish & Wildlife Service (FWS) employees are doing to connect children with nature. From the Don Edwards San Francisco Bay National Wildlife Refuge, where youngsters sample brine shrimp in the salt ponds or investigate bird and plant life with their parents, to the Chesapeake Bay Field Office, where students create schoolyard habitats outside their classroom door, the FWS is helping people of every age to get outdoors.
http://www.fws.gov/news/pdf/News_SuFall07.pdf

Children's Environmental Literature Bibliography
The Children's Environmental Literature Bibliography is available online courtesy of Wisconsin's Project WILD, Project Learning Tree, and Project WET programs. The bibliography contains more than 400 books, over 300 of them new additions. For easy teacher reference, the books are grouped according to topic area (including Aquatic Ecosystems and the Water Cycle and Fish) and age group.
http://www.dnr.state.wi.us/org/caer/ce/eek/teacher/childlit.htm

Christmas Bird Count
The Audubon Christmas Bird Count, December 14, 2005 – January 5, 2006, is part of the oldest and largest citizen science event in the world. For over a hundred years, people have gathered together during the winter holiday season to count birds. Your local count will occur on one day between those inclusive dates. Check out the lesson plans at the North American Bird Project.
http://www.audubon.org/bird/cbc/getinvolved.html
http://birdcentral.net/lessonplans.htm
http://www.audubon.org/bird/cbc/

CIESE Online Classroom Projects
The Center for Improved Engineering and Science Education (CIESE) sponsors and designs interdisciplinary projects that teachers can use to enhance their curriculum through use of the Internet. The focus is on projects that utilize real-time data from the Internet, and collaborative projects that reach peers and experts around the world via the Internet. Each project has a brief description and links to the National Science

Standards it supports.
http://www.k12science.org/currichome.html

Cities and Oceans
The World Ocean Observatory offers Cities and Oceans, the latest website in their series of events exploring ocean issues. This site offers multimedia presentations, interviews, and a wide array of information and images.
http://www.thew2o.net/events/cities_oceans/index.html

CITIZENShift
CITIZENShift is a National Film Board of Canada website dedicated to citizen engagement and social change. The website integrates written, audio, and visual media and provides a space where filmmakers and citizens can share knowledge, be entertained, and debate social issues. The focus on biodiversity under the Reel Community link includes *Nomads of the Ocean*, *Reefs: Rainforest of the Ocean*, and *Lords of the Arctic*. The website also includes background information, and photos.
http://citizen.nfb.ca/onf/info?aid=3423

City of Portland Wetlands Education
The City of Portland (Oregon) Environmental Services, in partnership with City of Portland Parks & Recreation, has been working for two years with all the 6th graders in the David Douglas School District to carry out wetlands investigations and restoration planting. They have two mandatory field trips, and provide several optional classroom programs. All of the programs are free for the students. Pre-field trip classroom options include a *Riparian Restoration* program and *Water Quality Testing in the Classroom*.
http://www.cleanrivers-pdx.org/clean_rivers/index.htm .

Civic Education Project
This Earth Day Network program helps teachers to teach students about a selected local environmental problem and take action to improve that issue. The program currently seeks applicants for the spring semester in Los Angeles, New Orleans, Cleveland, Chicago, Cincinnati, Albuquerque, and Washington, DC.
http://www.earthday.net/involved/civic_education/CEP_intro.aspx

CLASS Data Library from NOAA
The Comprehensive Large Array-data Stewardship System (CLASS) is an electronic library of NOAA environmental data. This website provides capabilities for finding and obtaining those data. CLASS is NOAA's premiere on-line facility for the distribution of NOAA and US Department of Defense Polar-orbiting Operational Environmental Satellite (POES) data, NOAA's Geostationary Operational Environmental Satellite (GOES) and derived data. CLASS provides data free of charge.
http://www.class.noaa.gov/nsaa/products/welcome

Classroom Data Activities
The BRIDGE collaborated with the Monterey Bay Aquarium Research Institute to develop two classroom data activities. ***Pumping Iron*** focuses on ocean fertilization, and ***Hold the Anchovies*** focuses on climate phenomena and fish populations. These activities and several others are available as part of the EARTH (Education and Research Testing Hypotheses) program. EARTH allows integration of real-time data with existing educational standards and tests curriculum in an interactive and engaging way.
http://www.marine-ed.org/bridge/index_archive0504.html

http://www.marine-ed.org/bridge/indexarchive0903.html
http://www.mbari.org/education/EARTH/default.htm

Classroom Earth
The National Environmental Education & Training Foundation (NEETF) launched Classroom Earth, a free website to help educators find the best and most usable environmental education programs available. It is a collection of environmental education programs and resources for K-12 teachers, parents, and students. This new site will help educators, after-school providers, and home-schooling parents to get started or improve their skills in environmental education.
www.ClassroomEarth.org .

Classroom Exploration of the Oceans: An Online Virtual Teacher Conference
The National Geographic Society and NOAA's Office of Ocean Exploration (OE) hosted a 9-part virtual teacher workshop series using ocean exploration to enhance learning in the classroom. Teachers were provided with lesson plans and information, with workshop information linking to Geographic's Ocean Atlas Teacher's Guide, OE's lesson plans, and the Oceans Scope and Sequence Matrix for K-12 Teachers.
http://coexploration.org/ceo

Classroom Exploration of Oceans 2005
Three online virtual teacher workshops focus on efforts currently underway to protect and conserve special places in the ocean and explore still unknown areas of the deep ocean. They will focus on new discoveries being made in ocean exploration, delve into historic and physical events newly found or still hidden in the ocean depths, and discuss what we still need to know for effective marine conservation and management.

- Oceans for Life: January 24 - February 6, 2005
- Mysteries and Sirens of the Deep: April 4 - 17, 2005
- Extreme Environments: October 10 - 23, 2005

http://www.coexploration.org/ceo/

Classroom Exploration of Oceans – Maritime Heritage Online
This online virtual teacher workshop focuses on maritime heritage: Mysteries and Sirens of the Deep: April 4-17, 2005. The upcoming keynotes are Maritime Heritage: Resources Revealed in the Hawaiian Islands; The Steamship Portland - Discovering and Managing our Maritime Heritage and the Technologies That Take Us Beneath the Blue Horizon; and Exploring Shipwrecks Together: How one program helps scientists and the public connect with the past.
http://www.coexploration.org/ceo/

Classroom Companion
The National Geographic has developed a new online resource called a Classroom Companion series, which includes K-12 lessons, maps, photographs and multimedia resources. While the materials can be listed by category or alphabetically, the keyword search yields the most useful method of finding resources.
http://www.ngsednet.org/community/resources_category.cfm?community_id=168

Clean Air Lesson Plans
The Clean Air Campaign and the Georgia Environmental Protection Division have developed five new air quality curriculum units for grades 4 to 8. Each grade unit includes two to three lesson plans, along with a Teacher Resource Manual and support

materials, which educate students about air chemistry, health and human behaviors, as well as the air pollution challenges. The lessons cross several subjects including science, social studies, geography and English.
http://www.cleanaircampaign.com/index.php/cac/for_schools/clean_air_lesson_plans

Clean Beaches Blue Wave Campaign
The Clean Beaches Council is a non-profit organization devoted to sustaining America's beaches. Their flagship program is the *Blue Wave Campaign*—America's first environmental certification program for beaches. The goal of Blue Wave is to promote public awareness and voluntary participation in beach sustainability, including water quality, habitat conservation, public information and education.
http://www.cleanbeaches.org/bluewave/bluewave.cfm

Clean Sweep U.S.A. - Solid Waste Education
Keep America Beautiful has a new education website geared for middle grades teachers and students -- Clean Sweep U.S.A. There is a wealth of information, activities, lessons, and links about solid waste.
www.kab.org/kids .

Clean Water for the 21st Century
The Wyland Ocean Challenge offers the Clean Water for the 21st Century classroom program, exploring the world of aquatic ecosystems above and below using tools and techniques from science and art. The downloadable materials include a teacher's guide containing detailed art and science activities, background information, tips on using art in your classroom, and standards alignment charts. Eco-Guides offer a full color student supplement with articles, fun facts, people profiles, images, and a set of organism cards.
http://www.wylandoceanchallenge.org/index.cfm?do=part2

Cleaning Water
Cleaning Water, from NASA, is a lesson in which students (Grades 3-5) create and test a system to filter "gray" water. In this lesson, students will design and build their own water filtering system and collect data to compare water before and after filtering. The activity is downloadable from the website, and is available in English and Spanish.
http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Cleaning_Water_Activity.html

Clearing Magazine
The quarterly resource magazine, C*learing: Environmental Education Resources for Teachers,* provides the latest news, information, perspectives, teaching ideas, and resources available to teachers of all grade levels and all subject areas with environmental and natural resources education. Published since 1978, Clearing has published over 100 issues.
http://www.clearingmagazine.org/

Climate Action: Energy For A Changing World
The European Union member nations agreed to work on a package of proposals that will help fight climate change and promote renewable energy. This website serves as the clearinghouse for the information related to this ambitious project. Information is available in all of the European Union languages. There are country fact sheets, working documents, reports on emissions trading schemes, and more.
http://ec.europa.eu/energy/climate_actions/

Climate Change: Agencies Should Develop Guidance for Addressing the Effects on Federal Land and Water Resources
The U.S. Government Accountability Office (GAO) obtained experts' views on the effects of climate change on federal resources and the challenges managers face in addressing climate change effects on these resources. GAO recommends developing guidelines incorporating agencies' best practices, advising on how to address climate change effects on the resources they manage and gather the information needed to do so. Links are provided to the report, report summary, and the full downloadable report.
http://www.gao.gov/docsearch/abstract.php?rptno=GAO-07-863

Climate Change Backpack
The New England Science Center Collaborative has developed the Climate Change Backpack®, a teaching tool containing graphs, experiments, a climate change play, an imitation ice core, lesson plans, and more. The lessons are designed to expand or contract according to the audience and available teaching time. All of the activities are downloadable.
http://www.sciencecentercollaborative.org/backpack.php

Climate Change in the Classroom
The Educational Global Climate Model incorporates a 3-D climate model developed at NASA's Goddard Institute for Space Studies. It is free and available for high school and university desktop computers. The climate model allows teachers and students to conduct experiments identical to those scientists run on supercomputers to simulate past and future climate changes.
http://www.nasa.gov/vision/earth/everydaylife/climate_class.html

Climate Change: Connections and Solutions
Facing the Future offers the 2-week curriculum unit, *Climate Change: Connections and* Solutions, free through funding from the Hewlett-Packard Company. The unit is available for grades 6-8 and 9-12. Students are encouraged to think critically about climate change and to collaborate to devise solutions. Students learn about climate change within a systems framework, examining interconnections among environmental, social, and economic issues. Check the website for additional free or for fee curriculum.
http://www.facingthefuture.org/Curriculum/BuyFacingtheFutureCurriculum/tabid/59/Default.aspx#Curriculum%20Unit

Climate Change Forum
The Frontlines Forum seeks community-based experiences with climate change: impacts, opportunities and adaptation strategies. It provides a platform for sharing observations, concerns, and innovations. They invite contributions from indigenous or rural communities in small islands, high altitudes, the Arctic, desert margins, and other vulnerable environments.
http://www.climatefrontlines.org/

Climate Change From Pole to Pole: Biology Investigations
NSTA offers the text, *Climate Change From Pole to Pole: Biology Investigations*, with case studies and background information on how to teach the science of climate change. The six researched and field-tested activities building on four content chapters, provide students the opportunity to solve real-life scientific problems using guiding

questions, graphs and data tables, short reading assignments, and independent research.
http://www.nsta.org/store/product_detail.aspx?id=10.2505/9781933531236&lid=exp

Climate Change Games
Red Redemption Ltd., based in Oxford, England, is an environmental games company producing scientific, educational, and environmental games. The website hosts online games, including Climate Challenge (for older students) and Operation Climate Control (for younger students).
http://red-redemption.com/news/

Climate Change Kids Site
The EPA's Climate Change Kids Site looks at climate change -- what it is, why it matters, and what kids can do about it. The website offers games, animations, quizzes, and more.
http://epa.gov/climatechange/kids/

Climate Change Listservs
The EPA offers several listservs for various audiences that provide information on new climate changes resources and current news and strategies.
http://www.epa.gov/climatechange/news_listservs.html

Climate-Change Town Hall
Communicating and Learning About Global Climate Change, an event for teachers, students, and others, was organized by AAAS in collaboration with the California Science Teachers Association, the National Science Teachers Association, and the United Educators of San Francisco (representing the National Education Association and the American Federation of Teachers). Videos of the program, an Abbreviated Guide for Teaching Climate Change, and additional information, are available online.
http://www.aaas.org/news/press_room/climate_change/mtg_200702/

Climate Change UNEP Portal
Established as part of the United Nations Environment Network, this website serves as a portal for resources that deal specifically with climate change. Navigation is aided by the left-hand side of the homepage, with a Key Issues area offering a set of resources that provide introductions to the topic, along with sections on the overall environmental, social, and economic implications of climate change. Featured Resources leads to many good resources, including common questions, a student guide, and more.
http://climatechange.unep.net/index.cfm

Climate Change: A Wisconsin Activity Guide
This climate change guide from Wisconsin's Department of Natural Resources is a resource for Wisconsin's teachers (grades 7-12) to help students develop the knowledge and skills needed to become informed and active participants in society's climate change discussions. The guide touches on both the scientific aspects of climate change and social issues. It contains activities applicable to a variety of subjects including sciences, math, language arts, social studies, and art.
http://www.dnr.wi.gov/eek/teacher/climatechangeguide.htm

Climate Change, Wildlife, and Wildlands Toolkit: A Toolkit for Teachers and Interpreters
The U.S. Environmental Protection Agency, in partnership with the National Park Service and with input from the U.S. Fish and Wildlife Service, developed a kit for use when talking with the public about how climate change is affecting our nation's wildlife and public lands. The website includes downloadable introductory materials, case studies, flash cards, and more. Check out the Climate Change Home Page with links to a myriad of useful resources.
http://www.epa.gov/climatechange/wycd/ORWKit.html

Climate Change and World Heritage
The UNESCO World Heritage Centre offers the publication entitled "Case Studies on Climate Change and World Heritage". The report features 26 case studies, including the Tower of London, Kilimanjaro National Park, and the Great Barrier Reef, that are representative of the dangers faced by the 830 sites inscribed on the World Heritage List. Chapters include Glaciers, Marine Biodiversity, Archaeological Sites, and more.
http://whc.unesco.org/documents/publi_climatechange.pdf

Climate, Community and Biodiversity Project Design Standards
The downloadable draft of the Climate, Community & Biodiversity (CCB) Project Design Standards is designed to identify proposed projects likely to deliver measurable climate, biodiversity and community benefits. The standards are primarily designed for land-use carbon markets but can also apply for sustainable development and biodiversity projects more broadly.
www.climate-standards.org
http://www.climate-standards.org/images/pdf/ccb_project_design_standards_v1.0.pdf

Climate Connections
National Public Radio (NPR) and National Geographic host the Climate Connections website with news items, interesting facts, practical ideas, and a daily podcast. An interactive map allows visitors to follow NPR reporting on areas of the world impacted by global warming, and the Wild Chronicles offers videos on a variety of wildlife and global warming issues.
http://www.npr.org/templates/story/story.php?storyId=9657621

Climate Discovery Teacher's Guide
This website from the National Center for Atmospheric Research includes three units with downloadable lessons for grades 5-9 to facilitate student learning about our planet's climate system. The units review how the sun's magnetism interacts with the earth's magnetic field, how scientists study ancient climates, and understanding how the earth system works. An unit on Investigating Climate Future is expected to be available in 2007.
http://eo.ucar.edu/educators/ClimateDiscovery/

Climate Literacy: Essential Principles and Fundamental Concepts
The Climate Literacy Network offers a climate science literacy guide to serve as a framework for understanding and communicating about climate science. Points in the guide can serve as discussion starters or launching points for scientific inquiry. The guide can also serve educators who teach climate science principles as a way to meet learning standards in their science curriculum. The website offers links to additional student and teacher resources.

http://climateliteracynow.org/

Climate of the Past
Climate of the Past is an interactive open access journal published under the auspices of the European Geosciences Union, dedicated to the publication and discussion of research articles, short communications, and review papers on the climate history of the Earth. In addition to general issues, they offer the possibility of publication of special issues.
http://www.clim-past.net/volumes_and_issues.html

Climate Time Machine
This NASA website offers a series of visualizations which show how some of the key indicators of climate change, such as temperature, sea ice extent, and carbon dioxide concentrations, have changed in Earth's recent history.
http://climate.jpl.nasa.gov/ClimateTimeMachine/climateTimeMachine.cfm

Climate Witness
Climate Witness is an initiative by the World Wildlife Federation to document the direct experiences of people who are witnessing the impacts of climate change on their local environment. WWF is working with climate scientists through their Climate Witness Science Advisory Panel to establish if the impacts reported are consistent with known trends, and if these stories can be placed in the context of current scientific knowledge of human-induced climate change events in a particular region. Subject to time availability these scientists will give their expert opinion on submitted stories.
http://www.panda.org/about_wwf/what_we_do/climate_change/problems/people_at_risk/personal_stories/index.cfm

ClimateBiz
As a partnership between two nonprofit organizations, Business for Social Responsibility and the Green Business Network, the ClimateBiz website offers a place to learn from each other. *ClimateBiz 101* offers an overview of the interactions between the world of business and climate change, and also provides insights into how to best utilize the website. Other sections include background articles, tools and resources, Ask the Climate Expert, and more.
http://www.climatebiz.com/

ClimateClassroom
The National Wildlife Federation's Climate Classroom is designed to help parents and teachers talk to students of differing ages about global warming. Its features include information for parents, proposed educator guidelines, age-adapted sources of useful curricula, a downloadable slide presentation with presenter's guide, and more.
http://www.ClimateClassroom.org

Clue in to Climate Change
Climate change can be examined through a number of lenses, including both rigorous scientific inquiry and through the perspective of persons living in various areas which happen to be undergoing significant climatic transitions. This website examines climate change in the Arctic. The site includes interactive activities, first-hand narratives, and section designed to increase awareness of the rapidly changing situation in the region. Other features of the site include a glossary, three lesson plans, and an online quiz.
http://www.nature.ca/sila/

Coast Day - Delaware
The University of Delaware's Coast Day, October 7, 2007 in Lewes, Delaware, introduces thousands of people each year to the wonders of the sea and the importance of Delaware's marine and coastal resources. Visitors enjoy hands-on exhibits, lectures on popular science topics, and more. Kids have special opportunities to speak with marine scientists and learn firsthand about their discoveries. They can also explore the many fascinating careers available in environmental science fields.
http://www.ocean.udel.edu/coastday/

Coastal and Estuarine Science News
The Estuarine Research Federation offers Coastal and Estuarine Science News, funded by the Ocean and Coastal Protection Division of the EPA, to strengthen the link between science and management in coastal systems. Back issues are posted at http://www.erf.org/cesn/ . You can subscribe to the mailing at http://www.erf.org/user-cgi/cesnlist.pl .

Coastal Fisheries Management and Development Project
The National Fisheries Authority of Papua New Guinea offers downloadable files from the Coastal Fisheries Management and Development Project, an initiative to promote sustainable, community-based management of coastal waters and education of communities that are often relatively isolated and home to people with varying degrees of literacy. Materials include posters, comics, and radio plays free of scientific and technical jargon.
http://www.fisheries.gov.pg/publications_coastal_fisheries_management_dev_project.htm

Coastal Heritage
Coastal Heritage is a quarterly publication of the South Carolina Sea Grant Consortium. Each issue is accompanied by Curriculum Connection guides, which offer focus questions, links to in-depth information, educational activities and resources, and more. The latest issue is *Cold-Water Corals: Ancient life in the deep, dark sea*. You can access the latest issue along with complete archives from the website.
http://www.cosee-se.org/teacher/?join=209

Coastal Land Cover and Change Maps
Coastal land cover and change maps, circa 1996-2001, are available for the conterminous U.S. from NOAA's Coastal Services Center. In addition, land cover updates for 2006 and their corresponding change maps are available for the Gulf Coast region and parts of the Northeast.
http://www.csc.noaa.gov/crs/lca/locateftp.html

Coastal Louisiana Activity Book
NOAA's National Centers for Coastal Ocean Science (NCCOS) offers the Coastal Louisiana Activity Book, the sixth in a regional series of children's activity books. The book introduces children (grades K-5) to coastal animals and ecology through regional information, fun facts, drawings to color, games, matching, and more. This series' goal is to begin the process of forming an environmentally aware citizen population, and encourage future careers in marine sciences.
http://www.coastalscience.noaa.gov/education/welcome.html

Coastal Ocean Observing Center
The Coastal Ocean Observing Center at the University of New Hampshire monitors the linked oceanic and estuarine ecosystem in their region. This monitoring system can detect changes in the ecosystem across multiple physical and trophic levels. The web-site includes data, educational materials, news, upcoming workshops, and more. Lesson plans and activities can help you integrate ocean observing data and tools into your classroom, and includes an image viewer and analysis tool for satellite images.
http://www.cooa.unh.edu/index.jsp

Coastal Population Trends
NOAA's National Ocean Service's Special Projects office has published *Population Trends Along the Coastal United States: 1980-2008*. This report contains useful statistics and highlights the importance of coastal areas. It presents an overview of coastal population trends from 1980 to 2003 and projected change in coastal population by 2008.
http://oceanservice.noaa.gov

Coastal Roots
Coastal Roots: Seedling Nursery Program for Wetland Restoration is a program of the Louisiana State University. Students from 4th grade through high school in south Louisiana are taking part in this project by establishing wetland plant nurseries at their schools. Students grow native plant seedlings that they will plant in a coastal habitat restoration project in south Louisiana.
http://coastalroots.lsu.edu/

Coastal Storm Impacts
The NOAA Ocean Service is working with the Weather Channel on a 30-minute show on the impacts of coastal storms on communities and some of the tools/capabilities that are available to help them. The key issues the show will address include ways that the public can be better informed about coastal storms.
keelin.kuipers@noaa.gov

Coastal Socioeconomics
The Management and Budget Special Projects Office launched a new website highlighting spatial trends in coastal socioeconomics. The site offers time series, geo-referenced data from the U.S. Census Bureau and the Bureau of Economic Analysis, and web based tools to facilitate data analysis. The primary objective of the site is to increase awareness and improve access for the coastal stewardship community to socioeconomic information.
http://stics.noaa.gov

The Coastal Union
EUCC - The Coastal Union is an association with members and member organizations in 40 countries. Founded in 1989 with the aim of promoting coastal conservation by bridging the gap between scientists, environmentalists, site managers, planners and policy makers, it has grown since then into the largest network of coastal practitioners and experts in Europe. Their website includes information about dune management, coastal landscapes and typology, the European Code of Conduct for Coastal Zones, and more. All issues of the EUCC Coastal News can now be accessed from a link on the front page of the website.
http://www.coastalguide.org

Coastal Wildlife – Feeling the Squeeze
University College in Chichester, England hosted a video conference on October 1, 2003, with presentations on climate change, coastal habitats and coastal defense, a field visit, and workshop sessions.
http://www.excitingscience.com/pages/924510/

CoastLines
CoastLines, funded by the National Science Foundation, will introduce fundamental concepts about information technologies to grade 7-12 schools through geographic information systems (GIS) and global positioning systems (GPS), by conducting scientific studies of coastal ecosystems in the Long-Term Ecological Research network.
http://www.coastlines.ws/

Coastwatching by Computer: Water Quality and the System-Wide Monitoring Program (SWMP)
The NERR System-wide Monitoring Program tracks short-term variability and long-term changes in estuarine waters to understand how human activities and natural events can change ecosystems. It provides long-term data on water quality and weather at frequent time intervals. There are lesson plans giving step-by-step instructions for accessing and downloading the data and a graphing exercise to help use the data in your classroom.
http://www.nerrs.noaa.gov/Monitoring/welcome.html .
http://www.waquoitbayreserve.org/education.htm#lp .

COASTWEEKS - California
COASTWEEKS, September 15-October 7, 2007, is a celebration of coastal and water resources. In California, COASTWEEKS is coordinated by the California Coastal Commission. The Commission will feature the events of participating organizations in a special section of their website; submit your event by July 27, 2007.
http://www.coastal.ca.gov/publiced/coastweeks/coastweeks.html

Coastweeks
Coastweeks, September 20-October 11, 2008, is a celebration of coastal and water resources. Each fall, people all over the United States participate in a three-week celebration of our coastal resources that begins on the third Saturday in September. The kick off for the celebration is Coastal Cleanup Day, when tens of thousands of people across the country come together o keep our coasts and inland waterways free of debris. Search the web to found out what's happening around your area.

Cold-Water Coral Reefs
This report by the United Nations Environment Program World Conservation Monitoring Center (UNEP-WCMC) examines the biology, ecology, distribution, and conservation of cold-water coral reefs. Far less known than the coral reefs in warm, shallow waters of the tropics and subtropics, these cold-water reefs are found throughout the world's seas: in fjords, along the edge of the continental shelf, and around offshore submarine banks and seamounts.
http://www.ourplanet.com/wcmc/pdfs/Cold-waterCoralReefs.pdf .

Cold Water Corals
The International Coral Reef Initiative website has created a new discussion area, Cold-water coral ad-hoc committee, on the ICRIForum. You can access this new area directly

at http://www.icriforum.org/router.cfm?show=List/Postings.cfm?CONFID=80 . In addition, the ICRI website links to two cold-water coral publications and provides additional useful links.
http://www.icriforum.org/ .

The Columbia River Virtual Field Trip
Learn about the Columbia River Watershed, including its history, geology, the headwaters region, First Nations and Native Americans culture, current issues and challenges to the river. Make educational connections and provide glimpses of sustainability about the future of the river with readings on the river from multiple perspectives. The materials are designed for middle and high school students and teachers.
http://cbi.wsu.edu .

Communicating on Climate Change
The Metcalf Institute for Marine & Environmental Reporting has published a book summarizing the discussions and recommendations that arose from a series of workshops on the communication of climate change. *Communicating on Climate Change: An Essential Resource for Journalists, Scientists, and Educators* is a final report of the science communication workshops. The report is downloadable from the website.
http://www.metcalfinstitute.org/Communicating_ClimateChange.htm

Communication Toolkit
A new Communication, Education and Public Awareness toolkit has been developed by the IUCN Commission on Education and Communication. Though aimed at professionals charged with implementing National Biodiversity Strategy and Action Plans, the toolkit offers practical steps that can be used to develop a variety of communication strategies. Tthere is a checklist for organizing an information meeting, a variety of tracking methods, a communication planning checklist, and much more.
http://www.cepatoolkit.org/

Communications Primer
Strategic communications helps create an effective strategy and involves identifying your goals and who you need to enlist to accomplish those goals; learning their motivations and creating a compelling message based on those motivations; and, of course, getting your message to them. The *Communications Primer for Great Lakes Habitat Advocates* is designed for grassroots organizers dedicated to enhancing public education and out-reach efforts. The website has sample press materials, evaluation pointers and more.
http://glhabitat.org/GL_Toolbox_v1/Leave_Alone/primerintro.html

Communications Tactics for Climate Change
Futerra Sustainability Communications Ltd. created this publication, New Rules: New Game – Communications tactics for climate change, as a communications guide to help in delivering the message of behavior change to impact climate change. The publication offers simple and practical communication techniques to help pull together the most effective strategies for motivating behavior change.
http://www.futerra.co.uk/downloads/NewRules:NewGame.pdf

Community Collaborative Rain, Hail, and Snow Network
CoCoRaHS is a grassroots volunteer network of backyard weather observers of all ages and backgrounds working together to measure and map precipitation (rain, hail, and snow) in their local communities. By using low-cost measurement tools, stressing training and education, and utilizing an interactive website, the aim is to provide the highest quality data for natural resource, education, and research applications. The site also includes links to lesson plans and additional educational websites.
http://www.cocorahs.org/

Community Culture and the Environment: Guide to Understanding a Sense of Place
This publication from the EPA addresses the social and cultural aspects of community-based environmental protection. The guide offers a process for defining and understanding the human dimension of an environmental issue and provides tools for more effectively working with the public on environmental protection efforts. The guide is based on the elements of social science theory and methodology most relevant to defining and understanding community life as it relates to environmental issues.
http://www.contextsensitivesolutions.org/content/reading/epa_community/

Community Risk Assessment Toolkit
The Community Risk Assessment Toolkit is part of the Community Risk Assessment and Action Planning project, which aims at strengthening community level risk assessment practices. The toolkit contains resources and a compendium of case studies.
http://www.proventionconsortium.org/CRA_toolkit.htm

Community Tool Box
The National Park Service Rivers, Trails and Conservation Assistance program is always exploring new ways to help communities work together to improve their special places. They offer methods learned in a ToolBox for public participation. These include decision making support, organization, events, outreach, and much more. In addition, check out the online resources for open space conservation and other useful links at the National Center For Recreation & Conservation (NCRC) website.
http://www.nps.gov/phso/rtcatoolbox/index.htm
http://www.nps.gov/ncrc/programs/rtca/helpfultools/ht_publications.html#river

Complete Hawaiian Reef Fish Coloring Book
The Complete Hawaiian Reef Fish Coloring Book complements any marine science, biological science, or other classes that covers topics on local ecosystems. The table of contents and about 30% of the book is viewable on Google books. Check this out.
http://books.google.com/books?id=B0c6dn2w540C&printsec=frontcover

Conservation Databases
The World Conservation Monitoring Center (UNEP-WCMC) maintains a large and varied collection of databases concerning nature conservation, developed in collaboration with a range of partners. These include species information, protected areas, forest information service, marine statistics and maps, national biodiversity profiles, and a resource center of formally and informally published information on biodiversity, held at the centre.
http://www.unep-wcmc.org/index.html?http://www.unep-wcmc.org/cis/~main

Conservation and Environmental Education Connections
The Conservation and Environmental Education Connections listserv is a tool from the U.S. Fish & Wildlife Service for listserve moderators from federal and state agencies and nongovernmental organizations to share professional development opportunities with conservation and EE professionals.
https://www.fws.gov/lists/listinfo/ceec

Conservation International: Biodiversity Hotspots
The Biodiversity Hotspots site from Conservation International features profiles of more than 30 ecologically important areas of the world, including island hotspots. In addition to regional profiles, the site offers a number of resources such as a terrestrial vertebrate species database, a glossary, maps, and related references.
http://www.biodiversityhotspots.org/xp/Hotspots/

Conservation International Marine Portal
The Marine Portal from Conservation International provides access to over 1000 marine-related documents and publications, hundreds of websites and related resources, and information for regional and issue-specific experts and contacts. The portal is an interactive web-based tool designed to increase capacity building, bridge information gaps, expand communication networks, and serve as a springboard to other sites and resources of interest.
http://portals.conservation.org/marine

ConservationEvidence.Com
The ConservationEvidence.com website collates information on the effectiveness of conservation practice. The website provides hundreds of case studies on a range of subjects including habitat restoration, invasive species management, reintroduction, species management, and habitat management. A separate section summarizes reviews on various aspects of conservation practice, along with a method for adding case studies; additional studies in the marine and aquatic environments could be useful.
http://www.conservationevidence.com/

Consumers Guide to Afterschool Science Resources
The Consumers Guide to Afterschool Science Resources contains reviews of high-quality, hands-on science content for afterschool programs. It provides a wide range of after school activities, curricula, and more. Reviewed materials include semester- and year-long curricula, activity kits, instructor guides consisting of many related activities, and websites that offer content appropriate for afterschool programs. A brief description of each resource is accompanied by two expert reviewers' detailed commentary.
http://www.sedl.org/afterschool/guide/science/index.html

Contrail Count-A-Thon from GLOBE
The 3rd Annual GLOBE Contrail Count-a-thon will be held on October 13th, 2005, during Earth Science Week. Clouds are among the largest variables controlling Earth's global climate and also a main source of uncertainty for scientists studying the atmosphere. Since contrails are difficult to study using satellite data, student observers are invited to help scientists by observing contrails in their area and reporting on the amount and type of contrails present.
http://asd-www.larc.nasa.gov/GLOBE

Convention on Migratory Species Family Guide
The encyclopedia of the Convention on Migratory Species is now available online. The guide has fact sheets explaining the history and structure of the convention along with some of the species the Convention seeks to conserve. Additional sections cover threats and challenges to migratory species, interagency outreach (e.g. World Migratory Bird Day), and more. The package of facts sheets can be downloaded in pdf format in eight sections.
http://www.cms.int/publications/family_guide.htm

Cool Science
The National Energy Technology Laboratory's Cool Science website offers lessons and experiments on a range of energy-related topics including carbon dioxide sequestration, phytoremediation, environmental management, and more.
http://www.netl.doe.gov/coolscience/teach.html#LESSONPLANS

The C.O.O.L. Classroom Website
The *Coastal Ocean Observation Laboratory Classroom*, from New Jersey's Jacques Cousteau National Estuarine Research Reserve, is a series of Internet-based instructional modules aimed at middle and high school students, linking classrooms with active oceanographic research investigations. The website includes movie clips, downloadable worksheets and teaching guides, career cards, a glossary, and more.
http://www.coolclassroom.org/home.html

Cooperative Conservation
Cooperative Conservation describes the efforts of landowners, communities, conservation groups, industry, and governmental agencies who join together to conserve our environment. The website provides details about programs which range from professional training opportunities to an online library of documents related to the creation of this initiative.
http://cooperativeconservation.gov/

Copper River Delta Shorebird Festival
The Copper River Delta Shorebird Festival hosts activities, workshops, and community events. The Delta is part of the Western Hemisphere Shorebird Reserve Network and its Shorebird Festival is one of Alaska's premier birding events, with millions of shorebirds and over 30 species of migratory shorebirds resting and feeding there during spring migration. The Delta is the largest continuous wetland on the Pacific coast of North America.
http://www.cordovachamber.com/index.cfm?showsecondarylinks=true&showcontentlinkID=352&primarylinkID=352 .

Coral Activity Book
Staff from NOAA's National Centers for Coastal Ocean Science and Coral Reef Conservation Program Headquarters developed a new activity book for children about the importance of coral reefs. It is available for downloading from the website.
http://www.coastalscience.noaa.gov/education/crbook.pdf

Coral Bleaching: a White Hot Problem
This month's featured Data Analysis Teaching Activity, *Coral Bleaching: A White Hot Problem,* is recently updated to include 2008 data. *Coral Bleaching* explores the effects of rising ocean temperatures on the coral in San Juan, Puerto Rico. Using four years of

water temperature data from ocean observing system buoys, students will compare these data, evaluate trends, forecast 2009 coral bleaching events and discuss the long term effects of elevated water temperatures and coral loss.
http://www2.vims.edu/bridge/DATA.cfm?Bridge_Location=archive0406.html

Coral Data
The Coral Reef Information System (CoRIS) website is designed to be a single point of access to NOAA coral reef information and data products. The data includes a searchable spreadsheet file of over 3,000 scientific names of coral ecosystem biota, reef names and locations, and lots more. Be sure to spend some time looking through the maps, and pull up some of the many aerial photos.
http://www.coris.noaa.gov/welcome.html .

CORAL Discussion Board
The Coral Reef Alliance announces the CORAL Discussion Board to stimulate dialogue on a variety of issues related to coral conservation. The discussion board will allow individuals, organizations, businesses and government agencies within the fields of marine conservation, park management, science, education, and tourism to seek technical advice and share lessons learned with others in a global network of communication.
http://www.coralreefalliance.org/parks/cdb .

Coral Discovery Kits
NOAA offers downloadable lesson plans to teach about corals at the high school level. These lessons focus on the biology of coral reefs, the benefits they provide to humans, major threats to coral reefs today, and how satellites are used to monitor and maintain the health of reefs. The resources include an online tutorial, an educational roadmap to resources, and formal lesson plans.
http://oceanservice.noaa.gov/education/kits/corals/welcome.html

Coral Ecosystems
The NSTA Learning Center offers the archived NOAA Coral Ecosystems Seminar, focusing on impacts to coral reefs. Materials include the downloadable presentation in PowerPoint or pdf, along with an Elluminate Live! application for those with faster connections.
http://learningcenter.nsta.org/products/symposia_seminars/boston08/Corals/webseminarl.aspx

Coral Ecosystems SciGuide
The Coral Ecosystem SciGuide is a new web-based "science toolbox" for teachers and other educators. The Coral Ecosystem SciGuide pulls together Internet resources on coral science and organizes them into three major theme areas for the classroom: coral reef biology, coral ecosystems, and coral conservation. For more information, contact Bruce Moravchik at Bruce.Moravchik@noaa.gov or Alissa Barron at Alissa.Barron@noaa.gov.
http://www.nsta.org/main/news/stories/nsta_story.php?news_story_ID=53036

Coral Literature, Education and Outreach Program
The Coral Literature, Education and Outreach (CLEO) Program offers educational modules developed primarily for middle school classes. Each module consists of three segments: background information of the science behind the instrument, a classroom

experiment, and a teacher's section. Students will be engaged to plot and manipulate the data, and to witness events live on the Internet via a Coral Cam. Links to further reference and educational materials are also available.
http://www.coral.noaa.gov/cleo/education.shtml

Coral Park Buddy Program
As part of Dive In To Earth Day 2004, divers in the U.S. are being asked to team up with dive buddies and park managers around the world in a campaign to support coral reef protected areas. Participating dive operators, clubs, and associations will organize fundraising events leading up to Earth Day (April 22), and the proceeds will pay for conservation projects at some of the world's most spectacular dive sites.
http://www.coralreefalliance.org/divein/parkbuddy/ .

Coral Portal
The Coral Portal website has been launched to serve as a portal for information, discussion and references on all coral-related subjects including scientific techniques, monitoring methods, and scuba diving locations. It offers links to useful websites, research, and a discussion forum.
http://www.coralportal.com/

Coral Reef Activity Book
The Coral Reef Activity Book is the first in a series of thematic activity books from NOAA's National Centers for Coastal Ocean Science. These books are for grades K-5 and highlight the organisms and issues relevant to coral reefs. The book can be downloaded from website, as can each of a series of regional ocean activity books. Hard copies can be requested by contacting Susan Baker at Susan.Baker@NOAA.gov.
http://www.coastalscience.noaa.gov/education/

Coral Reef Bleaching Module
NOAA's Coral Reef Watch program has developed an interactive lesson for the Bilko software that teaches users how to predict coral bleaching from satellite sea surface temperature data. The lesson and software are both available for free download on the website, along with other modules. The step-by-step lesson follows the operational Coral Reef Watch methodology, so users will gain in-depth knowledge of how the NOAA data are produced.
http://www.noc.soton.ac.uk/bilko/noaa_crw.php

Coral Reef Conservation Program Web Site
The NOAA Coral Reef Conservation Program (CRCP) redesigned and updated its program website. The site contains several key sections including: News and Highlights, Funding Opportunities, and Outreach and Education, as well as background information about the program, subscription information for the program newsletter and contacts for media inquiries. This is a companion site to NOAA's Coral Reef Information System.
http://www.coralreef.noaa.gov
http://www.coris.noaa.gov

Coral Reef Ecosystem Research Plan
The NOAA Coral Reef Ecosystem Research Plan defines the national and regional research essential to addressing the management challenges presented by coral reef decline; providing a national perspective on the research needed to address the range of stresses affecting the health of coral reef ecosystems; summarizing the management

and issues that will drive research at the regional level; and focusing on the use of research to guide effective implementation of ecosystem-based management strategies.
http://coris.noaa.gov/activities/coral_research_plan/

Coral Reef Ecosystems
This new website from the National Park Service is a collaboration between Ocean and Coastal Resources Branch and the Office of Outreach and Education. Ten National Parks with coral reefs attract more than 1.5 million visits per year. The National Park Service is working to restore and maintain the biological and recreational values of coral reef parks. The website offers links to the parks, NPS articles about coral reefs, and more.
http://www.nature.nps.gov/water/coralreefs/

Coral Reef Ecosystems: Educating the Masses Blog
This blog has originated as a means to help organize large efforts to educate the public on the plight of coral reef ecosystems. It is intended for use by experts in coral reef biology and education, and is not meant to be used as a resource on general coral reef biology. It is hoped that contributors would be those who would serve as educators or those managing larger efforts, and that this forum be used to help design and organize one or more major efforts through local, national and global media outlets.
http://coral-educate.blogspot.com/

Coral Reef Education and Outreach Library
This international library is an online catalogue of tools and publications that can be used to increase awareness about coral reefs. Each entry in the library contains a brief description of the publication and information on how to obtain it. Some publications are available to download directly from the library. In the library you will find descriptions of: brochures, books, posters, fact sheets, materials from marine parks, teacher's guides, videos and other coral reef educational materials.
http://library.coralreef.org
http://fmp.coralreef.org/library/home.htm
http://www.coralreef.org/tools/teachers.html

Coral Reef Education and Outreach Materials
NOAA's Coral Reef Conservation Program offers links to education and outreach materials about coral and coral reefs from a variety of sources. The website offers background information, an online glossary, and links to a wide variety of activities and lesson plans. The 2008 Coral Reef Educational Resources CD is available online. These classroom materials cover a wide range of topics related to coral reefs, including basic coral reef biology, ecosystems, human use, threats, and conservation efforts.
http://www.coralreef.noaa.gov/outreach/welcome.html

Coral Reef Educational Resources CD
The 2008 Coral Reef Educational Resources CD is a collection of coral reef education and outreach materials. The resources cover a wide range of topics related to coral reefs, including basic coral biology, coral reef ecosystems, human use, threats, and conservation efforts. The downloadable CD offers background information, lesson plans and activities, posters, videos, and much more.
http://coralreef.noaa.gov/outreach/resourcecd08/welcome.html

Coral Reef Film Materials
The Great Barrier Reef Marine Park Authority (GBRMPA) worked with Disney Pixar© To develop a CD of educational materials related to the film *Finding Nemo*. The CD also contains "Fishy Facts" – short videos presenting basic life history information using clips from the movie. The GBRMPA ReefEd website also has many curricular materials, set to Australian educational standards. The MacGillivray Freeman Films'©*Coral Reef Adventure* Teacher's Guide has other downloadable film-related educational materials.
http://www.FindingNemo.com.au
http://www.coralfilm.com/edu.html
www.reefed.edu.au

Coral Reef Messages
Collaborative efforts resulted in a cohesive and relevant U.S. Messaging Campaign for the International Year of the Reef (IYOR). The website offers free, print-ready downloadable ads, as well as branded products like banners, t-shirts, re-usable cloth bags and water bottles, for use in branding IYOR 2008 campaigns. Free registration is required.
http://www.iyorcreative.com/iyor/index.php

Coral Reef Multimedia Project
The Coral Reef Multimedia Project is an interdisciplinary effort to illustrate and explain coral reef dynamics and threats. The project goal is to make this knowledge accessible by combining the visual arts with a scientific background. The project is divided into two categories, Short Movies and Mini-Documentaries. Short Movies explain a concise subject with documented footage while Mini-Documentaries explore a broader biological theme with cinematography, photography, and visual effects. Check this one out!
http://www.coralreefmultimedia.org/

Coral Reef Park Buddy Program - 2005
The Park Buddy Program aims to support coral park managers in their efforts to protect their biologically diverse and increasingly threatened reefs. The program offers ocean lovers the chance to directly support fundraising efforts for four urgent conservation projects. CORAL is launching its Park Buddy program as part of the annual Dive In To Earth Day event, held each year during the week of Earth Day, April 22nd.
http://www.coralreefalliance.org/divein/parkbuddy/

Coral Reef Photographs
The on-line Coral Reef Ecosystem Database provides public access to new digital photographs from six years of coral reef field studies. Access to images of coral reef species and habitats, taken during studies in Puerto Rico and the U.S. Virgin Islands, facilitates a variety of coral reef research, management and educational opportunities. The searchable database includes images of fishes and invertebrates, hard and soft corals, mangroves, seagrass beds, and other benthic habitats.
http://www8.nos.noaa.gov/biogeo_public/reef_photos.aspx

Coral Reef Photos
Dr. Paddy Ryan has posted coral reef photos to his website in an easy to access set of pages. There are additional categories that may be of interest, so check out this website. School teachers are welcome to use these in their classrooms.
http://www.ryanphotographic.com/coralreef.htm

Coral Reef Report
This new online magazine has been launched to “celebrate the power and mystery of the planet's coral reefs." The Coral Reef Report features articles, personal stories, and audio interviews with scientists and others. The site also features a rotating photo gallery.
http://coralreefreport.info .

Coral Reef Videos
The Hawaii Coral Reef Initiative is committed to educating all types of audiences about the value of coral reefs through a wide range of media. In order to reach a broader audience, HCRI has expanded its use of the video-sharing websites YouTube and TeacherTube, and includes instructional videos for children on coral genetics and coral community connections, animations, and more.
http://www.teachertube.com/uvideos.php?UID=174264
http://www.youtube.com/hcrirp

***Coral Reefs: Canaries of the Sea* DVD**
The National Wildlife Foundation’s Climate Change and Wildlife Program, with funding support from NOAA, has produced a multi-media DVD entitled *Coral Reefs: Canaries of the Sea*, narrated by Jack Hanna. The DVD will help raise awareness of the effects of global climate change and other serious environmental problems on coral reefs around the world. It also provides ideas about what people can do to help protect reefs.
glick@nwf.org

Coral Science Web Site
The mission of the Coral Science website is to bridge the gap between coral science and society, and to stimulate awareness for our fragile planet and its ecosystems. They offer scientific articles about ocean related research. Current topics include coral calcification, coral immunology, coral bleaching, and more.
http://www.coralscience.org/home/

Coralpedia
Coralpedia is an identification guide to corals, octocorals, and sponges of Caribbean Reefs, developed through the Overseas Territories Environment Programme fund of the UK government, to assist conservation work in the UK Overseas Territories. Version 1 contains images and descriptions of about 64 Caribbean stony corals, 74 reef sponges and 41 octocorals, along with a few other groups; altogether over 1000 images are included. The information is available on the website and on CD.
http://coralpedia.bio.warwick.ac.uk

CoralSee
CoralSee offers an on-line Acropora coral identification program and an introductory guide to these corals. The interactive website includes the sections Explore the Reef, the Acropora key, and links to more information.
http://www.coralsee.org/

CoralWatch
CoralWatch, developed from a research project at the University of Queensland, offers an inexpensive, simple, non-invasive method for the monitoring of coral bleaching and assessment of coral health. The Coral Health Chart is basically a series of sample colors, with variation in brightness representing different stages of bleaching/recovery,

based on controlled experiments. The website also includes a description of an education package, educators' workshop registration, and more.
http://www.coralwatch.org/default.aspx

CORSACS: Controls on Ross Sea Algal Community Structure
CORSACS is a research cruise to the Ross Sea in Antarctica to study what controls the phytoplankton dynamics. The main research objective was to investigate the relative importance and potential interactive effects of iron, light and CO2 levels in structuring algal assemblages and growth rates in the Ross Sea. The website includes logs, descriptions of life at sea, questions and answers from students, and more.
http://www.whoi.edu/sites/corsacs

COSEE-Florida Web Portal
The Florida Center for Ocean Science Excellence in Education provides access to information and data for those interested in ocean sciences and education. The website allows you to search or browse through a growing collection of data and information in addition to search capabilities linking to numerous other websites and search engines. The Online School allows for the development and delivery of complete online courseware. Access is free for instructors, developers and learners.
http://www.coseeflorida.org/

COSEE NOW
The Centers for Ocean Sciences Education Excellence Networked Ocean World (COSEE NOW) is comprised of institutional partners who are using real time information from ocean observing systems to enhance public understanding of the ocean. Central themes of the website include Ocean Literacy, Virtual Community Collaborations, and Ocean Observing Systems.
http://coseenow.net/

COSEE SE
COSEE SE combines efforts with scientists and educators to improve science education, facilitate awareness of ocean sciences careers, increase outreach and understanding of research, and bring ocean sciences to students and the public. The website offers news and events, along with teacher's and scientist's sections with links to background about the South Atlantic Bight. Check out. the new publication for middle school educators on marine debris.
http://www.cosee-se.org/

COSEE-West Online
The COSEE-West website offers a rich and diverse set of resources for teachers interested in bringing ocean sciences into the classroom.
Online streaming video lectures and Powerpoint presentations. Presentations by scientists during COSEE-West events are taped and made available to educators online through the College of Exploration. These lectures provide background information on a variety of ocean research topics as well as data and discussions on the state of current research projects.
Classroom resources. Lesson plans, activities, and articles featured during COSEE-West education workshops are available for downloading on the Resources page, listed by topic and workshop date. The resources cover a wide range of coastal issues, from the deep sea to the shallow coasts, from policy to seabirds and whales. Also included

are a California marine science field trip guide and a long list of commercially available (and rentable) marine science videos. Other marine science lessons and information resources are also available on the Curricula and Ocean Literacy pages.
Archived Online workshops. COSEE-West hosts online workshops for educators on current ocean topics. The forums offer information, discussion topics, ideas for lessons, and classroom resources for teachers of all levels and audiences. All of the material is archived online and accessible through the Online Lectures page (hosted by College of Exploration).
Ocean science animations. Short animations on various ocean science topics are available on the Ocean Tube link from the homepage. Animated shorts appropriate for both secondary and elementary levels are featured (and more are in the planning stages).
http://www.usc.edu/org/cosee-west

Creating Coastal Stewardship Through Science Curriculum Guides
The Point Reyes National Seashore website hosts a wide range of educational materials. Of special note are seven curricular guides created by teachers for teachers to provide middle school students with the opportunity to observe natural processes at Point Reyes National Seashore, to encourage a greater interest in science and environmental stewardship. Pacific gray whales, northern elephant seals, and the San Andreas Fault, are highlighted.
http://www.nps.gov/pore/educate_curriculum.htm .

Creative Conservation E-Learning
This company designs, develops, and teaches professional development e-Learning programs to meet the needs of your organization. Each design is a unique blend of current e-Learning technologies and proven methodologies with an emphasis on learning. Courses include Designing for Distance, Project WILD, and Project Learning Tree professional development workshops.
http://www.creative-conservation.com/index.htm

Creative Gallery on Sustainability Communications
The United Nations Environment Programme (UNEP) has created an online database of corporate and public advertising campaigns specifically dedicated to sustainability issues and classified by more than a dozen sustainability themes, including *Seas and Oceans*. The campaigns highlighted address sustainability issues through various themes, tones, types of media and strategies.
http://www.unep.fr/pc/sustain/advertising/ad/ad_list.asp?cat=all

CREEC Resource Directory
Search for environmental education news and resources in California with the California Regional Environmental Education Community (CREEC) Networks' resource directory. Topics include community events, educational resources, training and professional development opportunities, grants/contests, and more. The resource directory offers links to over 2500 providers and resources of environmental education in California. Search by county, bilingual availability, grade level, academic focus, and much more.
http://creec.edgateway.net/cs/creecp/search/creec_res

Crittercam: See What the Animals See
What do marine animals do when we're not around? National Geographic's Crittercam allows researchers to follow wildlife through the use of advanced monitoring equipment

attached to the animal. The Crittercam website has maps, lesson plans, and activities. http://www.nationalgeographic.com/crittercam/index.html .

Crocheting a Coral Reef
You may use this for your students under the category *Anything's Possible*. In a woolly celebration of the intersection of higher geometry and feminine handicraft, and in testimony to the disappearing wonders of the marine world, the Institute for Figuring is crocheting a coral reef. Using the techniques of hyperbolic crochet discovered by mathematician Daina Taimina, the Institute has been evolving a wide taxonomy of reef-life forms - loopy "kelps", fringed "anemones", and curlicued "corals."
http://theiff.org/exhibits/reef.html

Cruise to Northwestern Hawaiian Islands Marine National Monument
The NOAA ship *Hi'ialaka*i undertook a 28-day voyage to the farthest reaches of the Northwestern Hawaiian Islands. This multidisciplinary research expedition included a benthic habitat mapping team, maritime archaeologists, and interpretation of this research through education and outreach specialists. The crew of 20 scientists and educators conducted studies at Kure Atoll, Pearl, and Hermes Atoll.
http://sanctuaries.noaa.gov/missions/2006nwhi/

Cruises and Virtual Expeditions to the Charleston Bump
From August 2-13, 2003 scientists explored the Charleston Bump, a complex bottom feature of great topographic relief located southeast of Charleston, South Carolina. The rocky, erosion-resistant rise impedes the flow of the Gulf Stream, deflecting it offshore and creating a zone of gyrating eddies and swift, narrow currents. Background material, daily logs, photodocumentaries, a video gallery, and lesson plans are available.
http://oceanica.cofc.edu/home.htm

Cruising Classroom
The Cruising Classroom, owned by the UCLA Institute of the Environment, introduces 4-12th grade and college students to the Santa Monica Bay. Participants are engaged through hands-on scientific explorations and dialogs with instructors. Students learn about physical oceanography, ocean chemistry, and marine organisms by collecting and analyzing a variety of physical, biological and chemical data, using the sampling equipment aboard the *R/V Sea World UCLA*.
http://www.ioe.ucla.edu/seaworld/

Crustacea.net
The Australian Museum offers Crustacea.net, an interactive information retrieval system for crustaceans of the world. The website offers interactive keys, glossaries, and more.
http://crustacea.net/

Cultural Resources Program Website
The U.S. Fish and Wildlife Service (USFWS) Cultural Resources Program website offers information on the many facets of the program at USFWS, as well as past issues of the *Historical Happenings* newsletter.
http://historicpreservation.fws.gov

Curious George Educational Materials
Leverage Curious George's appeal to bring earth science learning to young kids. PBS offers downloadable resources for educators. The resources outline how to set up and

run hands-on “Curiosity Centers” where children can make their own discoveries about sand, water, soil, wind, and recycling. The resources include simple materials lists, learning goals, leader notes, and tips for success.
http://pbskids.org/curiousgeorge/parentsteachers/activities/

The Cycle
RecycleBank offers The Cycle, an animated interactive look at the process of single stream recycling and materials reprocessing, following theoretical recyclables after they are collected. The Cycle takes viewers through each step of the process.
http://www.explorethecycle.com/

Dangers of Plastic Bags
Mobile Bay National Estuary Program has posted a pdf of a PowerPoint presentation on the dangers of plastic bags. It discusses the problems and costs of plastic bags to the environment and bans on their use.
http://www.mobilebaynep.com/site/Forefront/TheDangersofPlasticBags.pdf

Darwin Initiative
The Darwin Initiative is a small grants program, funded and administered by the UK Department for Environment, Food and Rural Affairs, that aims to promote biodiversity conservation and sustainable use of resources around the world. Project areas include institutional capacity building, training, research, work to implement the Biodiversity Convention, and environmental education or awareness. The website includes links to newsletters, funding initiatives, project information, and much more.
http://www.darwin.gov.uk/

Data in the Classroom
Data in the Classroom is a new online resource for teachers interested in using real scientific data in their teaching. The NOAA Ocean Data Education (NODE) Project is developing curriculum for grades 5-8 designed to help teachers and students use real scientific data to explore dynamic Earth processes and understand the impact of environmental events on a regional or global scale.
http://dataintheclassroom.org/

Data Explorer
Online access to NOAA’s National Ocean Service spatial data collections, such as nautical charts, coastal maps, environmental monitoring records, and more, is available through this website. The material can be searched by geographic area, keyword, or topic.
http://nosdataexplorer.noaa.gov/nosdataexplorer/

DataStreme Ocean Website
DataStreme Ocean is a semester-long distance-learning course for precollege teacher enhancement that is partially delivered via the Internet. It is an initiative of the American Meteorological Society/National Oceanic and Atmospheric Administration Cooperative Program for Earth System Education. The course website offers a comprehensive sampling of ocean information especially suitable for learning in an Earth system perspective.
www.ametsoc.org/amsedu/DS-Ocean/home.html .

Davidson Seamount: Exploring Ancient Coral Gardens
NOAA's Ocean Explorer program has launched *Davidson Seamount: Exploring Ancient Coral Gardens*, the website for their first expedition of 2006, which runs from January 26-February 4, 2006. The seamount is a vast underwater mountain 75 miles off the coast of Monterey, California, and more than 4,000 feet below the sea surface, created by volcanic activity. Seamounts are an important habitat for deep-sea corals and demonstrate a high degree of endemism.
http://oceanexplorer.noaa.gov/explorations/06davidson/welcome.html

A Day in the Life of a Drop
A Day in the Life of a Drop, from the EPA, is a set of activities designed to help students in grades 3–5 understand the connections between the source of the water they use and the ways their water use habits affect the environment and human health. Students also learn how to reduce their impacts and engage family members. Materials include a teachers' guide, student worksheets, a spreadsheet to track water use at home, and more.
http://www.epa.gov/watersense/water/drop.htm

Deep ATRIS
The U.S. Geological Survey has developed the Deep Along-Track Reef-Imaging System (Deep ATRIS) to support its mapping activities and the ground-truthing of acoustic, lidar, and satellite imagery of submerged coastal environments. Deep ATRIS is capable of surveying to depths of 30 meters and acquiring 12-bit color digital images at 9 frames per second. They offer Deep ATRIS on a cost-sharing basis to other researchers and resource managers.
http://coastal.er.usgs.gov/remote-sensing/advancedmethods/deepatris.html

Deep Scope 2005
NOAA Ocean Exploration has launched the Deep Scope 2005 website in support of the current exploration, which runs from August 19–September 3, 2005. Utilizing the Johnson-Sea-Link submersible and deploying a unique deep-sea observatory camera system to observe as unobtrusively as possible, scientists aboard the Harbor Branch Oceanographic Institute's research vessel *Seward Johnson* will examine the deep-sea environment in the Gulf of Mexico from the perspective of the animals living there.
http://oceanexplorer.noaa.gov/explorations/05deepscope/welcome.html

Deep Earth Academy Climate Change Resources
The Deep Earth Academy (formerly JOI Learning) facilitates and develops programs and materials based on scientific ocean drilling expeditions and Earth Systems Science to strengthen students' mathematics, science, and analytical skills. The website hosts lessons related to climate change plus a number of resources that can be provided free of charge, including posters, DVDs, drilling globes, and more.
http://www.oceanleadership.org/learning/climate

Deep Sea 3D
Deep Sea 3D is the new underwater adventure from IMAX, transporting audiences deep below the ocean surface in different locations around the globe and offering never-before-seen, up-close encounters with a wide range of undersea life. Moviegoers, with only their 3D glasses for a diving mask, will be able to swim alongside some of the most exotic creatures on the planet, from the bizarre Rainbow Nudibranch to the Giant Pacific Octopus. The website includes a film trailer along with an educator's guide to the film.

http://www.californiasciencecenter.org/Imax/Features/DeepSea3D/DeepSea3D.php

Deep-Sea Creatures Quiz from National Geographic
Dive to the depths to test your knowledge of some of the Earth's most unusual creatures. Try this quiz and read the accompanying background information. And while you're on the website, check out the other games including weather wizard, frogs, and much more in the archives.
http://magma.nationalgeographic.com/ngexplorer/0309/games/game.cgi .

Deep Water Macroalgal Meadows
The 2004 Deep Water Macroalgal Meadows expedition is now online on NOAA's Ocean Explorer website. This expedition studied deepwater meadows of the calcified green alga Udotea sp. in the waters surrounding the Hawaiian Islands. The website includes an essay about the Teacher at Sea experience, a mission summary, an essay on algal meadows in Hawaii, and three major slideshows filled with photos from the expedition.
http://oceanexplorer.noaa.gov/explorations/04algae/welcome.html

Deep-Sea Images and SERPENT
The SERPENT (Scientific and Environmental ROV Partnership using Existing Industrial Technology) project collaborates with the oil and gas industry to carry out deep-sea scientific research on habitat mapping, sea-bed recovery rates from disturbance, and a variety of other experimental approaches to document biodiversity in the deep sea. The website hosts Education pages for teachers with lesson plans and more. The Kids pages include fun facts and interviews with the SERPENT team members and partners. The Gallery pages link to additional video and image galleries, while Publications hosts both SERPENT newsletters and a bibliography with many downloadable articles.
http://www.serpentproject.com/

Delaware Sea Grant Social Networking
Delaware Sea Grant invites you to check their activities out through Facebook, Twitter, and YouTube. They will share photos, news, resources, and more through these sources.
http://www.facebook.com/pages/Delaware-Sea-Grant/40576461700
http://twitter.com/DESeaGrant
http://www.youtube.com/deseagrant

DEM Discovery Portal
For those teaching or using GIS in the classroom, this website can save time and effort. The National Geophysical Data Center has created an ArcIMS map interface for locating digital elevation models (DEMs) that are published on the web. This makes it easier for GIS users to locate, preview, and download DEMs. The DEMS may be bathymetric, topographic, or a merged combination of both, ranging from high-resolution coastal DEMs for local studies, to coarser ones with global coverage.
http://www.ngdc.noaa.gov/mgg/dem/

Derelict Fishing Gear Mission
NOAA scientists complete a 6-day research mission exploring the remote habitats of Cordell Bank National Marine Sanctuary and testing methods of removing derelict fishing gear from the seafloor using a Remotely Operated Vehicle (ROV). The website offers background information and mission logs.
http://sanctuaries.noaa.gov/missions/2008cordellbank/

Design a Planet
In September 2005, Astro-Venture, a multimedia website for grades 5-8 highlighting NASA careers and astrobiology research in the areas of astronomy, geology, biology and atmospheric science, will launch *Design a Planet* through NASA Quest. Students can interact with scientists who are developing a program that can model planets with signs of life. Students will also be introduced to a new simulation on the Astro-Venture website that will challenge them to design a planet that would support human habitation.
http://quest.arc.nasa.gov/

Design in the Classroom
Design can make any subject immediately relevant to students by directly relating to their real-life experience. The Cooper-Hewitt National Design Museum offers interactive modules and learning activities which make it easy to see how architecture, graphic, and media design can enhance the teaching of subjects that include mathematics, language arts, and environmental studies. Check out the lessons on contouring and designing an aquarium ecosystem.
http://www.educatorresourcecenter.org/

Dial-A-Buoy
Dial-A-Buoy gives mariners an easy way to obtain weather reports through a telephone. Buoy reports include wind direction, speed, gust, significant wave height, swell and wind-wave heights and periods, air temperature, water temperature, and sea level pressure. Some buoys report wave directions. Coastal weather stations report the winds, air temperature, and pressure; some also report wave information, water temperature, visibility, and dew point.
http://www.ndbc.noaa.gov/dial.shtml

Digital History: A Guide to Gathering, Preserving, and Presenting the Past on the Web
The Center for History and New Media at George Mason University offers this online resource. It serves as an introduction to the web for those "who wish to produce online historical work, or to build upon and improve the projects they have already started in this important new medium." The work is divided into chapters, including *Becoming Digital, Owning the Past?*, and *Preserving Digital History*. The work covers everything from copyright law to site design.
http://chnm.gmu.edu/digitalhistory/index.php

Digital Image Library
The USGS-National Biological Information Infrastructure offers a new website for its rapidly growing Digital Image Library. Containing thousands of images donated by photographers and organizations, the library links images to detailed information such as location, scientific and common names, and habitat and behavior descriptions to support research, education, and decision-making. Currently offering 30,000 images, the website allows multiple ways to browse the collections and select images.
http://images.nbii.gov/

Digital Library of the Caribbean
The Digital Library of the Caribbean, administered by Florida International University in partnership with the University of the Virgin Islands and the University of Florida, aims to build a cooperative digital library among partners within the Caribbean and circum-

Caribbean, providing scholars, students, and citizens around the world with open on-line access to Caribbean cultural, historical and scientific materials.
http://www.dloc.com/

Digital Library of Earth System Education
The Digital Library of Earth System Education is creating an online library of educational resources and services to support Earth system science education at all levels in both formal and informal settings. A quick search on "marine" came up with 152 entries.
http://www.dlese.org/

Digital Research Tools
Created by the director of the Digital Media Center at Rice University, this collaborative wiki collects information about tools and resources that can help scholars conduct research more efficiently or creatively. Visitors can browse through topical headings that include Authoring, Blogging, and Data Mining, among others. Visitors can search for specific tools that can help collect data, edit images, make a dynamic map, and more.
http://digitalresearchtools.pbwiki.com/

Digital Worlds GIS
Digital Worlds GIS 2 is built from the technology supplied by ESRI. The package is for the education market and gives pupils experience of GIS tools, bridging the gap between education and commercial applications of GIS. Though based in the U.K., the website can offer an introduction to GIS use in the classroom, along with examples of lesson plans. Users have also been able to integrate TerraLook imagery data with the layers using the software.
http://www.digitalworlds.co.uk/

Digging In: A Guide to Community Based Habitat Restoration
This 164-page guide describes how individuals and organizations can become involved in helping to improve and restore coastal wetlands and other coastal habitat in their communities. The guide explains the basic steps of information gathering, site selection, project implementation, monitoring, maintenance, and working with volunteers. The California Coastal Commission will be holding workshops to introduce the guide; see the website for details.
http://www.coastal.ca.gov/publiced/UNBweb/diggingin.html

Dihydrogen Monoxide Website
Explore the many special reports, FAQ, a primer on the subject, plus reports on the environment, current research, and other exposés about this often dangerous chemical. (Recent events have proven just how deadly it can be).
http://www.dhmo.org/

Disaster Resiliency
NOAA's Coastal Services Center publishes *Coastal Services*, a bimonthly magazine for the nation's coastal resource managers. You can read the magazine online or subscribe to this free publication. The January/February 2006 edition reports on what coastal resource managers are doing to increase their communities' disaster resiliency.
http://www.csc.noaa.gov/magazine/

Discover Your World with NOAA: An Activity Book
NOAA is celebrating 200 years of delivering science, service, and stewardship. Making this happen leads the people of NOAA from the edge of space to the bottom of the ocean. *Discover Your World with NOAA: An Activity Book* helps you learn more about the world and how NOAA helps explore, understand, and protect our Earth. The book contains 43 different activities, and can be downloaded in full or by individual activity.
http://celebrating200years.noaa.gov/edufun/book/welcome.html

Discovery Day at the Dauphin Island Sea Lab - Alabama
Discovery Day at the Dauphin Island Sea Lab offers free children's admission to the Estuarium on April 19, 2008, from 10:00am to 2:00pm, on Dauphin Island, Alabama. This family event includes a variety of environmentally-themed children's activities; an Open House at the lab research facilities where the public can meet the scientists; and free kids' admission to the Estuarium, the aquarium at the lab.
http://estuarium.disl.org/

Discovering Antarctica
The Royal Geographical Society and the British Antarctic Survey have created this website which explores life on Antarctica. Visitors can watch a short video clip about the continent, test their existing knowledge with a short quiz, and then participate in a "being there" activity. The site lists all of the resources by format, including audio files, video clips, Word documents, and images. The Teachers' Area offers learning activities for students and teacher notes correlated to each of the main sections of the website.
http://www.discoveringantarctica.org.uk/index.php

Discovering the Living Ocean Manual
Bent Tree Press offers *Discovering the Living Ocean: Laboratory and Field Activities in Marine Biology*, a manual for use in high school and undergraduate marine biology classrooms and suitable for students who have no previous background in biology. The book's 17 chapters of laboratory exercises and 5 chapters of field studies expose students to a broad range of activities in taxonomy, microbiology, invertebrate zoology, ichthyology, oceanography, and more.
http://benttreepress.com/products/labs/marinebio_labs.htm

Discovery Day at the Dauphin Island Sea Lab - Alabama
Celebrating 200 Years of NOAA, the Dauphin Island Sea Lab in Alabama is celebrating with a Discovery Day, April 14, 2007, featuring the groundbreaking of a new building at Sea Lab, special NOAA programs and activities, free children's and reduced adult admission to the Estuarium, discounts, and much more.
http://press.disl.org/1_31_07dday.html

Discovery Kits from NOAA's National Ocean Service
NOAA's National Ocean Service (NOS) Discovery Kits describe the scientific principles underlying NOS's major programs. Each kit includes an on-line tutorial, a roadmap to resources, and a set of lesson plans. Each module of the kit is designed to work together, but comprehensive enough to be used on its own. Currently available kits include *Corals*, *Tides & Water Level*s, and *Geodesy/Global Positioning*. *Estuaries*, *Non-point Source Pollution*, and *Marine Archaeology* are in development.
http://oceanservice.noaa.gov/education .

Discovery of Sound in the Sea
The redesigned Discovery of Sound in the Sea website is an online resource about the science and use of sound in the ocean. A new main section offers a Frequently Asked Questions and a Facts and Myths section. New on-line tutorials on the Science of Sound and the Effects of Sound on Marine Animals, content in the People and Sound section, and entries in the Audio Gallery are also available. Check out updated material under *How do marine animals hear sounds?* under Animals and Sound.
http://www.dosits.org/

Discovery of Sound in the Sea
The Discovery of Sound in the Sea web site has been developed by the University of Rhode Island's Office of Marine Programs in partnership with Marine Acoustics, Inc. This website introduces users to the science and uses of sound in the sea. The audio gallery allows users to listen to underwater sounds created by marine animals, human activities, and natural phenomena such as lightning, earthquakes, and rain. Offerings include video interviews with scientists, scientific investigations, and a section for teachers with resources and classroom activities.
http://www.dosits.org/

Distance Education Clearinghouse
The University of Wisconsin System offers the Distance Education Clearinghouse, a comprehensive website bringing together distance education information from Wisconsin, national, and international sources. The website hosts general information about distance education, research findings on its effectiveness, pedagogical support for teachers, financial aid information, and links to many additional websites and resources.
http://www.uwex.edu/disted/home.html

Dive In To Earth Day
Dive In To Earth Day has been broadening people's knowledge of Earth Day to include the education and conservation of our planet's aquatic ecosystems. It will be celebrated throughout the week of Earth Day, April 22. Visit the website for inspiration, tools, information, and to register your event for a global impact. Activities that make conservation fun and accessible while having a real impact include beach and underwater clean-ups, educational workshops, fish and reef surveys, mooring buoy installations, among many others.
http://www.coralreefalliance.org/divein/

Dive In To Earth Day
Dive In To Earth Day offers you the opportunity to take a stand for the protection of coral reefs, and raise global awareness about pressing conservation issues. Organize a beach or underwater cleanup, host an educational slideshow or film, conduct a fish survey, or raise funds for a marine protected area, by "Diving In" this Earth Day. 2003's event garnered 270 activities, helping protect coral reefs and aquatic ecosystems in 58 countries and territories around the world. Register your event online at http://fmpro.coralreefalliance.org/divein/reg_1.htm.
http://www.coralreefalliance.org/divein/ .

Dive Into Your Sanctuaries
The National Marine Sanctuaries website now includes a section covering diving in the sanctuaries. It features a map with mouseover pop-ups providing sanctuary specific

details, information on shipwreck diving, and details covering different sanctuary habitats.
http://sanctuaries.noaa.gov/visit/diving.html

Diving Deeper Podcasts
NOAA's National Ocean Service offers Diving Deeper, a bi-weekly audio podcast featuring discussions with NOS scientists on a wide variety of ocean topics. Current topics include marine debris, MPAs, and eutrophication.
http://oceanservice.noaa.gov/podcast.html#dd

Do L.A.P.'s for Michigan
The Michigan Department of Natural Resources provides its Millennium Education Project – great state, great parks, great history – L.A.P.'s (Learn from the past, Appreciate the present, and Preserve our outdoor heritage). Michigan fourth grade teachers and students have fun as they learn and explore through the L.A.P.'s characters. The website features a variety of resources, games, links, and a virtual tour of a different park each month.
http://www.dnr.state.mi.us/edu/DNRIntroPages/DNRlaps.html

Dog-Eared Publications and Social Ecology Press
Dog-Eared Publications aims to turn young readers into environmentally aware citizens and foster a love of science and nature in the new generation by capturing their interest and engaging them with interactive games, mysteries, puzzles, and stories. Social Ecology Press publishes accounts of human behavior, natural resources, and the environment. Their goal is to provide affordable books for classroom adoption and the natural resource professional community.
http://www.dog-eared.com
http://www.dog-eared.com/socialecologypress/index.php

Doing Science: The Process of Scientific Inquiry
This website helps students understand the basics of scientific inquiry. This NIH curriculum supplement series for grades 6-8 offers lessons, a teacher's guide, and more to help guide students about scientific inquiry. Activities include distinguishing questions that can be tested by a scientific investigation from those that cannot and participating in a computer-based scientific investigation as members of a fictitious community health department.
http://science.education.nih.gov/supplements/nih6/Inquiry/default.htm

Doing What Works
Doing What Works is a new website from the Department of Education dedicated to helping educators identify and make use of effective teaching practices. Doing What Works contains practice guides developed by the Department's Institute for Education Sciences that evaluate research on the effectiveness of teaching practices described in the guides. Though the website currently only hosts information about English Language Learners, Math and Science will be included at a later date.
http://dww.ed.gov/index.cfm?

DonorsChoose
Teachers ask. People choose. Students learn. DonorsChoose is a simple way to provide students in need with resources that our public school often lacks. Here,

teachers submit ideas for materials or experiences that their students need to learn. Individuals can choose a project and make it a classroom reality.
http://www.donorschoose.org/

Don't Even Sink about It
Don't Even Sink about It utilizes two components of ocean observing systems, AUVs and buoys, to explore density and how it affects the buoyancy of different objects. Don't Even Sink about It also uses the M/V Ocean Hope to discuss ship character. Students will evaluate archived and real-time water depth data from the Chesapeake Bay, as well as density plots of continental shelf water off of New Jersey to determine if commercial cargo ships can safely pass without running aground or other major shipping incidents.
http://www.marine-ed.org/bridge/index_archive1207.html

DoRight Enterprises
DoRight Enterprises™ is a youth-run consulting firm. This interdisciplinary curricular program "employs" students as consultants in a not-for-profit consulting firm run by the teacher. Students acquire environmental and economic knowledge and skills needed to offer their expertise as consultants to help their local businesses, hospitals, schools, and others reduce operating costs, raise profits, and reduce environmental impact.
http://scottbeall.com/dorightsummary.htm

Down Under, Out Yonder Highlights
The 13th annual Down Under, Out Yonder (DUOY) Advanced Educators Cruise brought 18 teachers to the reef for a three-day trip on a live-aboard dive boat. DUOY is a joint venture between the Gulf of Mexico Foundation and the Flower Garden Banks National Marine Sanctuary, with funding from ConocoPhillips. Photographer Franklin Viola documented this year's trip in photos, along with a brief log and links to more information.
http://gulfmex.org/gallery/duoy2007/index.html

Dr. E's Science Page PowerPoints®
From La Canada (California) High School's Dr. Mark Ewoldsen and students in the Advanced Placement Environmental Science class, Dr. E's Science Page provides PowerPoint® presentations on a variety of subjects, including biomes, coral reefs, endangered species, ocean pollution, and more.
http://www.lcusd.net/lchs/mewoldsen/PowerPoint.htm

Drawing from Nature
The *Drawing from Nature* series runs regularly as the lead story in the Sunday edition of the *Los Angeles Times Kids Reading Room Page.* Each article in the series introduces children to a different subject from nature and a related art technique. This project might be able to serve as a blueprint for an ocean-themed related series in a newspaper near you.
http://nrs.ucop.edu/Reserves/stunt/news/LALivingadpic.html

Drink it Up
This online educational environmental project encourages global participation for schools to learn about their local drinking water. Lessons for the project include how to test your drinking water, the water cycle, and what makes up a watershed. Participating classes are encouraged to test their drinking water, and to post their results to the

database for others to use as real data. Classes are encouraged to submit a group project as a web page about their research complete with pictures, maps and diagrams.
http://www.millennium.scps.k12.fl.us/staffpages/ShawR/drinkitup/waterover.html

Drought Portal
The U.S. Drought Portal is an interagency portal providing critical and updated information on drought to stakeholders. It was created to provide comprehensive information on emerging and ongoing droughts, and to enhance the nation's drought preparedness. The portal is an integral element of the National Integrated Drought Information System (NIDIS). The education section links to selected resources, including lesson plans in English and Spanish, along with general information.
http://drought.gov/

Ducks Unlimited and Project WET Join Forces to Highlight World Wetlands Day
Ducks Unlimited and Project WET (Water Education for Teachers) announce a new education partnership to celebrate World Wetlands Day, to benefit water, wetlands, wildlife, and people across North America. The partnership harnesses the power of both organizations to educate about the importance of wetlands and water resources. The partnership is also part of Ducks Unlimited's launch of its new wetlands education program, called Project Webfoot.
http://www.ducks.org/News/WET_Partnership.asp

Ducks Unlimited Wetland Curriculum
Ducks Unlimited has developed three units in a wetland ecosystems series. Each unit consists of an educator's guide and accompanying student journal. Teachers guides are also available for grades 4-6. The units include experiments and activities that provide a base to build a complete wetland curriculum. Additional materials and activities for kids are also available.
http://www.greenwing.org/dueducator/noncssdu_educator.html

The Dune Book
North Carolina Sea Grant offers a comprehensive book on sand dunes. This publication describes the benefits of dunes and dune vegetation, as well as the best dune management practices along developed shorelines where people, buildings and roads are already in place. It also describes how to select and plant the best dune grasses for the North Carolina coast and provides tips and colorful illustrations on the most common dune species.
http://www.vims.edu/bridge/index_geology.html .

Dutch Caribbean Nature Alliance
This website from the Dutch Caribbean Nature Alliance offers an Internet resource for both professionals and the general public on issues of biodiversity and conservation within the Dutch Caribbean, including the islands of Aruba, Bonaire, Curaçao, Saba, St Eustatius and St Maarten. The website currently features information on protected areas, habitats, ecosystems, and endemic, endangered and vulnerable species; details about ongoing projects; a sea turtle tracking programme; and more.
www.DCNAnature.org

Dynamic Earth
The Smithsonian Museum of Natural History brings a brief introduction into the physical science of the history of Earth alive in a unique fashion with this website. Sections

include Gems and Minerals, Rocks and Mining, Plate Tectonics and Volcanoes, and the Solar System. The website can be viewed either as multimedia or in a print version.
http://www.mnh.si.edu/earth/main_frames.html

Earth Alerts
Earth Alerts is a free, downloadable Windows-based application that provides alert notifications, reports, and imagery on many types of natural phenomenon that are occurring real-time both worldwide as well as in specific locations within the United States, including Guam, Puerto Rico, and the U.S. Virgin Islands. You can specify the activity types and locations of interest for notification.
http://earthalerts.manyjourneys.com/

Earth and Environmental Science: Research Overview
This website from the National Science Foundation examines questions that scientists are pursuing, including: What part do we play in earth's changing climate? What can rock layers tell us about earth's history? How can we understand the forces that lead to earthquakes and volcanoes? How do long-term changes affect earth's ecosystems? The website includes links to classroom and other resources related to the current research topics.
http://www.nsf.gov/news/overviews/earth-environ/index.jsp

Earth as Art: A Landsat Perspective
This exhibition from the Library of Congress showcases Landsat 7 images, from the collection of Landsat photographs held in the Geography and Map Division, which have been selected for aesthetic rather than scientific value. These images are actual pictures of the Earth, created by printing visible and infrared data in colors visible to the human eye. Band combinations and colors were chosen to optimize their dramatic appearance. Included are striking photos of Aleutian clouds, the Everglades, the Ganges River delta.
http://www.loc.gov/exhibits/earthasart/ .

Earth - The Biography
Earth - The Biography, from the National Geographic channel, examines how the earth was formed, and how carbon dioxide emissions are changing major ecosystems and the possible impacts on the planet. The program segments are Atmosphere, Oceans, Volcanoes, Ice, and Rare planet. A companion book to this series is also available for purchase.
http://channel.nationalgeographic.com/series/earth-the-biography/all/00#tab-Overview
http://shop.nationalgeographic.com/product/1062/4260/114.html

EarthCare
This resource features online stories about conservation, earth and ocean stewardship, ecosystems, and more. It showcases the Earth & Sky radio spots, along with links for more information.
http://www.earthsky.org/shows/earthcare .

Earth Climate Course
NASA's Goddard Institute for Space Studies offers educators and students a website to learn about how a planet's climate is determined, a system of human and natural processes that result in changes over various space and time scales. Students seek answers and consensus by experimenting with physical and computer models, collecting and analyzing their own measurements, and conducting comparisons with real world

data from satellites and ground-based observations. The website includes teacher notes, student activities, and data sets.
http://icp.giss.nasa.gov/education/modules/eccm/

Earth Day
Celebrate Earth Day on April 22. Check out happenings around your area or register your program. The website offers "Earth Day in a Box" under the Resources link.
http://ww2.earthday.net/~earthday/
http://www.earthday.net/earthday2009
http://www.earthday.gov/

Earth Day Celebrations
Learn what you can do to help our ocean planet while celebrating Earth Day, April 22. Events will be held throughout the county. Here's a brief sample.

- Aquarium of the Pacific, Long Beach, California, April 23-24, 2005. Join a weekend of family fun while learning simple, everyday tips to protect our environment. Visit booths from various organizations and participate in hands-on learning demonstrations. http://www.aquriumofpacific.org
- Florida Goliath Grouper Census, Panama City, Florida, March 19-April 22, 2005. Dive teams will be organized and will receive pre-dive briefings. http://www.earthday.net/programs/find/eventView.aspx?ID=3012
- "Earth Today" TV Show, South Carolina Educational TV, April 19, 2005. The student anchors interview adult experts on environmental topics. In addition to the 30-minute show, there are 21 lesson plans that relate to the different segments. http://www.earthday.net/programs/find/eventView.aspx?ID=2531
- EE-Link Earth Day Resources. http://eelink.net/eeactivities-earthday.html
- NSTA Earth Day Resources. http://science.nsta.org/nstaexpress/nstaexpress_2005_02_28_esteme.htm
- Earth Day Network, http://www.earthday.net/default.aspx, with links to the Educators Network and Environmental Jeopardy
- International Earth Day, http://www.earthsite.org/
- U.S. Government Earth Day Events and Information, http://www.earthday.gov/ (with links to taking action in your classroom)
- National Environmental Education Week, http://www.eeweek.org

Earth Exploration Toolbook
The Earth Exploration Toolbook is a collection of computer-based Earth science activities. Each activity, or chapter, introduces one or more data sets and an analysis tool to explore some aspect of the Earth system. Step-by-step instructions in each chapter walk users through a case study in which they access data and use analysis tools to explore issues or concepts in Earth system science. In the course of completing a chapter, users produce and analyze maps or other data products.
http://serc.carleton.edu/eet/index.html

Earth Force
Earth Force engages young people as active citizens who improve the environment and their communities now and in the future. Earth Force trains and supports educators in programs that enable young people to lead community action projects focused on creating sustainable solutions to local environment issues in the community. Visit the website for regional staff and basic activities.

http://www.earthforce.org

Earth: A Graphic Look at the State of the World
The Global Education Project presents "Earth: A Graphic Look at the State of the World." This program includes 15 maps along with 99 charts and graphs. The website offers a graphic look at the contents, along with references. Topics include global ecology, fresh water, food from the oceans, and more.
http://www.theglobaleducationproject.org/index.shtml

Earth From Above on the Web
Sponsored by UNESCO and Fuji Film, the *Earth from Above* project included a traveling exhibition that made its way across the United States. Photographer Yann Arthus-Bertrand documented many of the world's places and examined the effects of humans on the earth. This website allows users to view many of these photographs via an innovative interactive interface. Visit a mangrove forest in New Caledonia, motion graphics of the Planet Blue, and the Mark of Man. Netscape 6 is not supported.
http://home.fujifilm.com/efa/

Earth Gauge
Earth Gauge is a weekly environmental information service from the National Environmental Education and Training Foundation currently provided to TV meteorologists in seven states (GA, OH, MI, FL, RI, CA, and DC). Earth Gauge is designed to increase the amount of environmental information used on-air and make it easy to explain the environmental implications of weather events.
http://www.earthgauge.net/

Earth Gauge Kids
The Earth Gauge Kids website is designed for students in grades 5-8 and focuses on a different weather/environment theme each month. Students can find an interactive quiz, activity ideas, fun facts, and more.
http://www.earthgauge.net/kids/index

EARTH Lesson Plans
Education and Research: Testing Hypotheses (EARTH), provides teachers with means for integrating real-time data with existing educational standards and tested curriculum in an interactive and engaging way. EARTH uses near-real-time data from ocean observatories to design and test outreach with the Internet as an interface to scientists, teachers, students, and the public. The website offers lesson plans, links to data, standards rubrics, and more.
http://www.mbari.org/earth

Earth Learning Idea
The Earth Learning Idea website offers Earth science instruction ideas. Each activity is designed to maximize student participation, learning, and enjoyment while minimizing cost. Strategies promote interactive teaching and students' investigational and thinking skills. Activities are posted in English, Spanish, and more.
http://www.earthlearningidea.com/

Earth Matters: Studies for Our Global Future
The Population Connection is updating the secondary curriculum, Earth Matters: Studies for Our Global Future, and offers the second edition free for downloading on its website,

including all readings and activities. Units include Population Dynamics, Climate Change, Water Resources, and more.
http://www.populationeducation.org/index.php?option=com_content&view=article&id=443&Itemid=2

Earth Partnership for Schools
The Earth Partnership Program, from the University of Wisconsin-Madison Arboretum, focuses on ecological restoration as a way of establishing a positive relationship between people and the land. The program assists teachers in establishing restoration projects on school sites and providing the tools for building a curriculum that incorporates restoration into almost any subject area. Check out the resources under *Tools for Teachers*.
http://uwarboretum.org/eps/

Earth Portal
Earth Portal is a free resource for timely, objective, science-based information about the environment built by a global community of environmental experts: educators, physical, life, and social scientists, scholars, and professionals who have joined together to communicate to the world. The Earth Portal is being created and governed by individuals and organizations, with attribution and expert review for accuracy. Earth Portal includes *Encyclopedia of Earth, Earth News*, *Earth Forum*, and *Environment in Focus*. Check out the Hot Topics for Marine Ecology.
http://www.earthportal.org/

Earth Revealed
Annenberg Media presents *Earth Revealed*, a video instructional series for high school and college which explores earth's continuing evolution, scientific theories, and human impacts. Upcoming broadcasts include weathering and soils; running water; waves, beaches and coasts, and more.
http://www.learner.org/channel/series78.html

Earth Science Education Catalog
NASA's Earth Science Education Program offers a diverse array of programs and resources. The complete listing of earth science education programs, products and resources, along with NASA-wide resources for educators, is provided in this online catalog. The Elementary and Secondary, Higher Education, and Informal Education sections feature regional and national programs. Products and Resources identifies earth science products and resources for these three educational communities.
http://science.hq.nasa.gov/education/catalog/index.html

Earth Science Visualizations
Created by staff members at the department of earth science at the University of California, Santa Barbara, the Educational Multimedia Visualization Center website contains interactive animations and visualization tools that can be used in the classroom to demonstrate various geological processes. Contents include global tectonics, regional plate tectonics, Ice Age earth, and more.
http://emvc.geol.ucsb.edu/downloads.php

Earth Science Week
The American Geological Institute, in cooperation with NASA, USGS, National Park Service, and many others, supports Earth Science Week 2008, *No Child Left Inside*,

October 12-18, 2008. Earth Science Week 2008 encourages young people to learn about the geosciences by getting away from the television, off the computer, and out of doors. Local groups, educators, and interested individuals organize celebratory events.
http://www.earthsciweek.org/

Earth Science Week International Polar Year (IPY) Videoconference
Middle and high school students and teachers are invited to participate in *The Science of IPY*, an interactive one-hour videoconference hosted by local science centers on October 19, 2007. Scientists took participants on a virtual tour of Earth's polar regions and explored some of the key questions that scientists are trying to answer about how the poles are changing. Participants convened at select science centers in the eastern U.S., the United Kingdom, and France.
http://www.earthsciweek.org/newsletter/July2007.html

Earth Science Week Toolkit
Coordinated by the American Geological Institute, Earth Science Week, October 14-20, 2007, promotes an understanding and appreciation of the earth sciences. The institute offers *The Pulse of Earth Science* toolkit with a wide array of resources, including its calendar filled with activities and geoscientific dates, NASA's *Exploring Ice* CD-ROM, and more. The website includes links to downloadable lessons, career information, and Earth Science Week events and contests.
http://www.earthsciweek.org/materials/index.html

Earth and Sky Radio
Earth and Sky radio series offers short daily radio programs about science and nature, available on most National Public Radio (NPR) stations and the Armed Forces radio network. You can also listen to the logged broadcasts on the website. Recent segments focused on coral reefs and climate change.
http://www.earthsky.org/

Earth & Sky International Polar Year Resources
On this website, Earth & Sky editors have compiled radio programs, podcasts, and a photo gallery with content related to polar science to help celebrate the International Polar Year. They will continue to update this website with relevant interviews and sessions with polar scientists.
http://www.earthsky.org/article/international-polar-year

EarthCaching for Teachers
EarthCaching is a variation of geocaching with an educational dimension to the activity. When you visit an EarthCache, you learn something special about Earth science, the geology of the location, or how the Earth's resources and environment are managed there. EarthCaching has been developed by the Geological Society of America and partners in the geocaching community. The website includes a teachers guide, links to lesson plans, and more.
http://www.geosociety.org/Earthcache_Lessons/

Earthman Project
The Earthman Project comes from a nonprofit organization which uses music, the arts, and technology to inspire people to protect the environment. The Climate Crisis Jam online video is a musical message about global warming offered up in easy rap style.

Additional music includes the Earthman Blues and River of Grass. The website also links to lesson plans and additional information.
http://www.earthman.tv/2004/index.html

EarthPulse: A Visual Guide to Global Trends
The interactive website, *EarthPulse: A Visual Guide to Global Trends*, from National Geographic Maps, analyzes our connected world with maps, diagrams, and imagery.
http://www.nationalgeographic.com/earthpulse/index.html

earthOCEAN.tv
earthOCEAN.tv is an online channel about the marine environment. They produce educational videos from the field documenting environmental issues, scientific research, and conservation efforts around the globe. All videos programs are 10-20 minutes in duration and are freely distributed online in a number of formats through their website. There are also teacher's guides and fact sheets, including Disappearing Dolphins, Southern Right Whales of Argentina, and more.
http://www.earthocean.tv

Earthwatch Education Lessons
Earthwatch is a program that connects volunteers with opportunities to participate in field research. More than 50 lesson plans from educators who have participated in expeditions are available on the website. Lesson plan topic classifications include aquatic; terrestrial life and ecosystem; environmental issues; and community, culture, and history.
http://www.earthwatch.org/aboutus/education/edopp/lessonideas

Ebbinghaus
Ebbinghaus allows users the opportunity to create flash cards and then review them at their leisure. The program also allows you to export “boxes” of cards to devices such as an iPod.
http://www.christian-kienle.de/Ebbinghaus/

eBird
The Cornell Lab of Ornithology and the National Audubon Society offer eBird, which provides a simple way for you to keep track of the birds you see anywhere in North America. Users can retrieve information on personal bird observations, access the entire historical database to find out what other eBirders are reporting from across North America, and more. . Scientists can use the cumulative eBird database to know more about the distributions and movement patterns of birds across the continent.
http://www.ebird.org/content/

Eco-Discover Center - Florida
The Eco-Discovery Center is operated by NOAA's Florida Keys National Marine Sanctuary, the National Park Service and the U.S. Fish and Wildlife Service. Located on the Key West, Florida waterfront, the free-admission Eco-Discovery Center showcases the underwater and upland habitats that characterize the Keys. Through interactive and touch-screen exhibits, audio, and video, visitors can explore the Keys' hardwood hammock, mangrove, patch reef, seagrass, deep shelf and Dry Tortugas environments.
http://floridakeys.noaa.gov/eco-discovery.html

Eco-Friendly Holiday Tips
According to Use Less Stuff, Americans throw away 25% more trash during the Thanksgiving to New Year's holiday period than any other time of year. The extra waste amounts to 25 million tons of garbage. Check out this webpage for links to tips for trimming your holiday wasteline.
http://www.eeingeorgia.org/net/content/go.aspx?s=15483.0.68.4863

ECO Journeys Program through Creative Education
Creative Education provides hands-on experiences to teachers and students that focus on the interrelations between people and their natural environment. Their goal is to inspire exploration, conservation, and the integration of broadened perspectives into local communities and daily lives. ECO (**E**xplore the **C**ulture and **O**cean) Journeys are field programs where students snorkel coral reefs and mangroves, assist researchers with fish surveys and aquaculture projects, work with a local fisherman, and much more.
www.creativeed.org/ECOhome/fieldprograms.htm

ECOCEAN Whale Shark Photo-identification Library
The ECOCEAN Whale Shark Photo-identification Library is a visual database of whale shark encounters and of individually catalogued whale sharks. The library is maintained and used by marine biologists to collect and analyze whale shark encounter data to learn more about these fish. Submitters can assist with whale shark research through photos and sighting information. The website also includes background information about whale sharks, an interaction tutorial, and more.
http://www.whaleshark.org/index.jsp?langCode=en

EcoGarbage Board Game
ECOBASURA is a board game to help teach recycling, raw material recovery, profitable reduction of wastes, and the environmental renovation. Created in Colombia and endorsed by its Educational Ministry, it is adaptable to all languages and cultures. The website, along with pricing and ordering information, is available in English or Spanish.
http://www.ecobasura.com/

Ecology by Inquiry
NOAAA's Northwest Fisheries Science Center offers lessons designed to teach fundamental ecological principles using an inquiry-based approach to middle-school students. They cover a wide range of scientific skills and ecological concepts: quantitative versus qualitative observations, food webs, predators and prey, mapping, habitats and adaptations, watershed ecology, and much more.
http://www.nwfsc.noaa.gov/education/

Ecology Connections
Ecology Connections is a Canadian website dedicated to providing educators and public access to primary ecological research and education resources. The research and education connections are relevant to high school biology teachers, educators from non-formal education organizations, and public interested in learning more about the science of ecology. Information, professional development, curriculum, and links to career information are available.
http://www.ecologyconnections.ca/cgi-bin/index.php

Economic and Market Value of Coasts and Estuaries: What's At Stake?
The book, *The Economic and Market Value of America's Coasts and Estuaries: What's at Stake,* examines the economic value of our coasts and estuaries with an eye to understanding the economic benefits of protecting and restoring America's coasts and estuaries. Coasts and estuaries generate both economic value and economic impact. Updates to chapters, new chapters, and links to the types of data found in this book are available online at www.estuaries.org and www.coastalvalues.org.
http://www.estuaries.org/assets/documents/FINAL%20ECON%20WITH%20COVER%20PDF%205-20-2008.pdf

Economic Valuation of Coral Reefs in the Caribbean
The World Resources Institute offers reports on economic valuation of coral reefs in the Eastern Caribbean, along with downloadable valuation tools. The valuations focus on the economic contribution of coral reefs through tourism and recreation, fisheries, and shoreline protection services.
http://www.wri.org/project/valuation-caribbean-reefs

Economic Values of the World's Wetlands
This report highlights the high economic value of functioning wetlands. Seventy billion U.S dollars worth of goods and services from freshwater resources could be at risk annually if governments fail to manage their wetlands sustainably.
http://www.panda.org/downloads/freshwater/wetlandsbrochurefinal.pdf

Economics of Ecosystems & Biodiversity
The German Federal Ministry for the Environment and the European Commission, with support of several other partners, have initiated preparatory work for the global study, *The Economics of Ecosystems & Biodiversity*. Preliminary findings from the first phase are available in the form of an interim report, available for download from the European Commission website.
http://ec.europa.eu/environment/nature/biodiversity/economics/

EcoRigs
EcoRigs supports the redeployment of retired oil and gas platforms for use in sustainable fisheries and eco-technology applications such as the production of energy from wind, waves and currents and more. The website hosts videos of marine life on the platforms, pictures, and information.
http://www.ecorigs.org/

Ecosystem-Based Management Tools Network
The Ecosystem-Based Management (EBM) Tools Network is an alliance of EBM tool developers, practitioners, and training providers. The goals of the network include developing a knowledge base of coastal-marine EBM tools, increasing information about, access to, and honest evaluation of EBM tools, and others. Website visitors can search for tools, sign up for updates to the website, check out funding or training opportunities, and more.
http://www.ebmtools.org/

Ecosystem Services Report Series
Duke University's Nicholas Institute has launched a new series of reports examining critical issues in ecosystem services. The first two reports in the series focus on valuation, the first under the Wetland Reserve Program, the second focusing on

ecosystem service markets as a possible means to achieve biodiversity conservation goals on private lands.
http://www.nicholas.duke.edu/institute/products.html#

Ecosystems, Livelihoods and Disasters: An integrated approach to disaster risk management
This publication from the IUCN provides recommendations for making disaster risk reduction strategies more effective. In the direct aftermath of a disaster, saving lives and providing for safety and basic needs is clearly the domain of emergency professionals and humanitarian agencies. Existing environmental guidelines, laws, and policies are rarely applied in times of crisis. This downloadable document, under the Publications & Resources link, seeks to help address these problems.
http://www.iucn.org/themes/disaster/

EcoTipping Points Project
The EcoTipping Points website features environmental success stories collected from around the world by a team of scientists and journalists. The stories display a diversity of detail but have in common a community-based process switching environmental decline to a course of restoration and sustainability. Teachers interested in working with project staff to help incorporated the materials into their lessons should contact Gerry Marten through the website.
http://www.ecotippingpoints.org/

Ecoventures: Focus on the Gulf
EcoVentures: Focus on the Gulf is a multimedia CD designed to help middle school students learn about the Gulf of Mexico's aquatic environment and the issues associated with protecting and managing aquatic resources. Students enter the world of a fictional National Park to explore a variety of ecosystems and develop a management plan for the park. There are on-line activities, expert consultants, and a video encyclopedia.
http://eea.freac.fsu.edu .

EcoZone Green Schools Initiative
NOAA's National Ocean Service recently joined the EcoZone Green Schools Initiative, a public-private environmental outreach and education effort sponsored by EcoMedia and the CBS Corporation. The program's goal is to inspire students to do what they can to help the environment. The Green Schools Initiative will begin as pilot projects in Miami, San Francisco, and Chicago, with the purpose of performing "green" makeovers on area schools.
http://www.ecozonemedia.com/greenmyschool/

Eddies
Eddies: Reflections on Fisheries Conservation is a new quarterly magazine focused on the Fish and Wildlife Service fisheries program. The full-color magazine highlights the aquatic conservation work of the service's fisheries program and its partners. You can read it online or subscribe to email alerts.
http://www.fws.gov/eddies/

EDGES: Using GIS to Experience Sanctuaries
Channel Islands, Florida Keys, Gray's Reef, and Stellwagen Bank National Marine Sanctuaries have teamed up to utilize real scientific data in educational materials for

teachers and students to explore America's special ocean areas. **E**xploring **D**ata using **G**eographic Information Systems to **E**xperience **S**anctuaries (EDGES) lessons include underwater treasures, submerged lands, and monitoring from afar.
Contact Sanctuary.Education@noaa.gov .

Edheads Weather
Edheads helps students learn through educational games and activities designed to meet state and national standards. Through one of the on-line activities, students learn how to report and predict the weather. A teacher guide, lesson plans, and weather glossary are included.
http://edheads.org/activities/weather/index.htm

Edmonds Discovery Programs
This website contains information about marine life and local Puget Sound ecosystems, and provides downloadable curriculum. The site features a marine life guide and a Beach Etiquette Pledge.
http://www.ci.edmonds.wa.us/Discovery_Programs%20Website/index.html

EducaPoles
The EducaPoles website from the International Polar Foundation sets out to sensitize young people and the educational world to the importance of the Polar Regions and of climate change. The website offers news and background information along with teacher guides, student activities, animations, and much more. You can also sign up for a newsletter on science and climate change.
http://www.educapoles.org/

Educating Stakeholders about MPAs
MPA News, Vol. 8, No. 7 from February 2007 (MPA82.pdf) published *Educating Stakeholders about MPAs: Practitioners Use an Array of Methods*, offering a discussion of various methods to increase public awareness and community understanding of the benefits that can come from resource protection. The article examines how practitioners have employed a variety of approaches to inform and educate stakeholders.
http://depts.washington.edu/mpanews/issues.html

Educating Young People About Water
The Environmental Resources Center at the University of Wisconsin-Madison offers Educating Young People About Water, guides, and a water curricula database providing assistance for developing a community-based, youth water education program. The resource can help you find and select water education curricula; develop a program appropriate to your situation; train others to design community-based, youth water programs; and more. Search the website from over 150 water-related curricula.
http://www.uwex.edu/erc/eypaw/

Education And Research: Testing Hypotheses
The Education And Research: Testing Hypotheses (EARTH) teacher workshops provide teachers with means for integrating real-time data with existing educational standards and tested curriculum in an interactive way. EARTH uses near-real-time data from ocean observatories to design and test outreach with the Internet as an interface to scientists, teachers, students, and the public. Teachers can compare ocean observing data collected in different regions of the United States to study how regions can vary and change on a variety of scales. The website offers unit plans, each with an associated

group of activities; links to the activities via National Standards, Science Skills, or Ocean Literacy; an overview of each workshop, along with the activities generated by the
http://www.mbari.org/EARTH/

Education at AMNH
The American Museum of natural history has many free online resources useful to those studying marine and coastal environmental issues. Use the search feature to pull up resources using keywords such as ocean, coral, mangrove, and more.
http://education.amnh.org/

Education Center at ICRS
The 11th International Coral Reef Symposium (ICRS) in Fort Lauderdale will have an education center open to the public free of charge. Teachers, naturalists, scientists, and others can enjoy the four days filled with educational programs and demonstrations in the Coral Theater, informative booths hosted by facilities from across the globe, hands-on activities, and more.
http://www.nova.edu/ncri/11icrs/education.html

Education Discovery Classroom
Three new lesson plans have been added to NOAA's Education Discovery Classroom series: Ecological Forecasting/The Dead Zone; Marine Navigation/Do You Need a Map?; and Aerial Photography and Shoreline Mapping/Images of Katrina,. The National Ocean Service (NOS) Education Discovery Center is a collection of lesson plans developed in collaboration with NOS program offices. The 38 existing lesson plans cover 19 topical areas and emphasize hands-on activities using on-line data resources.
http://oceanservice.noaa.gov/education/classroom/welcome.html

Education & the Environment Initiative Units
New draft Education and the Environment Initiative (EEI) curriculum units are available on the California EPA website for review. The posted units are in draft form, have been reviewed by content experts for technical accuracy, and will be field tested by teachers in California. Units will be posted as soon as they are available and will remain on the website for 30 days.
http://www.calepa.ca.gov/Education/EEI/Curriculum/Default.htm#CurriculumUnits

Education in the National Estuarine Research Reserve System
The education section on National Estuarine Research Reserve System website has been updated. The changes include the addition of a new section for K-12 educators, links to an Estuaries Tutorial and curriculum, downloadable presentations for teachers, and much more. Be sure to check out the list of professional development programs offered around the country.
http://nerrs.noaa.gov/Education/welcome.html

Education Evaluation
The National Marine Sanctuary Program has launched a new website focused on the evaluation of environmental and marine education programs. The website includes information on how to create program evaluation plans, plan samples, tools and techniques for evaluation, an evaluation glossary, and more.
http://sanctuaries.noaa.gov/education/evaluation

Education for a Sustainable and Secure Future Recommendations Online
The final report of the Council for Science and the Environment for recommendations for educational reform for the U.S. can be read online. The recommendations address topics such as sustainability and security curricula for K-12 and undergraduates, community education, and planetary health.
http://www.NCSEonline.org/NCSEconference/2003conference/

Education through Cultural and Historical Organizations (ECHO)
The Education through Cultural and Historical Organizations (ECHO) Act is a federally funded educational and cultural enrichment initiative, serving children, teachers, and adult continuing learners in Alaska, Hawai`i, and Massachusetts. ECHO brings to culturally diverse audiences programs collaboratively produced by five regional cultural institutions: Alaska Native Heritage Center and Iñupiat Heritage Center in Alaska; Bishop Museum in Hawai`i; New Bedford Whaling Museum and New Bedford Oceanarium; and Peabody Essex Museum in Massachusetts.
Contact Bob Rocha at rrocha@whalingmuseum.org or (508) 997-0046 x149
www.echonsb.org and www.echospace.org

EducationAtlas.Com
This website provides links to many educational resources for K-12 teachers, students, higher education, homeschoolers, bilingual education, and more.
http://www.educationatlas.com/

Educational Resources from Busch Gardens and Sea World
SeaWorld, Busch Gardens, and Discovery Cove offer career resources; a Fun Zone with coloring books, song books and more; teacher resources with downloadable classroom activities, teacher guides; and much more. Take time to explore this website.
http://www.swbg-animals.org/index.asp

Educator Resources from the California Department of Fish & Game
The California Department of Fish and Game, Office of Natural Resource Education, has a variety of web-based resources for educators. These include a Project WILD Aquatic online workshop, the first offering from a marine curriculum, and a newsletter with educational materials, kid's activity, and regional and local events.
http://www.dfg.ca.gov/coned/index.html .

Educators' Bridge
The National Center for Atmospheric Research offers the Educators' Bridge website with links to lessons and guides for teaching about earth's climate, atmospheric science, and other earth science topics. The website refers to (and includes links to) The Kids Crossing Guide for Educators with activities for hands-on science exploration.
http://eo.ucar.edu/educators/

Educator's Guide to Nonpoint Source Water Pollution
The Kentucky Waterways Alliance provides a downloadable manual with hands-on lesson plans and activities relating to Kentucky's water and nonpoint source pollution. Students will gain an appreciation of the environmental sensitivity of water quality, explore the relationships of hydrologic components within a watershed, understand how human activities can affect the watershed, and learn responsible water resource management. Most of the activities are interdisciplinary.
www.kywater.net/KWA/splas01.doc

EDUCAUSE Live!
EDUCAUSE Live! is a series of free, hour-long interactive web seminars on information technology topics in higher education. In the Archives area, visitors can view previous programs; many include slides and other supplementary materials.
http://www.educause.edu/live

EE-Link Website Update
The North American Association of Environmental Education (NAAEE) and EE-Link websites have been updated, with dynamic content, better information organization, and integrated search capabilities to make it easier for you to find what you need. Visit EE-Link with thousands of links to environmental education resources for a preview, and NAAEE for information on new initiatives, association news, conference information, and more.
http://naaee.org

EE in Mexico
The Senderos e-bulletin from the Border-Wide EE Coalition features stories and news from the border region's environmental educators, and information about programs and events taking place in all of the ten US-Mexico Border States. Check out the on-line version in English or Spanish.
http://www.eecc.net/ecostarteng.htm

EETAP Resource Library
The EETAP Resource Library, now moved to EE-Link, makes environmental education resources more accessible. A major component of the Library is Info-Sheets, 1-2 page descriptions that summarize a specific EE topic and identify resources for additional reading.
http://eelink.net/eetapresourcelibrary.html .

Effective Practices Collection
The Corporation for National and Community Service offers the Effective Practices Collection, with over 650 good ideas, replicable strategies, and evidence-based studies to help service programs solve problems they may face. You can search the database by topic area, and submit your own effective program.
http://nationalserviceresources.org/epicenter/submit/index.php

eField Trips for Fall
Take your class on a field trip to Biscayne National Park to participate in an underwater adventure, to the freshwater wetlands of Watsonville, to the volcanoes of Hawai'i, or for a visit with Florida manatees. All trips have four major components: a virtual visit, an interactive multi-media web experience that your students can complete at their own pace anytime; a Trip Journal, a short worksheet that students complete as they complete the Virtual Visit, Ask the Experts, and specific times for a Live Web Chat.
www.eFieldTrips.org .

eField Trips – Glacier Bay
Check out the eField trips available, both upcoming and archived. In general, each program has four major components: a virtual visit, a trip journal worksheet, Ask the Experts, and a live webchat. Archives of the questions are posted on the website. Don't

miss *Glacier Bay: A Living Laboratory for Studying Marine Mammals*, hosted by Glacier Bay National Park and Preserve.
http://www.efieldtrips.org/Schedules/searchResults.cfm?searchType=all

E-Field Trips on Invasive Species, Alaskan Coast Invertebrates, and Shorebirds
During April 2004, the National Wildlife Refuge System is offering the eFieldTrip titled, *Invasive Species: America's Least Wanted!,* geared toward 4-6th grade students. Students will have the opportunity to learn about invasive species and why they are a menace. The eFieldTrip has four interactive components allowing students to complete the program at their own pace. There is no cost for schools or students to participate.
http://www.efieldtrips.org/Schedules/schedule_0404.cfm .

eField Trips – Manatees and Sea Turtles
Check out the eField trips available, both upcoming and archived. In general, each program has four major components: a virtual visit, a trip journal worksheet, Ask the Experts, and a live webchat. Archives of the questions are posted on the website. Don't miss the highlighted field trips on Manatees and Sea Turtles.
http://www.efieldtrips.org/

Electronic Navigational Charts Direct to GIS Web Portal
The NOAA ENC Direct to GIS web portal provides comprehensive access to display, query, and download all available large-scale NOAA ENC (electronic navigational charts) data in a variety of GIS/CAD formats for non-navigational purposes using Internet mapping service technology. Nautical charts include coastal topography, bathymetry, landmarks, geographic place names, and marine boundaries.
http://nauticalcharts.noaa.gov/csdl/ctp/encdirect_new.htm

Electronic Naturalist
The Electronic Naturalist is an on-line education program providing a weekly environmental education unit. Each unit has artwork, text, activities, additional web sites, plus online access to a professional naturalist. Two reading levels are available for grades K-3 (Quick Read) and 4-8 (Full Read). The units cover insects, fish, amphibians, reptiles, birds, mammals, plants, and environmental issues.
http://www.enaturalist.org/index.htm .

Elephant Seals Homecoming Days
Learn about the female elephant seals' 21,000-mile annual journeys during Elephant Seal Homecoming Days, sponsored by TOPP (Tagging of Pacific Predators), California State Parks, and California State Parks Foundation. The TOPP website features background information about research on the elephant seals at Año Nuevo State Reserve, lesson plans for teachers, links to pertinent parts of the Año Nuevo State Reserve site, and videos.
http://www.topp.org/elephant_seal_homecoming_days

Elliott Wildlife Values Project
The Elliott Wildlife Values Project and its Linking Girls to the Land program at Girl Scouts of the USA develop girls as leaders of environmental stewardship and conservation efforts who positively impact their communities and the world. They offer the 2007 National Conservation Events Calendar listing over 40 events, web sites, and a conservation history. Girl Scouts can earn the Get with the Land Patch by volunteering in national conservation events in collaboration with natural resource agencies.

http://www.girlscouts.org/program/program_opportunities/environment/elliott_wildlife.asp
http://www.girlscouts.org/program/program_opportunities/environment/2007_conservation_events_calendar.pdf

eNature.com
eNature.com, from the Shearwater Marketing Group, offers information about the wild animals and plants of the United States. The site's core content of wildlife information about almost 6,000 individual species is the same data set used to create the printed Audubon Field Guides. The website offers the ability to keep personal wildlife lists, sign up for newsletters, download mating call ringtones, track migration, and search wildlife guides.
http://wild.enature.com/ringtones/

Encyclopedia of Earth Collections
The Encyclopedia of Earth (EoE) brings together some of the world's leading scientists and organizations and presents the essential knowledge underlying a variety of issues. The EoE, one component of the Earth Portal, is a free, expert-driven, scaleable, online information resource about the environment published online by the National Council for Science and the Environment. Collections include climate change, coral reefs, ecology, environmental and social issues in economics, natural world heritage sites, and more.
http://www.eoearth.org/article/Collections

Encyclopedia of Flora and Fauna of the Northwestern Hawaiian Islands
The Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve has an online encyclopedia to showcase the flora and fauna that inhabit the region. The encyclopedia features over 130 plants and animals, complete with imagery and some video. For each organism, a short description is given along with information on status, distribution, habitat, quick facts, and more.
http://noaa.stage.webthink.com/onms/Park/Parks/?pID=12

Encyclopedia of Life
The Encyclopedia of Life is a global effort to document all 1.8 million named species of animals, plants, and other forms of life on Earth. The encyclopedia will be a multimedia Wikipedia-style website offering downloadable information on each species. Scanning and digitization of the biodiversity literature is now underway in London, Boston, and Washington DC. The first 30,000 pages of a massive online Encyclopedia of Life (EOL) are available. The EOL is being developed by a unique collaboration between scientists and the general public. By making it easy to compare and contrast information about life on Earth, the resulting compendium has the potential to provide new insights into many of life's secrets.
http://www.eol.org/

Encyclopedia of the Sanctuaries - On-Line Marine Life Field Guide
NOAA's National Marine Sanctuary Program offers an online resource that highlights the diverse marine life of America's ocean and Great Lakes treasures. The Encyclopedia of the Sanctuaries is available online, providing photos, streaming video and biological information for over 100 marine species from each of the national marine sanctuaries in the United States. The Encyclopedia of the Sanctuaries allows visitors to search for their favorite species, as well as view streaming video of marine life
http://sanctuaries.noaa.gov/education
http://marinelife.noaa.gov/

Encyclopedia Smithsonian: Science and Technology
The Encyclopedia Smithsonian covers science and technology through materials drawn from different parts of the Smithsonian Institution. Topics include Biodiversity, Ecology, Fishes, and much, much more. Current highlights include Looking at Earth, Arctic: A Friend Acting Strangely, Bird of the Month, and more. Other links bring you to Encyclopedia: History and Culture and Encyclopedia: Art and Design. It's easy to spend hours clicking through interesting and informative web pages through this site.
http://www.si.edu/Encyclopedia_SI/Science_and_Technology/default.htm

End of Year Ideas from the Bridge
As the school year draws to a close, now is a perfect time to incorporate the oceans into those end-of-year projects. Find science fair-style project ideas in the Bridge's Guiding Students section, or take your students on a virtual ocean expedition to a hydrothermal vent system. Information on local aquaria and research institutions is also available to schedule that last minute field trip. Have your students research a marine habitat and relate it to the biology, chemistry, physics, or geology concepts they learned this year.
http://www.marine-ed.org/bridge

End of Year Ideas from the Bridge
As we end another school year, now is a perfect time to incorporate the oceans into those last minute class projects. Find science fair-style project ideas in the Bridge's Guiding Students section, walk your students through one of our Data Analysis Teaching Activities, or take them on a virtual ocean expedition to the Antarctic. Information on local aquaria and research institutions is also available to schedule that end-of-year field trip.
http://www.marine-ed.org/bridge

Endangered Caribbean Sea Turtles: An Educator's Handbook
This comprehensive handbook offers nearly 40 classroom activities that use sea turtles to teach concepts related to natural science, geography, social studies, team building, statistical analysis, public speaking, and more. By exploring sea turtle diving and feeding, navigation and migration, nesting and hatching, as well as the various factors that threaten sea turtle survival, including pollution, international trade, fisheries, and habitat loss, students gain a greater understanding of contemporary marine science and conservation issues. The Spanish edition will be available in 2008
Contact Karen Eckert at keckert@widecast.org

Endangered Species Day
May 15, 2009 is Endangered Species Day. Events will be held across the country to raise awareness about the threats to endangered species, including global warming, and success stories in species recovery. Register your event, download educational materials, and more from the website.
http://www.stopextinction.org/cgi-bin/giga.cgi?cmd=cause_dir_custom&cause_id=1704&page=day

Endangered Species Day
May 11, 2006, May 18, 2007, is Endangered Species Day. Take this opportunity to educate your students about the importance of protecting endangered species and highlight the everyday actions that individuals and groups can take to help protect our

nation's wildlife, fish and plants. The website includes links to websites with background information and lesson plans.
http://www.stopextinction.org/
http://www.stopextinction.org/endangeredspeciesday

Endangered Species Day
National Endangered Species Day, May 16, 2008 provides an opportunity for parks, wildlife refuges, zoos, aquariums, conservation organizations, and others to educate the public about the importance of protecting endangered species. This special day is also an opportunity to highlight the everyday actions that individuals and groups can take to help protect our nation's wildlife, fish, and plants. Check out events in your area, download educational materials, and more.
https://www.givengain.com/cgi-bin/giga.cgi?cmd=cause_dir_custom&cause_id=1704&page=day

Endangered Species Research
Inter-Research produces web-hosted publications, with on-line abstracts and many on-line full text articles. The latest journal is *Endangered Species Research*. Others include *Marine Ecology Progress Series, Climate Research, Ethics in Science and Environmental Politics,* and more.
http://www.int-res.com/home/

Enduring Resources for Earth Sciences Education
Enduring Resources for Earth Sciences Education is a database of materials for teaching earth science concepts. Created by teachers and earth scientists, the database includes maps, documents, and other resources for teaching about earthquakes, oceans, plate tectonics, hyrdrothermal systems, geological time, and more.
http://earthref.org/ERESE/

Energy for Keeps – Electricity From Renewable Energy
Energy for Keeps is a comprehensive renewable energy publication for middle and high school education that covers the history, availability, impacts, technologies, and management of the resources that are used to generate electricity. Activities have been correlated to National Science Standards. It is available as a free download from the producers, Educators for the Environment.
http://www.energyforkeeps.org/ .

Energy Lesson Plans and Activities
The Department of Energy offers this K-12 Energy Lesson Plans and Activities website, with 350 lessons on energy efficiency and renewable energy. Organized by grade level and topic, the website allows students and teachers to study biomass, ocean energy, energy efficiency and conservation, and much more
http://www.eere.energy.gov/education/lessonplans/

Energy and Material Cycles Visualizations
Energy and Material Cycles Visualizations, from the Science Education Resource Center at Carleton College, provides animations, images, graphs, and photos on the carbon cycle, greenhouse gases, sea ice, continental drift, and more.
http://serc.carleton.edu/NAGTWorkshops/visualization/collections/Cycles.html

Enforcing U.S. Marine Protected Areas: Synthesis Report
The MPA Center has published *Enforcing U.S. Marine Protected Areas: Synthesis Report*. MPA.gov also hosts a link to the report and a presentation highlighting aspects of the report. The report provides a synthesis of existing information relevant to the enforcement of marine protected areas in the United States, as well as new insights into the current challenges, needs, and suggestions of coastal and marine resource managers, enforcement agencies, education/outreach specialists, and others.
http://www3.mpa.gov/mpa_lib/publications.aspx

Engaging the Public through Communication and Social Science
The Biodiversity Project brings us *Breakthrough Strategies for Engaging the Public: Emerging Trends in Communications and Social Science*. This working draft white paper provides an introduction to some emerging trends in the fields of communications and social science that could benefit public education, engagement, and awareness campaign planners. Drawing from a variety of resources, this paper attempts to address the challenges faced when communicating about biodiversity and our environment.
http://www.biodiversityproject.org/publications.htm

Engineering Disasters: New Orleans
Hurricane Katrina devastated New Orleans, submerging it under a torrent of floodwater. *Engineering Disasters: New Orleans* is a one-hour documentary investigating why the levees and water-pumping system failed in the wake of the hurricane. Follow Geological Detectives as uncover how 80% of the city was left underwater; expose how the levee system was a disaster in the making; and delve deep into the 100-year-old pump system to unearth why it failed and took weeks to drain the city.
http://www.historychannel.com/modernmarvels/?page=home

ENO-Environment Online
ENO-Environment Online is a free, international Internet-based school for teachers and students interested in environmental issues and global education, administrated by the city of Joensuu, Finland. Themes include: local community issues; climate change; ecological footprint; and traditional food. Approximately 250 new English-speaking schools will be selected to become members for the school year 2006 -2007.
http://eno.joensuu.fi/apply/

Environment and Global Climate Change
The University of the Arctic offers an "Introduction to the Circumpolar World" module for students grades 9-12 addressing climate change and potential environmental changes in the Arctic.
http://www.uarctic.org/bcs/BCS100/bcs100_m6.pdf

Environmental Dilemmas in Georgia
This downloadable resource book is intended to serve as a tool for educators who are interested in incorporating problem-solving strategies and contextual teaching/learning into their curriculum. Each contribution provides the background on a specific environmental dilemma found in Georgia and poses a problem for inquiry. Solutions are offered, but the readers should provide more possibilities, and come to a group consensus as to the most viable solution using an evaluation matrix. Covered issues include water, fish, invasive species, urbanization, and much more.
http://www.eeingeorgia.org/net/content/page.aspx?s=49027.0.68.4863

Environmental Education Articles from EETAP
Environmental Education and Training Partnership (EETAP) offers four new articles on key initiatives in environmental education:

- Leading the Way to Environmental Literacy and Quality: National Guidelines for Environmental Education
- EE Certification: Making Best Practice Standard Practice
- Distance Education: A User Friendly Learning Option
- The Roots of Environmental Education: How the Past Supports the Future

http://naaee.org/pages/publications/eetap_newpubs

Environmental Education Capacity Building Publications Survey
The National Environmental Education Advancement Project (NEEAP), funded through Environmental Education and Training Partnership (EETAP), has an online survey that seeks to document the value and use of various EE publications by those involved in EE capacity building efforts at the national, state and local levels. Your time and advice is greatly appreciated.
http://www.uwsp.edu/cnr/neeap/publications/pubsurvey.htm .

Environmental Education Clip Art and Photographs from the EPA
Photos can be worth a thousand words. The Environmental Protection Agency provides links to easily downloadable, environmentally-themed photos and clip art.
http://www.epa.gov/epaoswer/education/photos.htm

Environmental Education Curricula Library
Check out National Environmental Education Week's library of curricular resources. Topics include Amphibians and Reptiles, Birds, Climate Change, and much more. Other resources include green reading, newsletters, funding resources, and more.
http://www.eeweek.org/resources/curricula_library.htm

Environmental Education in Georgia Website
The EEinGEORGIA.org website provides: EE lesson plans based on Georgia's Quality Core Curriculum standards, a searchable directory of Georgia's EE providers and the resources they offer, a statewide calendar of EE events, EE news, and easy-to-access facts about Georgia's environment. It also hosts an interactive GIS map of EE providers in the state.
http://eeingeorgia.org/net/go/default.aspx?siteid=4863

Environmental Education for Kids
The Wisconsin Department of Natural Resources offers the EEK! website for kids and teachers, grades 4-8. A quick review shows that Nature Notes includes information about habitats and phenology; Our Earth covers water wonders, invasive and endangered species; Career Zones introduces park naturalists and hydrogeologists; and the Teacher Pages have activities and educational resources. The website is formatted for the younger student and includes plenty of useful information.
http://www.dnr.state.wi.us/org/caer/ce/eek/index.htm

Environmental Education in New Zealand Schools
A four-volume report highlighting research on environmental education practice provides lessons for school-based development of New Zealand curriculum for programs in special focus areas, and is meant to serve as a resource for schools who want to

develop their own environmental education programs. The report, Environmental Education in New Zealand Schools: Research into Current Practice and Future Possibilities, is from the New Zealand Council for Educational Research and Waikato University.
www.minedu.govt.nz/goto/eereports .

Environmental Education Program, Lee County
Lee County, Florida, stretches from the shell-strewn beaches of Sanibel Island to the deep green of Six Mile Cypress Slough. The long history of the Environmental Education Program includes national recognition and awards from the National Science Teachers Association as one of the ten best Environmental Education programs in the US. Components of the program include the Aquatic Systems/ Mosquito Control program, Estuary Animals and Mudflats field trip, and Six Mile Cypress Slough wet field trip.
www.lee.k12.fl.us/dept/ee/ .

Environmental Education Resources
The National Conservation Training Center's Division of Education Outreach of the U.S. Fish and Wildlife Service (FWS) offers this document online. It provides listings and links to general environmental education resources, education standards and terms, newswires and FWS listservs, lists of FWS environmental educators and resources, and much more.
http://library.fws.gov/resources.html

Environmental Education Works
The EE-works is a service of the National Environmental Education and Training Foundation (NEETF). The website hosts data, studies, and case examples of how environmental education has a measurable impact on environmental protection and improved student learning include better results on standard tests.
http://www.theeeworks.org/ .

Environmental Ethics Curriculum
Environmental Ethics: Examining Your Connection to the Environment and Your Community is a new curriculum geared towards middle and high school. It includes teacher and student guides aligned to national education standards and is organized by major topics: environmental ethics, air, water, forests, wildlife and minerals. The curriculum guides are free to download. A companion video series is available for a nominal cost.
http://www.envethics.org/

Environmental Film Festival - California
The 2006 Wild and Scenic Environmental Film Festival, *Lights! Cameras! Environmental Action!,* January 13-16, 2006 in Nevada City, California, will feature an array of award-winning films and discussions about restoration projects, climate change, and ocean protection issues.
http://www.wildandscenicfilmfestival.org/

Environmental Film Festival - Washington DC
The 13th annual Environmental Film Festival in the nation's capital, March 10-20, 2005, in Washington, DC, will screen 90 documentary, feature, animated, archival, and children's films. Screenings are enhanced by discussion with scientists and filmmakers,

and many are free. The complete film schedule will be posted on the website later this month.
http://www.dcenvironmentalfilmfest.org/index.html

Environmental Health Resources
National Environmental Education Week is continuing to expand their online curricula library and has just added links to lessons on environmental health. Materials range from water and air quality through the spread of infectious diseases to societal issues and much more. While on the website, check out the expanded listing of lessons and other materials in the library, including lessons on climate change and energy, green reading, newsletters, and more.
http://www.eeweek.org/resources/environmental_health_curricula.htm

Environmental History Modules for Teachers
The Environmental Literacy Council, with the support of the National Endowment for the Humanities, has produced a set of professional development modules in environmental history for high school teachers. Their goal is to provide teachers with resources linking fundamental historical concepts to important environmental issues. Modules include War and the Environment; Urbanization; Ordinary Landscapes; and more.
http://www.enviroliteracy.org/subcategory.php/314.html

Environmental History Resources
Professor Jan Oosthoek at the University of Edinburgh maintains this website to provide a range of resources and information on environmental history for the general public and scholars. Resources include bibliographies, essays, annotated guides to other web resources, a news feed, and more.
http://www.eh-resources.org/index.html

Environmental Impacts of Hurricane Katrina
NOAA offers this website with links to some of the projects they are currently working on throughout the region as they assess the marine environmental impacts of Katrina. Projects include assessments of the marine mammal and turtle health, harmful algal blooms monitoring, socioeconomic impact assessment, and more. There is also an interactive GIS mapping link.
http://www.st.nmfs.noaa.gov/hurricane_katrina/

Environmental Inquiry from Cornell University
Environmental Inquiry is a website and curriculum series developed at Cornell University to help students conduct environmental science research and participate in communities of fellow student scientists. Students learn specific research protocols and then conduct interactive research projects. The four-part Cornell Scientific Inquiry Series includes Watershed Dynamics, Assessing Toxic Risk, Invasion Ecology, and Decay and Renewal.
http://www.dnr.cornell.edu/ext/Ext/NATURAL%20RESOURCES%20PUBLICATIONS.pdf
http://ei.cornell.edu/ .

Environmental Literacy Council
The Environmental Literacy Council has assembled top scientists, scholars, economists, and educators to provide direct support to local teachers. Expert advisors provide practical teaching resources in a wide variety of projects, available both in print and online. The website offers the following sections with background information and

educational materials: air and climate, land, water, ecosystems, energy, food, environment and society.
http://www.enviroliteracy.org/index.php

Environmental Pathways – Youth Investigating Pollution Issues in Illinois
The Illinois EPA offers *Environmental Pathways – Youth Investigating Pollution Issues in Illinois*, a downloadable teacher's guide for grades 5-6. The guide meets the criteria of NAAEE's Environmental Education Materials: Guidelines for Excellence and is correlated with the Illinois Leaning Standards. The packet is designed to develop critical thinking skills, encourage students to think constructively about environmental issues, and to make informed decisions about our natural resources.
http://www.epa.state.il.us/kids/teachers/environmental-pathways/index.html

Environmental Performance Index
The *Pilot 2006 Environmental Performance Index* provides benchmarks for current national pollution control and natural resource management results. The issue-by-issue and aggregate rankings facilitate cross-country comparisons both globally and within relevant peer groups. It establishes specific targets for environmental performance and measures how close each country comes to these established goals.
http://www.yale.edu/epi/

Environmental Research and Education Needs
The National Council for Science and the Environment has released a new report, Environmental Research and Education Needs: An Agenda for a New Administration. It identifies research needed to improve scientific knowledge, and education needed to improve public understanding, professional capacity, and a strong workforce.
http://ncseonline.org/NCSEconference/

Environmental Science Interactive
Environmental Science Interactive is a set of 14 online laboratories used to complement a traditional lecture course, turning it into a lecture plus lab course. Topics include water resources, atmosphere and climate, policy and decision-making, and much more. For a limited time, they offer free access for instructors.
http://www.webschoolofscience.com/EnvScience.php

Environmental Science Labs and Activities
The Environmental Literacy Council offers labs which have been developed by an experienced team of environmental science educators and subjected to peer review. The content of the collection is varied, and each contains an inquiry-based component. They include a Tragedy of the Commons simulation, air quality monitoring, primary productivity, a coastal resources debate, and more.
http://www.enviroliteracy.org/subcategory.php/243.html

Environmental Science Teacher Exchange
The Environmental Literacy Council's website teacher exchange allows educators to share labs, activities, and ideas with colleagues online. The topics are drawn from the College Board's suggested labs and field investigations for the AP environmental science course. There are lesson plans, classroom curricula, and an AP Environmental Science course outline. Find the marine-oriented offerings under *Teaching Resources*.
http://www.enviroliteracy.org/category.php/17.html

Environmental Science: Understanding Our Changing Earth Curriculum – Request for Pilot Teachers
The American Geological Institute seeks up to 12 experienced science teachers in grades 9 through 12 to pilot test their comprehensive *Environmental Science: Understanding Our Changing Earth* curriculum in the fall semester of the 2004-2005 school year. The draft outline of curriculum and chapter headings are on the website and include watersheds and coastal processes.
http://www.agiweb.org/education/hses/pilottest/index.html .

EPA Kids
The EPA sponsors the Environmental Kids Club to get young children interested in learning more about the environment and to encourage their involvement in environmental projects. The website offers links to many categories, including Air, Water, You & Your Environments, a Game Room, Art Room, and more.
http://www.epa.gov/kids/

EPA Office of Solid Waste Educational Resources
This site provides materials to help develop an increased knowledge of solid waste issues and inspire participation in environmental activities. The site includes activities and project ideas to learn more about waste reduction, reuse, and recycling. Information sources, tools, and data enable student researchers to collect environmental information for use in projects and reports. Curriculum, activities, games, student award and grant information, and career information are also provided.
http://www.epa.gov/epaoswer/education/index.htm

EPA Public Involvement Tools and Techniques Website
The US Environmental Protection Agency's public involvement web pages have been expanded to include new materials and links to useful information about tools and techniques in use all over the world. The site also includes a new feedback section with ready-to-use surveys. In addition, the Public Involvement Resources and Training database, previously on EPA's Intranet, is now publicly available for use.
http://www.epa.gov/publicinvolvement

EPA Water Quality Booklet
The kids' water quality booklet, *What's Up with our Nation's Waters?* (EPA 841-F-02-002), is ready for distribution. Order individual copies from NSCEP at 1-800-490-9198 or request larger quantities by email at ncepiwo@one.net. The website highlights earlier versions.
http://www.epa.gov/owow/monitoring/nationswaters/

EPA Water Webpage for Kids
A new Kids Page has debuted on the Environmental Protection Agency's Office of Water website. The site contains games, activities, and animated classroom experiments, following along with a new character called "Thirstin". Teachers and students can work on-line or download some of the information for classroom use. Check out the interactive water cycle, and the *Aquifer in a Cup* activity.
http://www.epa.gov/safewater/kids/index.html

Erase the Waste Action Kit
From the California State Water Resources Control Boards' comes the Erase the Waste campaign, providing a number of resources and information on simple every day actions steps to stop pollution at the source. It includes tips on creating a trash-free cleanup event, adopting your local park or neighborhood as a trash-free zone. Also included are materials about pollution prevention, sample media materials, and a directory of additional resources. Available in English, Spanish, Chinese, Korean, and Vietnamese. http://www.erasethewaste.com/ .

ESRI Map Book Offer
ESRI, a GIS software company, offers copies of the ESRI Map Book Volumes 16 and 17 for the cost of shipping only, $3.00 per book. Volume 16, *Geography—Creating Communities*, reproduces color digital maps produced in 2000, including images of seafloor topography and geologic analysis of Mars and Venus. Volume 17, *Geography and GIS--Sustaining Our World* features stories from more than 20 disciplines. bmanion@esri.com

Essential Science for Teachers from the Annenberg/CPB Channel
Life Science, premiering March 3rd on the Annenberg/CPB Channel, is the first in a three-part course series *Essential Science for Teachers*. These courses help K-6 teachers understand science concepts needed to teach a standards-based curricula. Real-world examples, demonstrations, animations, still graphics, and interviews with scientists enrich content segments. Upcoming modules includes *Variation, Adaptation, and Natural Selection*; *Material Cycles in Ecosystems*; and others. http://www.learner.org/redirect/february/lifescience1.html .

Essentials of Geology
Designed to complement a geology textbook, this website includes animations, interactive crossword puzzles, and news articles; many of the materials can be used as stand-alone exercises. The animations cover the Earth's magnetic field, the spread of the sea floor, the formation of ocean crust, and more.
http://www.wwnorton.com/college/geo/egeo/welcome.htm

Establishing Marine Protected Area Networks
The IUCN World Commission on Protected Areas (WCPA-Marine) has released a new guidebook summarizing key points in building MPA networks. The 16-page guide, *Establishing Marine Protected Area Networks: Making It Happen*, offers a concise synopsis of factors necessary for effective network design, including ecological criteria, best practices for planning, and other considerations. It is intended to show briefly how to transform policy aspirations into practical action, and is not meant to be exhaustive. A full technical report to flesh out the summary report's framework is expected to be released later in 2007.
http://www.iucn.org/themes/wcpa/biome/marine/mpanetworks/networks.html

Establishing Resilient Marine Protected Area Networks
Establishing Resilient Marine Protected Area Networks - Making It Happen is a new document that provides guidance for designing and implementing effective MPA networks. The guide contains information for MPA planners, managers, and conservation practitioners about the role of MPA networks in achieving marine conservation goals.
http://blog.protectplanetocean.org/2008/10/new-global-best-guidance-released-on.html

Estuaries 101 Curriculum
NOAA's National Estuarine Research Reserve System offers Estuaries 101, an on-line science curriculum designed for grades 9-12 classrooms. Students learn fundamental concepts in science, develop scientific thinking skills, and explore the nation's biologically rich and economically important estuaries. From flying over an estuary with Google Maps to tracking the path and impact of a hurricane, Estuaries 101 modules feature hands-on learning, experiments, field-based activities, and data explorations.
http://www.estuaries.gov/estuaries101/Teachers/Home.aspx

Estuaries and Coasts, Hurricane Edition
Estuaries and Coasts, the Journal of the Estuarine Research Federation, volume 29(6A) is dedicated to papers about the individual and cumulative effects of hurricanes on coastal ecosystems. The special issue is open access. In addition, many other full text articles from other issues are available on the website for free.
http://estuariesandcoasts.org

Estuaries Discovery Kit
NOAA's National Ocean Service Communications and Education Division offers the Estuaries Discovery Kit. The kit explores how estuaries are classified, the various ecosystem services estuaries perform, how organisms have adapted to estuarine environments, human impacts, and the work that the National Estuarine Research Reserve System and its partners conduct to monitor, preserve, and restore estuarine ecosystems throughout the United States.
http://oceanservice.noaa.gov/education/kits/estuaries

Estuaries.Gov
The revamped Estuaries.Gov site is a hub for exploration and discovery of our nation's estuaries. In addition to the Estuaries 101 Curriculum and links to other educational materials, students and educators can access videos; animated interpretations and other easy-to-use visualizations; fact sheets on threatened estuarine species, including a picture of the species, a range map, quick facts, conservation notes, and life history information; scientific and educational reports; and estuarine news.
http://www.estuaries.gov/

Estuarine Geospatial Data
NOAA offers downloadable data sets to help your students study estuaries around the U.S. Check out Estuarine Bathymetry and the Coastal Geospatial Data Project, offering bathymetric data sets, shorelines, salinity, shellfish growing areas, and more.
http://estuarinebathymetry.noaa.gov/
http://coastalgeospatial.noaa.gov/

Estuary Condition Reports
The National Estuary Program Coastal Condition Report presents the condition of 28 estuaries covered by National Estuary Program (NEP) based upon data collected as part of EPA´s National Coastal Assessment program and data collected by individual NEPs or by NEPs in partnership with interested stakeholders, including state environmental agencies, universities, or volunteer groups. The National Coastal Condition Report series describe the condition of 100% of all estuaries in the contiguous 48 states.
http://www.epa.gov/owow/oceans/nepccr/index.html

EstuaryLive! 2009
EstuaryLive! will take place May 1 and May 15, 2009 with an annual, free, live, interactive, field trip through our nation's estuaries. This year's program will feature six 30-minute segments broadcasting live from three of NOAA's National Estuarine Research Reserves. The broadcasts will include a discussion of the impacts of global climate change on our coastal ecosystems. For those who can't watch the live broadcasts, check out the archives. Share your projects on the estuary wiki, and check out the extensive archives and video collection. Make sure to check your technology connections beforehand, to make sure you can join the full broadcast.
http://estuarylive.pbworks.com/
http://www.estuaries.gov/

EstuaryLive 2006
Preparations have begun for the September 29, 2006 EstuaryLive Internet broadcast, and educators are invited to sign up for this year's event. EstuaryLive is hosted by the National Estuarine Research Reserve (NERR) System in collaboration with the National Estuary Programs. This year four field trips will be offered:

- New York - New Jersey Harbor Estuary Program, New Jersey
- Padilla Bay NERR, Washington State
- Peconic National Estuary Program, Long Island, New York
- South Slough NERR and Tillamook Bay National Estuary Program, Oregon

www.estuaries.gov

Estuary Live: 2004
National Estuaries Day is a Coast Week celebration to promote the importance of estuaries and the need to protect them. This year's program will include field trips to seven estuaries: Puget Sound, Slough Slough, Weeks Bay, Rachel Carson Reserve, Great Bay, Peconic Estuary, and Waquoit Bay. Visit the website for the education topics and standards; additional information and teaching materials will be posted soon.
www.estuaries.gov .

Estuary Live! 2003
National Estuaries Day, an interagency campaign to promote the value of estuaries and the need to protect them, was celebrated September 27, 2003. The feature event for National Estuaries Day is *EstuaryLive*, an interactive Internet journey through estuaries for students of all ages. Naturalists and students tour different estuaries, and web participants interact with the tour guides by emailing questions during the field trips.
www.estuaries.gov and http://www.estuarylive.org/

Estuary Live - Celebrate National Estuaries Day 2004
Take your students on a tour of estuaries of the United States by participating in the EstuaryLive interactive webcast. National Estuaries Day, September 25, 2004, is an annual celebration of the magical places where fresh water from rivers mix with salt water from the ocean. EstuaryLive kicked off the celebration on September 23 and 24 by bringing free, live, interactive, Internet field trips in seven different estuaries around the country right to your classroom.
www.estuaries.gov

Estuary Live! 2005
Take a live, interactive virtual field trip to the Rachel Carson Site of the North Carolina National Estuarine Research Reserve with a trained naturalist as your guide via a live Internet connection. Visit four uninhabited islands and salt marshes located off Beaufort, North Carolina, May 3-5, 2005. The broadcast will feature topics including blue crabs, oysters, water quality, coastal geology, weather, decoy carving, and sand sculpture. Lesson plans and images are available on-line.
http://www.estuarylive.org/

EstuaryLive 2005
Celebrate National Estuaries Day by taking a free, interactive field trip over the Internet on September 22 and 23, 2005. Naturalists from the National Estuarine Research Reserve System and the National Estuary Programs will take participants on guided tours through:

- Tillamook Bay National Estuary Program, Oregon
- New York-New Jersey Harbor Estuary Program, New Jersey
- Grand Bay National Estuarine Research Reserve and Mobile Bay National Estuary Program, Alabama
- Jacques Cousteau National Estuarine Research Reserve and Barnegat Bay National Estuary Program, New Jersey
- San Francisco Bay National Estuarine Research Reserve, California

http://www.estuaries.gov/elive.html

EstuaryLive 2006
Tune into EstuaryLive on September 29, 2006. This year's field trips will feature segments on crabs, salmon, turtles, birds, salt marshes, habitat restoration and much more. The broadcast schedule for this year's field trips will be as follows (all times are EST); archives will also be available for these and previous field trips:

- Peconic National Estuary Program, New York, 11:00 am-12:05 pm
- New York - New Jersey Harbor Estuary Program, New York, 12:10-1:15 pm
- South Slough NERR and Tillamook Bay National Estuary Program, Oregon, 1:20-2:25 pm
- Padilla Bay NERR, Washington State, 2:30-3:35 pm

http://www.estuaries.gov

Estuaries Discovery Kit and Tutorial
The Estuaries Discovery Kit, from NOAA's National Ocean Service and National Estuarine Research Reserve System educators, contains a 12-page tutorial on estuarine habitats, the threats facing them, and efforts to monitor and protect estuaries nationwide. The tutorial includes photographs, videos, illustrations and interactive graphics to enhance the text and bring understanding to concepts that may be difficult to visualize. A roadmap provides additional links to online data resources and formal lesson plans.
http://oceanservice.noaa.gov/education/kits/estuaries/

Estuaries SciGuide
The Estuaries SciGuide is an on-line resource which can help your students discover why estuarine environments are so unique; how they interact with the surrounding environment; the effects humans and estuaries have on each other; and more. The SciGuide can save you time by providing resources that have been pre-evaluated and

aligned to the National Science Education Standards. The Estuaries SciGuide is free; registration is required.
http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/5/SG-21

EurekaAlert! Marine Science Portal
The American Association for the Advancement of Science (AAAS) has an online news service called EurekAlert! The online Marine Science Portal includes a calendar of events, links to marine science resources, press releases, and more. It offers marine science information from universities, research institutes, and other organizations engaged in all aspects of marine science research.
http://www.eurekalert.org/marinescience/ .

Every Drop Counts
Facing the Future presents *Every Drop Counts*, a series of water-related lessons beginning with a water trivia game and a short demonstration of how much of Earth's water is available for human and other species' needs. The series includes a "water walk" and a personal water-use audit. It is designed for use in middle and high school classrooms and is available as a free download. Check out the other free materials on the website.
http://www.facingthefuture.org/Curriculum/DownloadFreeCurriculum/tabid/114/Default.aspx

Excellence in Environmental Education – Guidelines for Learning
NAAEE has revised and reprinted Excellence in Environmental Education – Guidelines for Learning (Pre K-12) and its companion publications, Excellence in Environmental Education – Guidelines for Learning (Pre K-12) Executive Summary and Self Assessment Tool. The guidelines provide a common framework for promoting environmental literacy and support state and local environmental education efforts by setting expectations for performance and achievement in grades 4, 8, and 12.
http://naaee.org/pages/npeee/

Expedition Chesapeake
On June 24, 2005, a group of students from Rockingham County, Virginia, embarked on a unique, educational, 30-day journey with the Chesapeake Bay Foundation. Sixteen upcoming juniors and seniors from Turner Ashby High School are paddling 355 miles, from their home town at the beginning of the South Fork of the Shenandoah River to Tangier Island, Virginia. Follow the journey online through the students' own journal entries and photographs, posted and updated regularly on the website.
www.baybound.org

Expedition to the Deep Slope
Now available on NOAA's Ocean Explorer website is the *Expedition to the Deep Slope* mission, the first systematic exploration of hydrocarbon seep communities deeper than 1000 meters in the Gulf of Mexico. The scientific team includes geologists and geochemists working alongside microbiologists, physiologists, and ecologists to maximize what can be learned about the deep Gulf of Mexico cold seeps and coral communities.
http://www.oceanexplorer.noaa.gov/explorations/06mexico/welcome.html

Expedition to the Deep Slope 2007
The 2007 Expedition to the Deep Slope expedition, June 4-July 6, 2007, continues the exploration and study of hydrocarbon seep communities deeper than 1000 meters in the Gulf of Mexico. Funded by the Minerals Management Service, a leader in supporting the scientific characterization of seep communities in the Gulf of Mexico, and the NOAA Ocean Exploration program, a diverse team of scientists will be using the ROV Jason II and the NOAA ship *Ronald Brown*.
http://www.oceanexplorer.noaa.gov/explorations/07mexico/welcome.html

Expedition to the Remote Northwestern Hawaiian Islands
Scientists conducted an expedition to the Papahanaumokuakea Marine National Monument from July 7-31, 2007. Researchers tagged apex predators such as jacks, sharks, and grey snapper, conducting movement studies. The research will help inform management of this marine national monument, by studying the health of the coral reef and inhabitants in this remote ocean wilderness. Check out the educational resources.
http://www.hawaiianatolls.org/research/July2007/index.php

Expedition Susquehanna
The month-long journey by canoe highlighted the role that the vast Susquehanna River, the largest tributary of the Chesapeake Bay, plays in the health of the nation's largest estuary. The Chesapeake Bay Foundation offers the on-line WebQuest, Expedition Susquehanna, where students can virtually paddle alongside the expedition crew on a journey 444 miles from the Susquehanna River's headwaters in Cooperstown, New York to the Chesapeake Bay in Maryland to investigate water quality and land use.
http://www.cbf.org/site/PageServer?pagename=back_pa_expsuskie_expedition

Expert Voices Weblog
The National Science Digital Library Expert Voices site provides the latest science news straight from the source: scientists. Expert Voices is a weblog site for experts in STEM and a forum for educational discussion about the latest STEM news. Moderated conversations are designed to tie NSDL resources to science news and add context for resources that enhance discovery, selection, and use.
http://expertvoices.nsdl.org/

Exploration through Navigation Challenge
In the Fall 2008 NASA Quest Challenge, students will first be tasked to chart a course from the Big Island of Hawai'i to Rapa Nui (Easter Island) using ocean navigation skills that were used in early Polynesian exploration. In Part II of the Challenge, students will be tasked to chart a course from Kennedy Space Center at Cape Canaveral, Florida to one of the lunar poles using navigation skills appropriate for outer space. See the website for an educator guide and much more.
http://quest.nasa.gov/challenges/lcross2/index.html

Explorations Into Water Teaching Curriculum
Rain Bird's Explorations Into Water Teaching Curriculum is an educational tool providing teachers and parents with lesson plans and related course work geared to students in grades 3-6. This downloadable elementary curriculum motivates students to think about the part each person plays and the actions they can take in using and conserving water, through hands-on outdoor activities and classroom demonstrations.
http://www.rainbird.com/iuow/community/curriculum.htm

Explorations@Scripps
The Scripps Institution of Oceanography offers a monthly e-newsletter with multimedia, archives of ocean and earth science information, feature articles, and more.
http://explorations.ucsd.edu/@Scripps/

Exploratorium Webcast from the South Pole
The Exploratorium will host a series of webcasts from the South Pole where astrophysicists and engineers are installing a new 10-meter telescope. The webcasts begin November 25, 2006 and continue through the end of December. They also offer an e-newsletter to stay informed of Exploratorium webcasts and other events. The Digital Assets Archive offers digitized museum materials related to exhibits and scientific phenomena, including images, educational activities, QuickTime movies, and more.
http://exploratorium.edu/index.html

Explore! Ice Worlds
Developed by the Lunar and Planetary Institute and funded by NASA, *Explore! Ice Worlds* is a suite of activities designed for children ages 8-13 in celebration of the International Polar Year. All activities are tied to National Science Education Standards and use inexpensive, easy-to-find materials. Free webcast training in using these activities will be available in February and March 2009 for 4 hours.
Contact Katy Buckaloo at buckaloo@lpi.usra.edu to register for the training.
http://www.lpi.usra.edu/education/explore/ice/activities/

Explore the World with Shorebirds
Explore the World with Shorebirds educators' guide is the curriculum for the Shorebird Sister Schools Program, an internet-based conservation education program designed for educators and their students. The content of *Explore the World with Shorebirds* includes chapters on connecting cultures, a shorebird primer, classroom activities, and field trip planning. Activities found within the guide are correlated with the National Education Standards in the United States. The *Explore the World with Shorebirds* CD-ROM is free.
http://sssp.fws.gov

Exploring Biodiversity: A Guide for Educators around the World
Conservation International provides *Exploring Biodiversity: A Guide for Educators around the World,* developed to introduce basic concepts of biodiversity conservation, support educator training, and inspire and guide the development of local biodiversity education materials. Adapted from the World Wildlife Fund curriculum Biodiversity Basics, this guide offers background information on biodiversity conservation as well as hands-on activities for teachers and non-formal educators to implement with students.
http://www.conservation.org/xp/CIWEB/programs/awareness/education/

Exploring Climate Change Impacts Curriculum Guide
The Union of Concerned Scientists has produced a *Global Warming: Early Warning Signs* map and teaching materials geared towards students and teachers in grades 9-12, exploring the local and regional consequences of global climate change.. Individual exercises are adaptable to different grade levels and engage students in an exploration of the impacts of global climate change on ecosystems and natural resources.
http://www.climatehotmap.org/ .

Exploratorium: Microscope Imaging Station
The Microscope Imaging Station from the Exploratorium offers a door to the wonder of the microscopic world. Visitors can view images from sea urchins, zebrafish, and more. Each feature includes images of the cells, along with complete background material on the work that is being done through the use of these high-powered images. The Gallery offers high-resolution images and movies created with research-grade microscopes. The website also includes classroom activities, printable flipbooks, and more.
http://www.exploratorium.edu/imaging_station/index.php

Exploring Data
The Exploring Data website makes understanding statistics a bit easier for students, teachers, and researchers needing a review. The site is easy to navigate, with an index of topics and materials on the home page ranging from linear regression to sampling. Each of these sections includes activities, worksheets, and datasets that can be used in a variety of ways. The site includes both introductory and advanced materials.
http://exploringdata.cqu.edu.au/

Exploring the Environment
The Exploring the Environment online series, featuring an integrated approach to environmental earth science through modules and activities promotes science-literate and reflective students who are knowledgeable of the earth's processes and their responsibilities for stewardship. The series provides students with tools to investigate scientific, social, political, and cultural aspects of controversial, authentic environmental problems. Standard problem-solving models, online resources that include relevant satellite imagery, and recommendations for extended inquiry are available. Modules include Severe Weather: Hurricanes!, Coral Reefs, Florida Everglades, Earth on Fire, and much more. The teacher pages include teacher support, module notes, information about planning and assessment, software, and links to additional websites.
http://www.cotf.edu/ete/

Exploring Environmental Issues: Biodiversity
Exploring Environmental Issues: Biodiversity was developed by Project Learning Tree in partnership with the World Wildlife Fund. This module uses biodiversity as a window through which secondary students investigate the environment. It permits educators and students to step back from specific issues and species and instead, examine broader concepts and larger connections - not just biological, but political, cultural, ethical, and economic as well.
http://plt.org/cms/pages/21_21_16.html

Exploring the Inner Space of the Celebes Sea
NOAA's Ocean Explorer traveled to the Inner Space of the Celebes Sea, unexplored waters south of the Philippine Islands, September 27-October 16, 2007. Lying just north of the equator, the Celebes Sea is the center of the most biologically diverse area of the world's ocean. Internet coverage includes Speciation, Midwater Technology, Bluewater Diving, Marine Conservation, and Sea Surface Temperature content essays written especially for this mission.
http://oceanexplorer.noaa.gov/explorations/07philippines/welcome.html

Exploring the Northwestern Hawaiian Islands
Explore the Northwestern Hawaiian Islands through the eyes of graduate students as they study marine conservation in the remote, restricted Papahānaumokuākea Marine

National Monument of the Northwestern Hawaiian Islands and spend three days learning about environmental issues on Oahu. The students offer blogs, photos, and videos from their trip, which took place January 13-25, 2008.
http://www.nicholas.duke.edu/hawaii

EXPLO.TV
This website is the video component of the Exploratorium: Museum of Science, Art and Human Perception in San Francisco. This site offers webcasts, podcasts, and video clips, with many in the Ice Stories series - dispatches from polar scientists. You can browse by subject, category, and much more.
http://www.exploratorium.edu/webcasts/index.php

Extreme 2004: Expedition to the Deep Frontier
University of Delaware marine scientists will lead *Extreme 2004: Expedition to the Deep Frontier*, from November 30-December 20, 2004, a National Science Foundation expedition to hydrothermal vents in the Pacific Ocean. Middle- and high-school classrooms are invited to join via a virtual field trip. The University of Delaware will offer participating teachers free classroom materials about the deep sea, including student resource guides, curricula, a video, and more.
http://www.ocean.udel.edu/expeditions .

Extreme 2003: To the Depths of Discovery
This website from Delaware Sea Grant highlights an expedition from November 29 - December 21, 2003. Expanded curricula have been developed for both middle and high school, and a new evaluation is in place.
http://www.ocean.udel.edu/extreme2003

Extreme Virtual Expeditions
Explore foreign and domestic seas or the deep ocean with a virtual expedition linked from the Bridge. In the past few weeks, we have seen teachers working with researchers in and around the Aquarius underwater habitat and an extreme deep sea adventure to the hydrothermal vents on the floor of the Pacific Ocean. Most of these virtual expeditions have daily blogs from the scientists, researcher profiles, video and pictures, lesson plans, and more.
http://www2.vims.edu/bridge/search/bridge1output_menu.cfm?q=expedition
http://www.marine-ed.org/bridge

The Eyes of Nye
This new series from Bill Nye (the science guy), *The Eyes of Nye*, is geared toward older children and adult viewers. It provides a more in in-depth look at science topics that are making news, changing lives, and impacting policy. Episodes began airing on public TV in April, and include population and climate change. The website offers links to additional content, information about scientists featured in the episodes, and more
www.eyesofnye.org

Facing the Future Activities
Facing the Future's new lesson book for middle and high school teachers, *Engaging Students through Global Issues: Activity-Based Lessons and Action Projects*, is a companion to Facing the Future's student texts. Designed to help students understand complex global issues and sustainable solutions, the lessons cover a range of topics

including biodiversity and global health. Many of the lessons are available to download from the website, including water-related lessons, Fishing for the Future, games, and more.
www.teacherscorner.org/activities

Factbook of Economic, Environmental, and Social Indicators
The online version of the Organization for Economic Co-operation and Development (OECD) Factbook 2005 of economic, environmental and social indicators for the world's core economies is available. The chapters include environment, science and technology, and education.
http://new.SourceOECD.org/factbook

The Failure of Environmental Education (and How We Can Fix It)
In this article, authors Daniel T. Blumstein and Charlie Saylan argue that it is time for the environmental education community to take stock of itself. They suggest ways that an "evidence-based" approach can improve environmental education and that to create environmentally aware citizens, some difficult lessons must be taught.
http://biology.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pbio.0050120

Farming the Seas
Habitat Media, the California-based non-profit media production house, creators of *Empty Oceans, Empty Nets*, is offering *Farming the Seas* to marine and environmental educators, zoos and aquariums for screening at upcoming events during the summer and fall of 2004. *Farming the Seas* explores what's at stake as the aquaculture industry spreads across the globe. The film highlights ground-breaking efforts by scientists, communities and industry to develop viable, sustainable operations.
www.habitatmedia.org .
rivkahbeth@habitatmedia.org .

Federal Education Digital Resources Library
The Federal Education Digital Resources Library (FEDRL) features a collection of free science and mathematics education resources. The site provides descriptions of a range of online materials that were developed with U.S. Department of Education or National Science Foundation funding. These materials include lesson plans, magazine articles, student resources, and materials for teachers' professional development.
http://encdl.org/search/simple/0,5046,,00.shtm .

Federal Resources for Educational Excellence
Federal Resources for Educational Excellence (FREE) has been redesigned with improved navigation. The site links to over 1500 teaching and learning resources available from the federal government. The Earth Sciences section offers quick links to resources on oceanography, climate change, and the environment, while Life Sciences offers zoology, botany, and more.
http://free.ed.gov

Federal Science Website
A federal website makes scientific information gathered by different agencies accessible to the public. The site is an offshoot of Firstgov.gov, housing information under one roof from the multiple agencies that perform scientific research.
www.science.gov

Feet Wet, Hands Dirty
The book *Feet Wet, Hands Dirty: Environmental Projects in Maryland Public Schools,* highlights 15 different elementary school student-developed environmental projects. Maryland's EE program provides students with the opportunity to investigate environmental issues and take action to preserve or restore the environment. The website offers a preview of the first 15 pages of the book.
http://www.blurb.com/bookstore/detail/111841

FEMA for Kids Website
For younger kids, check out this website for games, challenges, quizzes, and information on dealing with disasters. It also has resources for parents and teachers.
www.fema.gov/kids

FerryMon
The FerryMon (ferry monitoring) project installed oceanographic instruments on ferries traversing Pamlico Sound in North Carolina. Ship-board instruments allow ferries to take water samples every three minutes, monitoring changes in environmental conditions as they happen and providing the continuous environmental information about the surface waters of the sound. Information is sent from ferries to a laboratory via cell phone line, and then converted to graphs for a wide range of users, including educators.
http://www.unc.edu/ims/paerllab/research/ferrymon/index.html

Field Guide to the Future
Field Guide to the Future is a practical, step-by-step manual describing methods that can help communities think ahead and prepare for changes in their environment and natural resources. The authors have collaborated with communities in the management of forests, land, and water in many parts of the world, but particularly in tropical forest margins. In this manual they share their experiences and lessons learned about methods that can help communities prepare for the future. Spanish and French translations will be available late 2006 or 2007.
Contact Sandra Velarde at s.velarde@cgiar.org

Field Guide to the Monterey Bay National Marine Sanctuary
The Monterey Bay National Marine Sanctuary offers the downloadable *Field Guide to the Monterey Bay National Marine Sanctuary*. The guide was designed for use by both visitors to and residents of communities adjacent to the marine sanctuary as a travel guide or for educational purposes. The guide includes information on each sanctuary habitat, as well as descriptions and photographs of the some of the sanctuary's most commonly seen marine wildlife and the best times of the year to view them.
http://montereybay.noaa.gov/reports/2006/fieldguide/welcome.html

Field Guide to Tidal Wetland Plants
The University of Massachusetts Press offers "Field Guide to Tidal Wetland Plants of the Northeastern US and Neighboring Canada". The book emphasizes plant identification and provides simple, easy-to-use keys and descriptions for identifying over 700 species found in the region's salt and brackish marshes, tidal freshwater marshes and swamps, tidal flats, rocky shores (including dominant algae), beaches, and coastal ponds.
http://www.umass.edu/umpress/spr_08/tiner.htm

Field Trip Earth
Field Trip Earth focuses on field-based wildlife conservation research projects ongoing around the world. All of the projects provide classrooms and others around the world the opportunity to interact meaningfully with wildlife researchers and other conservation experts. Students can read researchers' field diary entries, direct questions to the researchers, watch video taken in the field, and more. Information is available for sea turtles, waterfowl, and more.
http://www.fieldtripearth.org/

Fifty Facts about Wider Caribbean Coral Reefs
Compiled for the International Year of the Reef, *Fifty facts about Wider Caribbean Coral Reefs* offers interesting facts about coral reefs and human impacts in the wider Caribbean. There are also links to additional resources, news, events, and more.
http://www.iyor.org/focalpoints/orgs/unep-car/Caribbean_Coral_Reefs.asp

Financing Protected Area Publications
The World Conservation Union (IUCN) World Commission on Protected Areas website offers several publications on the financing of protected areas. Downloadable documents include *Sustainable Financing of Protected Areas: A global review of challenges and options; Financing Protected Areas - Guidelines for Protected Area Managers;* and *Guidelines for Tourism in Parks and Protected Areas of East Asia.*
http://www.iucn.org/themes/wcpa/pubs/subject/financing.html

Find-a-Photo Website
USDA Forest Service's Find-a-Photo website offers the NatureWatch, Wildlife, Fish, and Threatened and Endangered Species Program's Photograph Library. Find-a-Photo allows you to access thousands of copyright free wildlife, fish, wildflower, and environmental education photographs. Check back often since new photographs are being added quite frequently. These copyright-free photographs are available for non-profit use; please credit the photographer.
http://wwwnotes.fs.fed.us:81/wo/wfrp/find_a_photo.nsf/

Fire Education Resources
The National Wildfire Coordinating Group Wildland Fire Education Working Team has recently completed a reference document to fire education products which are available on the web or through the symbols cache.
http://www.myfirecommunity.net/NeighborhoodPosts.aspx?ID=468&Topic=1820&Category=1

Fire eFieldTrip
The Bureau of Land Management has sponsored an eFieldTrip on Fire's Role in Ecosystems: A Hot Topic! The trip takes place from the National Interagency Fire Center in Boise, Idaho. The program has four major components: a virtual visit, a trip journal worksheet, ask the experts, and a live webchat. Archives of the questions and answers are posted on the website.
www.eFieldTrips.org

Fire Information and Education
The Wildland Fire Lessons Learned Center on-line Advances in Fire Practice has posted a Special Issue, *Fire Information and Education: A New Message for New Challenges*. Articles illustrate the value of innovative approaches to communicating with the public:

using different communication styles, using windows of opportunity, and providing information in terms people can understand; and much more about fire education and outreach.
http://www.wildfirelessons.net/AFP.aspx?Page=AFPOverview

Fire Management - Learning From the Experts
Fire Management - Learning From the Experts captures the experience of seasoned employees who are acknowledged by their peers to have high expertise in planning and implementing fire programs. Topics include fire behavior prediction, high reliability organizing, stories, and more.
http://www.wildfirelessons.net/Additional.aspx?Page=124

Fire & Smoke
A new NASA Fire and Smoke website shows latest fire views and research. Satellites, aircraft, and research know-how have created numerous cutting-edge tools to help firefighters battle wildfires and scientists understand the impact of fires and smoke on Earth's climate and ecosystems. This website brings the latest information to the public. The site is includes images of fires and their associated smoke plumes in the United States and around the world as well as articles and multimedia resources.
http://www.nasa.gov/mission_pages/fires/main/index.html

FIRESafe Marin
Firesafe Marin is a non-profit organization dedicated to reducing wildland fire hazard and improving fire safety awareness in Marin County. They foster community involvement by building partnerships and providing resources for mitigating fire danger. The website includes a survival guide, firewise plant list, a teacher's guide, and additional information.
http://www.firesafemarin.org/index.html

Firestorm!
The Environmental Literacy Council offers teaching materials to help high-school and middle-school educators teach about forest fire management. The modules, *Firestorm: Thinking Critically about Environmental Issues*, use a fictionalized controversy about the role of prescribed burning in forest management to teach the process of making important decisions about the environment through a role-play exercise. Acting as community stakeholders, students learn to gather and analyze information.
http://www.enviroliteracy.org/article.php/1279.html

Fish of the Great Lakes
The University of Wisconsin Sea Grant Institute has developed this website for the Fish of the Great Lakes. The website includes a downloadable version of George C. Becker's text *Fishes of Wisconsin*, profiles of the major fish species in the Great Lakes, information about fish anatomy, and even tips for safe cooking and eating. The Kids' Page includes a fish quiz, glossary, and more.
http://www.seagrant.wisc.edu/greatlakesfish/

Fish and Habitat Photos
NOAA's National Center for Coastal Monitoring and Assessment hosts on-line photos of reef fish, reef habitat, and aerial images from Hawai'i and the U.S. Virgin Islands. The fish photo website offers the ability to select by location, date, and type of fish.
http://www8.nos.noaa.gov/biogeo_public/

Fish Kids
EPA's National Fish Advisory Program has released this new Fish Kids website, using interactive stories and games to teach students ages 8-12 about contaminants in fish and fish advisories. Whether they catch their own fish or buy it at a store, kids and their families can use this site to learn how to choose fish wisely.
http://www.epa.gov/fishadvisories/kids/

Fish Olympics
This interactive website allows kids to learn about different species of fish and their areas of expertise. It's up to the students to guess who the winners will be in each of 4 categories, based on what they learn as they go.
http://www.liverpoolmuseums.org.uk/nof/fish/index.html

Fish Research of Interest to Students
Use the article at this website when you want to show your students you can be on the same "wav"-length as they are. Scientists studying underwater fish acoustics have identified another possible mechanism herring use to communicate.
http://www.newscientist.com/news/news.jsp?id=ns99994343

Fish Species Identification and Data Programme
The UN's Food And Agriculture Organization (FAO) website for [fish] Species Identification and Data Programme is set up to improve the identification of marine organisms of actual and potential interest to fisheries, provide tools, and improve fisheries data quality. The website has species identification publications, regional guides, fact sheets, species distribution maps, and more. Many of the publications are downloadable.
http://www.fao.org/fi/SIDP>http://www.fao.org/fi/SIDP .

FishBase
FishBase, developed by the WorldFish Center in collaboration with the UN Food and Agriculture Organization (FAO), is a global source for research on living aquatic resources. The site contains information on 28,400 fish species, as well as 35,900 pictures and 32,800 references. Check out the quiz section.
http://www.fishbase.org/home.htm .

Fisheries and Aquatic Resources
The National Biological Information Infrastructure Fisheries and Aquatic Resources website provides information about managed fish populations throughout the U.S., as well as watershed-based data and state-by-state fishing resources. Learn about freshwater and marine fishes, aquatic invertebrates, water quality and habitats, and dams and fish passage. Make sure to check the teacher resources.
http://far.nbii.gov/

Fisheries Law Enforcement and National Bio-Fact Loan Program
NOAA Fisheries Service's Office for Law Enforcement has redesigned it website to provide one location for information about the office and its protection and conservation of our nation's living marine resources. The site has useful information about marine conservation laws, public awareness campaigns, and enforcement activities. Of special note for educators is the National Bio-Fact Loan Program, which can be found under the COPPS (Community Oriented Policing and Problem-Solving) link.
http://www.nmfs.noaa.gov/ole/ole_about.html

Fisheries Learning on the Web
Project FLOW is a Great Lakes curriculum series developed by Michigan Sea Grant with support from the Great Lakes Fishery Trust. The online lessons are designed to help educators teach students about the Great Lakes through hands-on activities. The 15 downloadable lessons cover the aquatic food web and invasive species, water quantity and quality, and Great Lakes fisheries. Each lesson is aligned with state and national curriculum standards for science and social studies.
www.projectflow.us

Fisheries Legal Instruments
The International Collective in Support of Fishworkers offers Fisheries Legal Instruments, a website providing detailed information for a wide range of instruments relevant to fisheries and fishworkers. It covers 124 documents, categorized by Human Rights, Food Security, Environment and Sustainable Development, Oceans and Fisheries Management, Environmental Pollution, and more.
http://legal.icsf.net/icsflegal/home.jsp

Fishery Regulations in the Wider Caribbean
This project summary report from the United Nations Environment Programme World Conservation Monitoring Centre provides information on fisheries regulations throughout the wider Caribbean region. Details of fishery regulations for each country are presented in terms of national restrictions, national zoning, and MPA-level restrictions. In addition, the website (http://gipping.unep-wcmc.org/wdbpa/caribPa/maps.cfm) has an interactive map of the fishing regulations.
http://gipping.unep-wcmc.org/wdbpa/caribPa/Fishery_Regulations_in_the_Wider_Caribbean_Region.pdf

Fishing for Answers: Making Sense of the Global Fish Crisis
The goal of *Fishing for Answers* is to provide easily digestible but comprehensive fisheries information for consumers and policymakers. This report will allow consumers to make links between what they eat and the effect on the ecosystem and fishers globally, as well as to stimulate dialogues among environmentalists, the fishing industry, and consumers. The executive summary is currently available, and the full print version will be made available soon.
http://water.wri.org/pubs_pdf.cfm?PubID=3866

FishWatch
NOAA's FishWatch is an online consumer seafood guide designed to facilitate informed seafood- buying decisions for consumers who are increasingly more sophisticated in their requirements for sound, accurate, and reliable information about the health and sustainability of seafood. The site has information on popular seafood species, with more species to be added shortly. The information includes population strength and status, nutritional content, and more.
http://www.fishwatch.noaa.gov

Floating Classroom for Educators and Students - Texas
On the R.V. Karma, a 57-foot teaching and research vessel, students can use otter trawls, plankton nets, water samplers and test kits, bottom corers and video-enhanced microscopes to investigate topics such as marine biology, ecology, fisheries and environmental impact. Additional initiatives include Elderhostels, youth development

camps and courses, marine education workshops and professional development, and short courses for informal educators.
http://extensioneducation.tamu.edu/karma.htm .

Florida Keys and Field Guides
The Florida Department of Environmental Protection, Bureau of Laboratories offers an online list of downloadable identification keys and field guides to a wide variety of organisms found in the state. These include amphipods, clams, leeches, snails, ferns, venomous snakes, and more. The web page also links to checklists of amphibians and reptiles and to a checklist of vascular plants of north central Florida.
http://www.dep.state.fl.us/labs/cgi-bin/sbio/keys.asp

Florida Oceans Day
The 11th annual Florida Oceans Day, March 25, 2009 in Tallahassee, Florida, will feature exhibits on ocean economics and climate change reports of the Florida Oceans and Coastal Council, along with a roundtable discussion of ocean management.
http://www.floridaoceanalliance.org/

Florida Office of Coastal and Aquatic Managed Areas Interactive Map
The Florida Department of Environmental Protection's Coastal and Aquatic Managed Areas manages nearly five million acres of submerged lands. These include Aquatic Preserves, National Estuarine Research Reserves, and the Florida Keys National Marine Sanctuary. The website includes an interactive map of the entire state, broken down into regions.
http://www.dep.state.fl.us/coastal/sites/default.htm .

Florida Shipwrecks
The National Register of Historic Places has launched a virtual travel itinerary, Florida Shipwrecks: 300 Years of Maritime History. This itinerary is currently the main feature on their homepage and highlights 13 historic shipwrecks listed in the National Register of Historic Places that are accessible to divers. The website includes an interactive map, background information about the wrecks, and an introduction to Florida's maritime history.
http://www.cr.nps.gov/nr/travel/flshipwrecks/

Florida's Springs
Rising up from deep within the aquifer, cool clear water flows from hundreds of springs that dot the Florida landscape. This website hosts virtual explorations of some springs, information about threats to the quality and quantity of water in the Florida aquifers, and educational resources, including "Build Your Own Aquifer".
http://www.floridasprings.org/

Flotsam and Jetsam
Flotsam and Jetsam, the Journal of the Massachusetts Marine Educators, is an online quarterly. Each issue has a central theme, such as Ocean Floor Geology, National Marine Sanctuaries, and more, and includes at least one curriculum activity. Previous years' editions are available for general view.
http://massmarineeducators.org/journal.shtml

Flow: The Essentials of Environmental Flows
IUCN and its *Water and Nature Initiative* published a new guide to "environmental flows"

–the water regimes provided within a river, wetland or coastal zone to maintain ecosystems and their benefits where there are competing water uses and where flows are regulated. *Flow* includes chapters on international legal instruments, defining water requirements, covering costs, and building capacity.
http://www.waterandnature.org/flowlaunch.html

Flower Garden Banks National Marine Sanctuary
The updated Flower Garden Banks National Marine Sanctuary Website is live. Sanctuary education materials can be downloaded directly from the site's document library. Included are downloadable coloring pages, games, an educational activity, and more. Teachers can sign up for an Education List Serve, request educational materials, and stay abreast of the various workshops and seminars offered by the sanctuary.
http://flowergarden.noaa.gov/education/education.html

Flying WILD
Flying WILD is a new initiative from the Council for Environmental Education that extends upon Project WILD by providing resources and guides for School Bird Festivals in conjunction with International Migratory Bird Day. The program allows students the opportunity to get involved in learning through researching, planning, and hosting a bird festival at their school. Flying WILD is sponsored by the National Fish and Wildlife Foundation and Phillips Petroleum Company.
http://www.projectwild.org/flying_wild/overview.htm

Focus The Nation "Teach-in"
Focus the Nation, a national teach-in on January 31, 2008, is designed to engage faculty and students across the country, with a focus on global warming solutions, for participants to get educated, organize, engage civic leaders, vote on solutions, and act. The website includes links to educational materials and more.
http://www.focusthenation.org/nationalteachin.php

Folly Beach Educator's Guide
This website, from COASTeam at the Lowcountry Hall of Science and Math in South Carolina, is designed to offer basic information on South Carolina's barrier islands. It offers background content and images for educators to use in teaching marine science. Most of the information contained in these sections is general and can be applied to any local barrier island. The site contains introductory images, animation of coastal processes, and beach activities.
http://oceanica.cofc.edu/An%20Educator%27sl%20Guide%20to%20Folly%20Beach/guide/default.htm

Forest Encyclopedia Network
Jointly developed by the USDA Forest Service Southern Research Station and Southern Regional Extension Forestry, this website has multiple online encyclopedias about the forests of the Southern United States, as well as one that covers the environmental threats facing all North American forests. The menu allows the visitor to view the site through a thematic lens, or through a global one.
http://www.forestencyclopedia.net/

Forest Service Partnership Resource Center
The Partnership Resource Center is a centralized website from the Forest Service to provide information and tools to promote partnerships. The website includes resource

documents, links to training opportunities and funding sources, tools and templates, and lists of organizations and agencies which work collaboratively and in partnerships to manage natural resources.
http://www.partnershipresourcecenter.org/index.shtml .

Forming Hurricanes Poster – FL, GA, NC, SC
Help your students learn to define and describe the nature of hurricanes, as well as their regional significance in the Atlantic. This poster supports the upcoming SEACOOS Virtual Hurricane Classroom that will soon be found on the SEACOOS website. On this website you will be able to find classroom activities, locate real time hurricane information on the web, learn hurricane vocabulary, and more.
http://seacoos.org/Community%20and%20Classroom/

For Sea
The FOR SEA marine science curriculum and teacher training program offers materials and teaching strategies with middle school/junior high school curriculum, a career awareness in science curriculum, and environmental education curriculum. The website offers tables of contents and examples of available materials.
http://www.forsea.org/Default.htm

For The Sea
For The Sea Productions was created to promote marine environmental protection via visual experience. The website offers video and photos to engage, entertain, and raise awareness of the critical need for conservation of the oceans. The Hawaii Reef Etiquette PSA is available for downloading in English and Japanese.
http://www.forthesea.com/

The Fragile Fringe
The USGS National Wetlands Research Center offers The Fragile Fringe, a Guide for Teaching about Coastal Wetlands, a downloadable teaching guide. The intent of this material is to provide a basis from which a comprehensive study of coastal wetlands can be developed by the teacher on the basis of individual needs. The site includes background information, suggested activities, glossary, references, and a reading list. Activities can be demonstrated by the teacher or performed by students.
http://www.nwrc.usgs.gov/fringe/ff_index.html

Framework for Evaluating Impacts from Informal Science Education Projects
The report, *Framework for Evaluating Impacts from Informal Science Education Projects,* is available for downloading from the Center for Advancement of Informal Science Education. It provides the results from a National Science Foundation-sponsored workshop on evaluating informal education.
http://insci.org/

Framework for a National System of Marine Protected Areas
The United States has developed a national system of marine protected areas to advance the conservation and sustainable use of the nation's vital natural and cultural marine resources. The national system is described in detail in the downloadable *Framework for a National System of Marine Protected Areas for the United States America*.
http://mpa.gov/national_system/national_system.html

Free Copy of Green Teacher
To celebrate the launch of an electronic edition of their non-profit quarterly EE magazine, Green Teacher invites you to download a copy of the Winter 2006-2007 edition, through July 1, 2007. The electronic issue is searchable and the hot-links provide readers with quick access to additional information about a topic or new educational resources mentioned in that issue. Check out the article, *Discovering Lake Management: Getting Students' Feet Wet*.
http://www.greenteacher.com/freeIssue80.html

Free Use of Camping Equipment Through The REI Gear Bank
The REI Gear Bank is a program designed to facilitate a positive introduction to the outdoors for kids who have not yet had a wilderness experience. In order to ensure that their first experience in the outdoors is a positive one, REI has set up a program to provide kids with quality gear so they are comfortable and can focus on having fun. The Gear Bank offers camping essentials free of charge.
relion@rei.com

Free Science "Stuff" for Teachers
This wiki-style page from Science Inquirer offers free teaching resources from listservs, podcasts, videos, posters, and more.
http://scienceinquirer.wikispaces.com/freestuff

French Frigate Shoals Expedition Archive
The Census of Marine Life, Census of Coral Reefs Expedition to French Frigate Shoals from October 2006 can be viewed on the Northwestern Hawaiian Islands Multi-Agency Education Project website. . Read the ship logs, journals, and scientist interviews. There's plenty of other information, including maps, photos and more.
http://www.hawaiiatolls.org/research/CoML/index.php
http://www.creefs.org/

Freshwater Ecoregions of the World
Freshwater Ecoregions of the World provides a global biogeographic regionalization of the Earth's freshwater biodiversity. This ecoregion map, together with associated species data, can be a useful tool for underpinning global and regional conservation planning efforts, particularly to identify outstanding and imperiled freshwater systems; for serving as a logical framework for large-scale conservation strategies; and for providing a global-scale knowledge base for increasing freshwater biogeographic literacy.
http://www.feow.org/index.php

Frog Calls
This website, sponsored by the Chicago Herpetological Society, offers frog calls and documentary video clips of scientists discussing frog issues, including declining amphibians and malformed frogs.
http://www.midwestfrogs.com/

Frogwatch USA
Frogwatch USA is a long-term frog and toad monitoring program that gives volunteers the opportunity to help scientists conserve amphibians, managed by the National Wildlife Federation in partnership with the United States Geological Survey. The website offers frogwatching tips, field guides, and much more. The website offers very easy-to-access frog call identification for your state through links to the eNature website.

http://www.nwf.org/frogwatchUSA/

From the Serengeti to Austin Texas - Watching Wildlife is Bringing in the Bucks
Wildlife Watching and Tourism: A study on the benefits and risks of a fast growing tourism activity and its impacts on species was launched at the meeting of the Convention on Biological Diversity in Curitiba, Brazil. The report focuses on 12 case studies to highlight the growing economic importance of wildlife watching while flagging some of the pitfalls that may arise through poor or insensitive management. Concrete recommendations are made on how best to promote environmentally, economically, and socially sound wildlife watching, including advice to visitors, drivers and divers.
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=471&ArticleID=5238&l=en

From Sea to Shining Sea
The National Geographic Society and NOAA's Office of Ocean Exploration have collaborated to create an ocean focused map, *From Sea to Shining Sea, Exploring America's Ocean Realms*, along with three new online lesson plans. In addition, there a limited number of paper versions of the map. If you would like to receive a copy of this map, please send an email to fcava@ngs.org with "Request a copy of the Sea to Shining Sea map" in the subject line.
http://nationalgeographic.com/xpeditions/lessons/15/g68/seatoshiningsea1.html
http://nationalgeographic.com/xpeditions/lessons/08/g68/seatoshiningsea2.html
http://nationalgeographic.com/xpeditions/lessons/15/g68/seatoshiningsea3.html
http://nationalgeographic.com/xpeditions/lessons/15/g68/s2ssmap.pdf

From Shore to Sea: Exploring California's Channel Islands
The JASON Project combines scientific expeditions, standards-based classroom curriculum, and accredited professional development for teachers to engage students in science, math, and technology, and to deliver measurable gains in student achievement. *From Shore to Sea* focuses on the Channel Islands and the surrounding sea. Monitor change with standards-based lesson plans covering geography, natural history, culture, watersheds, kelp forests, marine conservation and much more.
http://channelislands.noaa.gov/edu/shoretosea.html .

From Shore to Sea Lecture Series - California
Channel Islands National Marine Sanctuary and National Park celebrate their 25- year anniversaries with this year's lecture series by featuring speakers who have made significant contributions to the park and sanctuary. The programs, free and open to the public, will take place on the second Tuesday and Wednesday of the month.
http://channelislands.noaa.gov/edu/shoretosea.html

Fueling the Future
Help your students understand energy issues using the new Facing the Future activity, Fueling the Future. Students compare energy use and CO2 emissions by sector in the United States and China (and optionally in another country). They research and discuss energy impacts and sustainable energy solutions and present their findings at a "World Energy Summit." Additional materials available from Facing the Future include water trivia, Got Water? and more.
http://www.teacherscorner.org/activities.html#

The Future of Sustainability
The World Conservation Union (IUCN) is hosting *The Future of Sustainability: Have Your Say!.* an e-discussion forum between August 21-September 15, 2006. The four themes are global challenges to sustainability, human wellbeing and sustainability, the new economy and biodiversity, and shaping the future. A summary of the e-Discussion Forum will made available on the website later this year.
http://www.iucn.org/members/future_sustainability/

GalAPAGoS: Where Ridge Meets Hotspot
The *GalAPAGoS* (Galapagos Acoustical, Plumes, and Geobiological Surveys)*: Where Ridge Meets Hotspot 2005* Expedition, from December 3 through January 10, 2006 sponsored by NOAA's Office of Ocean Exploration, offers education opportunities for teachers, students, and the general public to virtually join a team of scientist, explorers, and educators as ocean explorers investigate a 400 km-long section of the Galapagos Spreading Center which is part of the global mid-ocean ridge system.
http://oceanexplorer.noaa.gov/explorations/05galapagos/welcome.html

Galveston Bay Information Center Resources
The Galveston Bay Information Center and the Galveston Bay Estuary Program have teamed up to provide resources you can use to teach the science of the bay area in your classroom. The website offers curriculum focusing on oceans, estuaries, and bays. The Resources for Teachers webpage contains free resource materials for use in your classroom including links to locally designed curriculum, classroom presentations, links to local field trip opportunities, and more.
http://gbic.tamug.edu/

Games Planet Arcade
This arcade from NOAA is a portal to games and interactive activities focused on ocean and air themes. It highlights the science and the activities of NOAA and other agencies and organizations promoting environmental stewardship. There are puzzles, interactives, and links to in-depth learning games.

Games@NOAA
This arcade hosted by NOAA is a portal to games and interactive activities focused on ocean and air themes. It highlights the science and the activities of NOAA and other agencies and organizations promoting environmental stewardship.
http://games.noaa.gov/

Gateway to Educational Materials
The Gateway to Educational Materials offers a database of more than 24,000 education resources, including marine resource education, across more than 400 web sites.
http://thegateway.org/

GEF Lessons Learned E-Group
The Knowledgebase for Lessons Learned and Best Practices in the Management of Coral Reefs project aims to formalize the experiences, outcomes, and lessons learned from previous Global Environment Facility projects, as well as major initiatives involving coral reefs and associated ecosystems. This e-group creates a forum where experiences in Caribbean coral reef management can be exchanged, facilitating information sharing and discussions regarding coral reef management in the Caribbean.
http://tech.groups.yahoo.com/group/gefll/

GEF Lessons Learned Project
The GEF-funded project *Knowledgebase for Lessons Learned and Best Practices in the Management of Coral Reefs* seeks to formalize the experiences and lessons learned from previous GEF projects, as well as major non-GEF initiatives, involving coral reefs and associated ecosystems. The downloadable *GEF Lessons Learned and Best Practices* Toolkit is a place to find information about how to design and implement coral reef management strategies; it will be updated quarterly.
http://www.reefbase.org/gefll/

GEO Year Book 2003
The United Nation's Environment Programme (UNEP) presents its first annual Global Environment Outlook (GEO) statement to highlight significant environmental events and achievements during the year and raise awareness of emerging issues from scientific research and other sources. Based upon a collaborative/comprehensive tracking and stocktaking process established with many partners, it includes an overview of major global and regional environmental issues, a focus on freshwater, indicators and more.
http://www.unep.org/geo/yearbook/ .

GeoBirds
Geobirds is meant to be an online birding community. The “BirdBrain” interface allows users the opportunity to navigate around the United States to begin determining which type of bird may have been spotted. Web visitors can also add bird-watching data to an interactive map of North America. The website includes an online field guide, complete with photographs and descriptions.
http://geobirds.com/

Geographic Data in Education (GEODE)
The Geographic Data in Education (GEODE) Initiative, for middle school through college, uses data visualization and analysis tools to support inquiry-based learning. An integrated program of research and development, the GEODE Initiative provides curriculum, educational software, and teacher professional development. Software includes *WorldWatcher* and *My World*. Curriculum includes *Looking at the Environment* and *Planetary Forecaster Project*.
http://www.worldwatcher.northwestern.edu/ .

Geographic Names Information System
The Geographic Names Information System, developed by the USGS in cooperation with the U.S. Board on Geographic Names, contains information for almost 2 million physical and cultural geographic features in the United States, its territories, and the Antarctica. The federally recognized name of each feature described in the data base is identified, and references are made to a feature's location by state, county, and geographic coordinates.
http://geonames.usgs.gov/

Geology of National Parks
This website from the U.S. Geological Survey draws on thousands of historic and contemporary photographs, views, documents, and other items, creating 3D and photographic tours of dozens of national parks. Visitors will find an alphabetical list of the parks, along with links to the 3D image galleries, standard image galleries, and

selected online field guides. Dig out your 3D glasses and check out Puuhonua o Honaunau National Historic Park and Point Reyes National Seashore, among others.
http://3dparks.wr.usgs.gov/

Georgia Standards Website
The Georgia Department of Education offers the GeorgiaStandards.Org website, a gateway to education and professional resources to support teaching and learning in Georgia. It offers access to curriculum frameworks by subject and grade along with resources, tools, and web links commonly used by teachers. A variety of environmental education lessons are posted, including *A whale of a movement*, *Water cycle skit*, and much more.
http://www.georgiastandards.org/

Georgia's Amazing Coast
Fun and learning come together in *Georgia's Amazing Coast*, a collection of one hundred short, self-contained features about the flora, fauna, and natural history of Georgia's coast. Each page includes a full-color illustration and fact-filled commentary on coastal wildlife, from fifty-foot-long northern right whales to single-cell plankton. Contact Allison Reid at areid@ugapress.uga.edu for details.

Georgia Encyclopedia
The New Georgia Encyclopedia provides an accessible, authoritative source of information about people, places, events, historical themes, institutions, and many other topics relating to the state. It includes a section on Land and Resources, including articles and information on ecological functions of the environment, environmental regions of Georgia, and more.
www.georgiaencyclopedia.org .

Georgia High School Envirothon
The Envirothon is a hands-on, high school academic competition on the environment. Teams exercise their training and problem-solving skills in a competition centered around five topics: soils/land use, aquatic ecology, forestry, wildlife, and a current environmental issue. There are three levels of competition. The regional competition is a one day event, while the state competition is a 2-day event. There is also Eco-Meet, a middle grades academic competition on the environment modeled after the Envirothon.
www.georgiaenvirothon.org .

Geospatial One-Stop Portal
The Geospatial One-Stop portal helps the public and government agencies access geospatial data and other information from one centralized location. NOAA manages the *Oceans and Estuaries* and *Locations and Geodetic Networks* channels on the portal, and co-manages the *Atmospheric and Climate* channel.
http://www.geodata.gov/gos

Geotagger 1.1
Photographers with a keen interest in spatial analysis (and appropriate photographs) might find this freeware useful. With Geotagger 1.1 and Google Earth, users can take their digital photographs, insert GPS coordinates into the images, and place them online.
http://craig.stanton.net.nz/software/Geotagger.html

Getting in Step: a Guide to Effective Outreach in Your Watershed
The *Getting in Step* guidebook or on-line web-based training module provides some of the tools needed to develop and implement an effective watershed outreach plan. It helps watershed practitioners trained in the sciences address public perceptions, promote management activities, and inform or motivate stakeholders.
http://www.epa.gov/owow/watershed/outreach/documents/

Ghost Crab Trap Removal Program
The Barataria-Terrebonne National Estuary Program is supporting this Department of Wildlife and Fisheries' program through a ghost trap "sweep" within the Barataria-Terrebonne National Estuary, planned for February 28 through March 14, 2004. A ghost crab trap may be an old, bent, barnacle-encrusted trap without a buoy or float, or even be a relatively new trap with a line and buoy still attached (sometimes referred to as "derelict" traps).
http://www.blue-crab.net/derelict.html .

GIS Day 2003
GIS Day, Nov. 19, 2003, is part of the National Geographic Society's initiative, Geography Action, a year-long initiative encompassing key educational achievements. The theme of this year's Geography Awareness Week, November 16-22, 2003, is "Habitats."
http://www.gisday.com/index.html

GIS Day 2006 – New Hampshire
The University of New Hampshire hosts GIS Day on November 1, 2006 with a geo-spatial science career and educational presentations, professional mapping exhibitions, hands-on activities, and more. This year's featured GIS Day map exhibition is the NOAA Ocean Mapping and Ocean Exploration cartographic exhibition.
http://gisday.sr.unh.edu

Global Amphibian Assessment
The Global Amphibian Assessment is a comprehensive assessment of the conservation status of the world's 5,743 known species of frogs, toads, salamanders, and caecilians. This website presents results of the assessments, including IUCN Red List threat category, range map, ecology information, and other data for every amphibian species.
http://www.globalamphibians.org/

Global Biodiversity Information Portal
The Global Biodiversity Information Facility (GBIF) is an international non-profit organization devoted to providing free and universal access to data regarding the world's biodiversity. Check out the GBIF Communications Portal at www.gbif.org . Many countries and organizations participate in GBIF and have made their data available at the GBIF Data Portal.
www.gbif.net .

Global Challenges
Earth Day Network offers a new curriculum called *Global Challenges, an Introductory Climate Change Curriculum* that provides four lesson plans suitable for middle school classrooms. The lesson plans are activity driven and work together to cover the broad topic of climate and climate change. These resources are available for free to members of the Teacher's Corner.

http://www.earthday.net/

Global Climate Change
NASA offers this new website, Global Climate Change, NASA's Eyes on the Earth. The site, managed by the Jet Propulsion Laboratory, is a one-stop-shop for all of the latest climate information from NASA's Earth-monitoring missions and research. The website offers background information, interactives, and much more. Categories include key indicators, uncertainties, solutions, and news.
http://climate.jpl.nasa.gov/

Global Climate Change
Global Climate Change, from the Exploratorium website, offers a window into the world of scientific research on climate change. Learn about physical processes underlying the earth's climate, data on how the climate is changing and the role of human activity, and questions and uncertainties that researchers continue to explore. The site is organized in five parts: the atmosphere, hydrosphere (oceans and water), cryosphere (snow and ice), biosphere (living organisms), and global effects.
http://www.exploratorium.edu/climate/index.html

Global Climate Change: Economics, Science, and Policy
MIT's Sloan School of Management, through the OpenCourseWare initiative, offers materials for the course on climate change, including a syllabus, reading suggestions, lecture notes, and several assignments. The class introduces scientific, economic, and ecological issues underlying the threat of global climate change and the institutions engaged in negotiating an international response. Some of the reading materials are available on-line.
http://ocw.mit.edu/OcwWeb/Sloan-School-of-Management/15-023JSpring-2007/CourseHome/index.htm

Global, Environmental, and Outdoor Education Council Lesson Plans
The Global, Environmental, and Outdoor Education Council is one of 23 specialist councils of the Alberta, Canada Teachers' Association. They promote quality professional development for teachers. The website offers lesson plans covering a variety of subjects, for grades 1-9. Some of the topics include stewardship, endangered species, water, and more.
http://www.geoec.org/lessons/

Global Map of Human Impacts to Marine Ecosystems
This analysis of human impacts to marine ecosystems, posted on the website for the National Center for Ecological Analysis and Synthesis, shows that over 40% of the world's oceans are heavily affected by human activities and few if any areas remain untouched. The goal of the research was to estimate and visualize the global impact humans are having on the ocean's ecosystems. While on the website, check out the link to ***Kids Do Ecology***, an educational, participatory, bilingual website, supporting an inquiry-based approach to science for 5th grade classes to design and conduct scientific experiments in ecology.
http://www.nceas.ucsb.edu/GlobalMarine

Global Positioning System Guide
The NOAA Pacific Services Center offers an informational guide, Where Am *I Going? A Manager's Guide to GPS*. Meant for the coastal and marine resource management

community, it provides a good introduction to the Global Positioning System (GPS), illustrates the benefits of GPS, and discusses considerations for purchasing GPS equipment.
http://www.csc.noaa.gov/psc/prodsvc.html

Global Systems Science
Global Systems Science is an integrated, interdisciplinary course for high school, consisting of nine student books, teacher guides, and software dealing with a societal issue that requires science for full understanding. Teacher guides are downloadable free online; student texts can be downloaded for review, but not printed. Texts are available on a number of different topics, including Climate Change, Losing Biodiversity, and Ecosystem Change, and can be used as a set or individually with other coursework.
http://www.lawrencehallofscience.org/gss

Global Ultraviolet Index
EPA and NOAA adopted a new Global Ultraviolet Index to help reduce overexposure to dangerous UV rays. The index, developed by the World Health Organization and other international organizations, replaces existing reporting methods. The index is designed to foster understanding of which precautions to take in protecting ourselves from different levels of UV radiation.
http://www.cpc.ncep.noaa.gov/products/stratosphere/uv_index/uv_current.html or http://www.epa.gov/sunwise/uvilaunch.html .

Global Warming
NASA's Earth Observatory features an article on global warming, explaining what global warming is, how scientists know it's happening, and how they predict future climate.
http://earthobservatory.nasa.gov/Library/GlobalWarmingUpdate/

Global Warming 101
The Will Steger Foundation is dedicated to creating programs that foster international leadership and cooperation through environmental education and policy. An on-line initiative, Global Warming 101, promotes change through education and advocacy, hoping to raise broad public awareness about global warming as witnessed through Will Steger's polar expeditions. The website includes educational information and materials, a discussion forum, and more.
http://www.globalwarming101.com/

Global Warming 101 Begins New Expedition
The Global Warming 101 expedition team of Inuit hunters, explorers, and educators, will embark on a four-month expedition to get a first-hand look at how global warming is impacting the Arctic landscape, wildlife, and human communities.
http://www.globalwarming101.com/content/view/32/88888907/

Global Warming 101 Expedition with Will Steger - Online
National Geographic Explorer Will Steger and a team of young adventurers from Norway, Great Britain, Canada, and the U.S. will bring their High Arctic dogsled expedition to educators and learners through multimedia dispatches. The website includes standards-linked multidisciplinary lesson plans appropriate for middle school and older students that explore how climate shapes the past, present, and future for members of the High Arctic community.
http://www.globalwarming101.com/

Global Warming Debate
The Online NewsHour Science Reports from PBS, funded by the National Science Foundation, discusses global warming, policy struggles to address it, international efforts, the cap-and-trade system, and more. The website offers interactive features, background information, a lesson plan, and more.
http://www.pbs.org/newshour/indepth_coverage/science/globalwarming/index.html

Global Warming Facts and Our Future
The Marian Koshland Science Museum explores the latest scientific information from the National Academy of Sciences about global warming. Learn about the greenhouse effect, the carbon cycle, and past changes in our climate. See predicted changes and how they could affect sea levels, agriculture, and ecosystems. The website also presents options for reducing CO2 emissions.
http://www.koshlandscience.org/exhibitgcc/index.jsp

Global Warming Web Resources
The National Association of Biology Teachers offers a number of instructional materials designed for use in the classroom along with grants, awards, and professional development opportunities. Their list of instructional materials includes a short listing of some global warming websites.
http://www.nabt.org/sites/S1/index.php?p=83

Global Wildlife Disease News Map
The Global Wildlife Disease News Map displays news articles from the Wildlife Disease News Digest that have been posted within the last 45 days and have a geographical reference. On it, users can see wildlife disease headlines both locally and globally.
http://wildlifedisease.nbii.gov/wdinNewsDigestMap.jsp

Global Youth Service Day
Global Youth Service Day April 24-26, 2009, highlights and celebrates the difference youth make in their communities year-round through community service and service-learning.
http://www.gysd.org/

GLOBE at Night Campaign
GLOBE at Night, February 25-March 8, 2008, is designed to aid teaching about the impact of artificial lighting on local environments and the ongoing loss of a dark night sky as a natural resource for much of the world's population. The website will include instruction guides, one-page flyers, and more.
http://www.globe.gov/GaN/

GLOBE moves to Boulder, CO
The GLOBE Program now resides at the University Corporation for Atmospheric Research, in Boulder, Colorado. GLOBE is a worldwide hands-on, primary and secondary school-based education and science program. Internationally, GLOBE is a partnership between the United States and 100 other countries.
http://www.gsfc.nasa.gov/news-release/releases/2003/h03-087.htm

GLOBE Student Research Campaign on Climate Change 2011-2013
Planning for the GLOBE Student Research Campaign on Climate Change will begin in January 2009, and will enlist the support of climate change scientists, science educators and educational outreach experts, as well as businesses, foundations, and policy makers. The campaign will culminate with an international student research conference in 2013.
http://globe.gov/r/html/climatechange

GLOBIO - Mapping Human Impacts on the Biosphere
This UNEP program, Global Methodology for Mapping Human Impacts on the Biosphere (GLOBIO), uses models and analysis to assess human impact on the biosphere. The website features maps, videos, and documents, as well as a description of the model and scenarios. Analyses of coastal regions using the GLOBIO methodology are featured in the downloadable report, *Our Precious Coasts: Marine Pollution, Climate Change and Resilience of Coastal Ecosystems*.
http://www.globio.info/

Glossopedia
Glossopedia is an online multimedia science encyclopedia that students can use to learn more about animals, habitats, science, technology, and more. Founded by a core team from the publishing, technology, business, and education communities, it is dedicated to offer safe and quality content that kids of all ages can enjoy.
http://www.globio.org/glossopedia/

Go Fish! Hawai'i and Great White Card Games
Educational, marine-themed card games, *Go Fish! Hawai'i* and *Great White,* have been received with minor errors, and are being made available at a special price ($2.50 each, plus shipping) to classroom teachers only, for distribution to their students. The minimum quantity is 24 decks and the maximum allowed is the number of students in their class. For more details, and if you have any other ideas about what might be done with these cards, please contact Elaine de Man at elainede@sbcglobal.net.
http://www.cardsharkpress.com/wst_page2.html

Go Green Database
Edutopia offers the Go Green Database, an environmental-resources directory for educators. Users can search by topic, grade level, cost, or location. Topics include water, air/climate, habitat/ecosystem, and more, while resources can be searched for lesson plans, information/statistics, field trips, and more. Be sure to supplement the entries with your contributions and comments.
http://www.edutopia.org/go-green

Goliath Grouper Video
A new video has been posted on You Tube titled Guasas bajo proteccion [goliath grouper under protection]. The video is a rough cut of what will be aired eventually on Telemundo. The audio is in Spanish, and they are working on subtitles or dubbing in English.
http://www.youtube.com/watch?v=FHRa26y-Ypk

GoNorth!
This free K-12 online classroom expedition in the arctic sets out to explore the prospects of oil exploration, document the realities of Arctic climate change, and the value of traditional ecological knowledge. Team GoNorth! will dogsled the land of Alaska to learn

from the Gwiich'n and Inupiat Eskimo (Inuit) people along the trail while gathering scientific data from the field in collaboration with NASA and the Office of Polar Programs at National Science Foundation.
http://www.polarhusky.com/te2005.asp?menuID=121

Google Earth
Google Earth combines satellite imagery, maps, and the power of Google Search to put the world's geographic information at your fingertips. The free download allows users to zoom into any part of the Earth. It brings across the point that approaching from space, one sees first the oceans, then land, and then coral reefs. Many of the world's large reef systems are clearly visible in low-resolution imagery from as close as about a virtual mile up, while some areas are available in higher resolution.
http://earth.google.com/

Google Scholar - Free Search for Online Academic Documents
The Internet search organization Google has released a new tool called "Google Scholar" that allows you to look up any author, publication, or technical topic and find all of the other articles or websites that cite that work. Google Scholar enables you to search specifically for scholarly literature, including peer-reviewed papers, theses, books, preprints, abstracts, and technical reports from all broad areas of research.
http://scholar.google.com

Go Visit an Aquarium
The Bridge can help you find an aquarium or ocean science-related museum for your spring field trip or summer vacation. In the Resource Center section, you will find a listing of aquariums and ocean science museums. Studies show that many of students' most memorable and effective learning experiences occur outside the classroom, where they can see and touch marine science concepts first hand. The Bridge also features information on field trips to research institutions and other outdoor education centers.
http://www.marine-ed.org/bridge/index_aquarium.html

GPA Marine Email Newsletter
The GPA is the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, for which the United Nations Environment Programme (UNEP) provides the secretariat. Monthly GPA Outreach newsletters and weekly GPA News Updates are a new source of information about related events and information relevant to the wider marine and freshwater sector. To subscribe to GPA Outreach, send an e-mail to join-gpa-outreach@lists.healthdev.org .

GPA Outreach Online Debate
The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) hosted an interactive online debate as part of GPA Outreach, March 8-17, 2004. The debate focused on *Water Management and Governance* and *Perspectives on Water and Poverty Reduction*.
http://www.unedforum.org/debate/ .

Graduation Pledge of Social and Environmental Responsibility
The Graduation Pledge of Social and Environmental Responsibility states, "I pledge to explore and take into account the social and environmental consequences of any job I consider and will try to improve these aspects of any organizations for which I work."

Students at over a hundred colleges and universities, ranging in size from Whitman to Harvard, have used the pledge at some level.
http://www.graduationpledge.org/ .

Grand Bay National Estuarine Research Reserve
Mississippi Department of Marine Resources' Grand Bay National Estuarine Research Reserve (NERR) offers this site for educators, researchers, students, and others. This website features several sections of interest including a short video showing the reserve before and after Hurricane Katrina and a species profile generator. The website includes downloadable field journals, books for students, slide shows, and more.
http://www.grandbaynerr.org

Graveyard of the Pacific: The Shipwrecks of Vancouver Island
The Virtual Museum of Canada explores the various shipwrecks that have taken place around Vancouver Island, off the mainland of British Columbia, from the year 1803 to the present day. Read tales of survival from these vessels, view an interactive map of the shipwrecks, and learn about the various hazards associated with the waters off Vancouver Island. Check out the interactive game called "Wrecks."
http://www.pacificshipwrecks.ca/english/index.html

Gray's Reef Brought to Atlanta Through Distance Learning
Through Georgia's distance learning program, Gray's Reef National Marine Sanctuary educators teach and interact live with typically three and as many as seven classes across the state and nation simultaneously. With slides and video footage, they bring Gray's Reef to students from downtown Atlanta and the peanut farming communities of Plains to the mountains of New York and desert of Arizona.
http://www.graysreef.nos.noaa.gov/education.html

Gray's Reef National Marine Sanctuary Ocean Film Festival
The Gray's Reef National Marine Sanctuary will host the 2007 Ocean Film Festival September 21-23, 2007 in Savannah, Georgia. The films explore the beauty of the sea, the complexity of the marine ecosystem, the creatures that inhabit it, our maritime heritage, and humankind's relationship with the oceans in a family-oriented format. The festival is free.
http://www.graysreefoceanfilmfestival.com/

Gray's Reef Ocean Film Festival
Attend the Gray's Reef Ocean Film Festival, September 23-25, 2005 in Savannah and Tybee Island, Georgia. More than 20 free films about the ocean will be shown, sponsored by Gray's Reef National Marine Sanctuary and the National Marine Sanctuary Foundation. All films are free; tickets will be available at the Trustees Theater box office (912 525 5050) starting September 1, 2005. For more information, call (912) 598-2345.
www.graysreef.noaa.gov

Great Annual Fish Count
The event registration and planning for the upcoming Great Annual Fish Count has begun. 2006 marks the 15th year for this annual marine conservation citizen science event. All events must be registered online in order to guarantee inclusion on the website calendar, media releases, and other publicity. All Fish ID classes must be

offered free. The website includes inclusive information for organizers, links to learning resources, a fundraising challenge, and more.
http://www.fishcount.org/index.html

Great Backyard Bird Count
The National Audubon Society and the Cornell Laboratory of Ornithology encourage everyone to count birds with a buddy for the ninth annual Great Backyard Bird Count, February 17-20, 2006. The Mississippi Classroom Activity Kit can help you bring the birds into your classroom at http://www.msaudubon.org/GBBC/classroom.php. Count in a backyard, on a high-rise balcony, in a park, or on any of the 730 million acres of public lands.
www.birdsource.org/gbbc

Great Explorations in Math and Science
Great Explorations in Math and Science (GEMS) offers specialized professional development workshops, an international support network, and science and math curriculum for teachers of grades pre-K thru 8. They have teacher's guides, a series of home activity kits, online activities and videos, an email newsletter, and more in a broad range of earth and ocean science related science units, including *On Sandy Shores, Only One Ocean*, and *Ocean Currents*. GEMS is also introducing a line of integrated science and literacy curricula entitled *Seeds of Science/Roots of Reading* which will launch Fall 2007 with the title *Shoreline Science*.
http://www.lhsgems.org/
http://seedsofscience.org/

Great Lakes Areas of Concern Program
This website, from the Great Lakes Commission under a grant from the EPA, provides a variety of information on the Great Lakes Areas of Concern program and associated Remedial Action Plans, highlighting actions taken to identify and clean up polluted areas in the Great Lakes.
http://www.glc.org/rap/resources/

Great Lakes BeachCast
The Great Lakes Information Network developed this website with funding from the EA in an effort to provide better beach information to the Great Lakes community. It will broadcast information about beach closings and educational content on human health concerns. The website provides news about erosion control projects, contamination and cleanup efforts, beach testing efforts, and more. There are also links to monitoring data.
http://www.great-lakes.net/beachcast/index.html

Great Lakes Ice
For the past 30 years, NOAA has been recording ice data in Great Lakes. Researchers at the NOAA Great Lakes Environmental Research Laboratory in Ann Arbor, Michigan, have tracked ice cover in this region searching for signs of climate change and gathering data to help them better understand ice and its impacts on the Great Lakes and other regions of the world. Students will enjoy the animations, while teachers will appreciate the background information and data.
http://www.magazine.noaa.gov/stories/mag172.htm

Great Lakes Invasive Species Information, Activities, and Curriculum Guide
Illinois-Indiana Sea Grant provides a wealth of Great Lakes environmental education on their website, with a focus on invasive species. The Biological Resources page links to aquatic invasives activities and resources, while Water Quality links to many useful classroom resources and information. Down-load *The Great Lakes Invasive Species Curriculum Guide* to provide students an introduction to aquatic invasive species.
http://www.iisgcp.org/edu/br/grlksinv.pdf. http://www.iisgcp.org/edu/ .

Great Turtle Race
Eleven critically endangered leatherback turtles were tagged with a satellite tracking device, and followed through the Great Turtle Race from a Costa Rican beach across the Pacific towards the Galapagos Islands. This public awareness and educational campaign was sponsored by three schools—an elementary school, a high school and a university. Teachers can use the curriculum and background information provided on this website and/or create their own lesson plans around the event.
http://www.greatturtlerace.com/

The Great Warming
Narrated by Alanis Morissette and Keanu Reeves, *The Great Warming* is a film about climate change which reveals how a changing climate affects the lives of people in a variety of places around the world. The website includes a trailer, links to books, and background information.
http://www.thegreatwarming.com

Great Whales Curricula
Oregon State University's Marine Mammal Institute offers The Great Whales curricula for grades 6-9. The materials address research efforts to expand our knowledge about marine mammals and explore whale biology, ecology topics, and more. The nominal cost covers shipping and handling.
Contact Vicki Osis at vjosis@peak.org

Greedy Goblins' Global Warming
Join the folks at Dauphin Island Sea Lab for a spooky evening of kid-friendly games, activities and education as you learn how to battle the warming forces of the Greedy Goblins, October 26, 2007 in Dauphin Island, Alabama. Games for children of all ages will be held and admission to the event is free. Exhibits, games, and contests will be designed to teach visitors about the causes and effects of global warming, and what we can do to combat those effects to be good stewards of our environment.
For more information on Spooktacular, call 251-861-8710

Green Careers Resource Guide
The Green Careers Resource Guide is designed to assist career development professionals, but is also of use to self-directed students, career explorers, job seekers, and career changers.
http://www.cassio.com/FreeResourceGuides.htm

Green Conference Guide from EECOM
From the Canadian Network for Environmental Education and Communication (EECOM), this online guide can help make your next conference or meeting greener.
http://www.eecom.org/english/greenconf.html .

Green Guide to the Mexican Caribbean
Mexiconservación launched the Green Guide to the Mexican Caribbean, a manual available in English and Spanish designed to educate both individuals and businesses as to the value of the region's biodiversity and the threats it faces. The downloadable guide includes conservation guidelines relating to sea turtles, coral reefs, mangroves, seagrasses, cenotes, lagoons and beaches. It offers good practices recommendations for sport fishing, recreational boating, and hotel and restaurant management.
http://www.mexiconservacion.org/MC_GreenGuide.html

Green Media Toolshed
Green Media Toolshed is a nonprofit organization that works with the environmental community to provide online media and communications tools. Tools include an online media database, email and fax outreach abilities, and tips to help groups build relationships with reporters. Other assets include photos that members can use, a fully branded online press room, and more. Yearly membership fees are a sliding scale based on budget and scope of outreach.
http://www.greenmediatoolshed.org/aboutus/goalsandstratigies.acs

Green TV
Green TV, from UNEP, is the world's first broadband TV channel dedicated to environmental issues. Covering everything from climate change to children's stories on wildlife, it will carry films from around the world. It will have seven channels covering: air, land, water, climate change, people, species and technologies. Each channel will include a feature, a news item, and a children's story.
http://www.green.tv/

Greenhouse Gas Equivalencies Calculator
The greenhouse gas equivalency calculator can help us understand just what reducing carbon dioxide emissions by 1 million metric tons means in everyday terms. This equivalency calculator may be useful in communicating your greenhouse gas reduction strategy, reduction targets, or other initiatives aimed at reducing greenhouse gas emissions.
http://www.epa.gov/cleanenergy/energy-resources/calculator.html

Greening of the Great Lakes
Michigan State University and Detroit's radio station WJR offer this website as an online resource for those interested in learning about the Great Lakes region, related environmental issues, and ways that they can protect the environment.
http://www.greeningofthegreatlakes.com/

Guide to Building Effective Education Initiatives
The SAI (STEM Accelerator Initiative) Guide to Building Effective STEM Education Programs is available from the National Alliance of State Science and Mathematics Coalitions. The guide can be a useful resource for anyone designing a new education program or conducting a strategic review of an existing program.
http://www.dehavillandassociates.com/SAIGuide_NASSMC.pdf

Guide to the Exotic Species of San Francisco Bay
The bays and estuaries of the Pacific Coast contain some of the most invaded marine habitats in the world, with additional species arriving every year. The Species Gallery of this guide to the exotic species of San Francisco Bay helps you identify and learn more

about some of the most common invaders in this area. Clicking on an image in the gallery takes you to a web page with information about the species, native range, distribution, and more.
http://www.exoticsguide.org/

Guide to Good Environmental Management Practices for Marinas in Mexico
The Guide to Good Environmental Management Practices for Marinas in Mexico is the result of an open collaboration among a diverse group of people, organizations, and institutions who are committed to the idea that environmental protection is a key function of marina operations. This initiative identifies and supports the voluntary adoption of good marina management practices through preparing codes of conduct, technical manuals, pilot projects, and training. The guidelines are in English and Spanish.
http://www.crc.uri.edu/mxgmp/

Guide to Responsible Travel Options in the Americas
The Rainforest Alliance and their partners have produced a user-friendly guide to help you select reputable hotels and tour operators practicing sustainable tourism principles. The Sustainable Tourism Certification Network of the Americas offers *Certified Tourism Products in the Americas* with descriptions of 138 hotels, restaurants and other types of tourism businesses in Guatemala, Costa Rica, Ecuador and the Caribbean.
http://www.rainforest-alliance.org/news/2005/travel_guide.html

Guides to the Species of the ACE Basin, South Carolina, and Coastal Habitats of Rhode Island
The Ashepoo-Combahee-Edisto (ACE) Basin of South Carolina has a largely undeveloped landscape with diverse habitats, with more than 1500 different plant and animal species that interact with the physical environment to create the ACE Basin ecosystem. The Internet-based Species Gallery highlights birds, fish, invertebrates, mammals, plants, and reptiles that make their home in the ACE Basin.
http://www.dnr.state.sc.us/marine/mrri/acechar/specgal/birds.htm .

Rhode Island is home to an array of coastal habitats, including salt marshes, seagrass beds, and river systems which contribute greatly to the state's biological integrity and diversity and help support the state's economy. Rhode Island's Habitat Restoration Portal hosts an Internet-based Species Gallery of anadromous fish, seagrass, and salt marsh habitats highlighting invertebrates, birds, fish, and plants found there.
http://www.edc.uri.edu/restoration/html/gallery/seagrass.htm

Guide to Understanding a Sense of Place
The free *Guide to Understanding a Sense of Place* (publication number EPA 842-B-01-003) explores the concepts of community and culture and provides tools for identifying, assessing, and working cooperatively within the social dynamics and local values connected to environmental protection. The guide is designed for people involved in community-based initiatives.
http://www.epa.gov/ncepihom/index.htm

Guidelines to Prevent Species from becoming Endangered or Threatened
This 56-page draft guideline was produced for a consortium of NGOs, bringing together current international and small island conservation planning information which can be used by national planners to build a pro-active plan for protecting island species and habitats from current and projected hazards and threats. It is available for downloading

under Information Documents on the website. Check out the many other useful documents on the SPAW COP IV website.
http://cep.unep.org/meetings/2006/spaw-cop-iv/meeting_documents_view

Gulf Facts
Visit the Gulf of Mexico Foundation website for information about the Gulf of Mexico. Representing a wide range of interests (agriculture, business, fisheries, industry, tourism, and the environment), the Foundation promotes and funds research, education, and conservation programs. The focus area encompasses all areas bordering the Gulf. The website covers geography, resources, history, environmental concerns, education, and more.
http://gulfmex.org/facts.htm .

Gulf of Alaska with NOAA Ocean Exploration
The Gulf of Alaska 2004 Expedition from NOAA's Ocean Exploration, July 30-August 23, 2004, explored five large seamounts located approximately 200 miles off the Alaska coast. Scientists will focus their investigations on seafloor aging and characterization, deep-sea coral genetics, and community ecology. The website hosts essays and lesson plans that tie directly to the expedition, developed for students in Grades 5-12. Logs, Ask an Explorer, videos, and more were added during the expedition.
http://oceanexplorer.noaa.gov/explorations/04alaska/welcome.html .

Gulf of Maine Primer of Marine Habitat Types
The Gulf of Maine Council on the Marine Environment has recently released The Gulf of Maine Primer of Marine Habitat Types, which details the types of habitats found in the Gulf of Maine region. The primer provides scientific data and descriptive characterizations to assist with evaluating and safeguarding marine habitats.
http://www.gulfofmaine.org/habitatprimer/

Gulf of Maine Monitor
Access cutting edge research and issues about coastal ocean observing in the Gulf of Maine by subscribing to the *Gulf of Maine Monitor*. Each issue explores timely issues surrounding the western Gulf of Maine, such as the effects of spring storms on the spring bloom. The Monitor is published quarterly and is free of charge.
http://www.cooa.unh.edu/publications.jsp

Gulf of Maine Research Institute
The Gulf of Maine Research Institute website offers materials to teach and learn about aquatic environments. Topics range from how satellites image the Earth to detailed examinations of species and habitats including lobsters, turtles, herring, marine mammals, and aquatic environments from Katahdin to the sea. Working with NASA, the site offers materials that describe global climate change, hurricanes, and over a hundred classroom-tested activities.
http://www.gma.org/educate/default.asp

Gulf of Mexico Alliance
The Gulf of Mexico Alliance, a partnership between Alabama, Florida, Louisiana, Mississippi and Texas, is intent on increasing regional collaboration to enhance the ecological and economic health of the Gulf of Mexico. Current focus is on five issues: water quality for healthy beaches and shellfish beds; wetland and coastal conservation

and restoration; environmental education; identification and characterization of Gulf habitats; and reductions in nutrient inputs to coastal ecosystems.
http://www.dep.state.fl.us/gulf/default.htm

Gulf of Mexico Alliance Environmental Education Network Clearinghouse
The U.S. Geological Survey, National Wetlands Research Center in Lafayette, Louisiana, offers the Gulf of Mexico Alliance Environmental Education Network Clearinghouse. The site is searchable by issue and state. Information is included on reducing nutrient inputs, restoration, water quality, habitats, and much more. Check out the image galleries and links to science careers.
http://www.nbii.gov/gomaeen

The Gulf of Mexico at a Glance Report
One objective of the Gulf of Mexico Alliance is to build public awareness about the linkages between the Gulf region's ecological health, the quality of residents' everyday lives, and the economic vitality of the region. To this end, The Gulf of Mexico at a Glance presents regional aggregations of selected economic activities that are focused in coastal and ocean areas, as well as selected social and environmental attributes of the region.
http://gulfofmexicoalliance.org/pdfs/gulf_glance_1008.pdf

Gulf of Mexico Marine Debris Mapping Website
The NOAA Gulf of Mexico Marine Debris Project recently launched this website. Nearshore waters of Mississippi, Alabama, and Louisiana are being surveyed for the purpose of locating and mapping marine debris, identifying risks to commercial fishing and shrimping activities in the Northern Gulf of Mexico coastal zone and providing users with critical information and maps of debris laden survey areas.
http://gulfofmexico.marinedebris.noaa.gov/

Gulfbase
GulfBase is a database of resources about the Gulf of Mexico. The goal of this website is to regroup, synthesize, and make freely available Gulf of Mexico research information. GulfBase can help researchers, policy makers, and the general public work together to insure long-term sustainable use and conservation of the Gulf of Mexico. The website hosts a comprehensive listing of upcoming events, background information about regional ecosystems, a history of exploration, and more.
http://www.gulfbase.org/

GulfBase InfoHub
GulfBase InfoHub is a public information resource for the Gulf of Mexico from the Harte Research Institute for Gulf of Mexico Studies and the National Sea Grant Law Center at the University of Mississippi. Users can search for articles on the laws, the science, and socioeconomic issues relevant to management and use of the Gulf of Mexico.
http://www.gulfbase.org/infohub/

H_2O Conserve
H_2O Conserve is a web-based project that offers tools and information that enable individuals to make water conservation part of their everyday lives. The website includes links to lesson plans, issue sheets, a water use calculator, and more.
http://www.h2oconserve.org/home.php

H2OUSE
This website was developed by the California Urban Water Conservation Council under a cooperative agreement with the EPA. The website offers water-wise resources, including actions you can take around your house to conserve water, an extensive resources links section, water budget calculator, garden lists, and more.
http://www.h2ouse.org/

Habitable Planet
Annenberg Media offers a new video series in environmental science, *The Habitable Planet: A Systems Approach to Environmental Scienc*e. The 13 programs guide viewers through topics including the atmosphere, oceans, and ecosystems, as well as the impact of human activities and population growth on water and food resources, biodiversity, energy use, and global pollution. Each of the programs in the series includes two case studies featuring the work of top scientists in the field.
http://www.learner.org/resources/series209.html

Habitable Planet
Annenberg Media offers this website as an online textbook, in addition to the video series in environmental science, The Habitable Planet: A Systems Approach to Environmental Science. The website offers a multimedia course for high school teachers and adult learners interested in studying environmental science, with access to course content and activities developed by leading scientists and researchers in the field.
http://www.learner.org/channel/courses/envsci/index.html

Habitat Connections
The Fisheries Office of Habitat Conservation has re-launched their quarterly newsletter, *Habitat Connections*. The next three issues will focus on oyster habitat around the nation.
Laura.Walko@noaa.gov

Handbook on Public Participation in International Waters Management
This downloadable draft publication is produced by the International Waters Learning Exchange and Resource Network. The handbook provides an overview of the considerations related to planning public and stakeholder involvement in international waters management and a set of tools for implementing those plans. Each chapter focuses on a specific topic related to participatory water management, and can be used as a reference for that particular issue or process. (Beware: large file).
www.iwlearn.net/abt_iwlearn/events/p2/p2-handbook.en

Hands on the Land
Hands on the Land is a network of field classrooms stretching across America from Alaska to Florida and is sponsored by Partners in Resource Education, a collaboration of federal agencies, and other partners. Hands on the Land provides a national network of field classrooms, both inland and coastal, to enhance kindergarten through high school student-learning. The website provides teaching materials, resources for students, educational program information, teacher bulletins and more.
http://www.handsontheland.org .

Happenin' Habitats!
The Happenin' Habitats! website has a wealth of resources about the National Wildlife Federation's Schoolyard Habitats® Program. Check out the live electronic field trip on April 13, 2005. The website also includes teacher resources, a forum for information exchange, and information about inclusive instructional techniques for students with disabilities or language barriers.
http://happeninhabitats.pwnet.org/index.php

Harmful Algal Bloom Educational Resources
A request for information about a good lab to teach about harmful algal blooms (HAB) received the following responses, with additional options about HAB educational resources culled from the archives of this *Information Exchange* newsletter.

- Bigelow Lab for Ocean Science has an interactive CD-ROM available titled "Phytopia-Discovery of the Marine Ecosystem." Phytopia has three learning modules Phyto Factors, Phyto Files and the Bloom Activation tool. The website also includes many other HAB materials. http://www.bigelow.org/hab/
- The following monograph on brevetoxins can be a good primer for teachers http://ehp.niehs.nih.gov/members/2005/7501/7501.pdf
- The Bridge's April 2002 Data Tip entitled "In Full Bloom" is a classroom activity that uses HAB data from the NOAA Coastal Services Center. To access this activity, go to the Bridge's home page and type in Full Bloom in the search box. The Data Tip will be the first resource to come up. http://www.vims.edu/bridge
- While not all phytoplankton blooms are harmful, teachers can also refer to "When is Dinner Served? Predicting the Spring Phytoplankton Bloom in the Gulf of Maine, through the Earth Exploration Toolbook. http://serc.carleton.edu/eet/index.html
- The Southeast Phytoplankton Monitoring Network provides information and activities. http://www.chbr.noaa.gov/CoastalResearch/SEPMN/index.htm
- NOAA's Discovery Classroom includes an HAB lesson plan. http://www.nos.noaa.gov/education/classroom/07_algal.html

Harmful Algal Blooms
The Education and Outreach Office at NOAA Fisheries/Northwest Fisheries Science Center offers a film and curriculum booklet about the study of harmful algal blooms. The film documents the work of a team of scientists studying the problem of harmful algal blooms on the coast of Washington. Accompanying the film is a curriculum booklet, The Harmful Algal Bloom Hunter's Handbook, with activities and experiments, a cruise journal, phytoplankton identification chart, and more.
http://www.nwfsc.noaa.gov/hab/outreach/education.html

Hawai'i Coral Reef Bibliography
The Hawai'i Coral Reef Initiative Computer Interactive Bibliography is a collaborative project between the Hawai'i Wildlife Fund and AECOS, Inc. This reference data base provides reference listings of surveys, studies, technical reports, and more on subjects ranging from physical oceanography, biology, taxonomy, water quality, ecology, and reef resources for the main Hawaiian Islands.
http://home.hawaii.rr.com/cpie/CoralReefBib.html

Hawaii Coral Reef Initiative YouTube Channel
The Hawaii Coral Reef Initiative has established a YouTube channel of their scientific presentations from project progress and final reports and workshops. Feel free to engage in a dialogue via the YouTube comments.
http://www.youtube.com/hcrirp

Hawaii's Outer Kingdom
National Geographic Interactive Edition features *Hawaii's Outer Kingdom*, with an excerpt of the National Geographic article, a brief photo gallery, links to additional websites for more information, and beautiful video and a narrated video clip by the researchers and photographers of the article.
http://www7.nationalgeographic.com/ngm/0510/feature4/index.html

Healthy Reefs for Healthy People
Healthy Reefs for Healthy People: A Guide to Indicators of Reef Health and Social Well-being in the Mesoamerican Reef Region is the product of a multi-institutional effort. It is intended to move beyond conventional metrics of biological and ecological health by connecting ecosystem processes with human activity for better management decisions for improved ecosystem health and human well-being in the region.
http://www.healthyreefs.org/

Healthy Rivers: A Water Course
Healthy Rivers: A Water Course was created by the Minnesota Department of Natural Resources. This free, interactive, online water course uses graphics, literary references, and testimonials from experts to help guide readers through the ecology of rivers, the threats facing them, and what can be done about the threats. Suitable for both students and educators, the course offers an overview of stream life and its importance.
http://files.dnr.state.mn.us/assistance/backyard/healthyrivers/course/index.html

Herpetology of Porto Rico
The classic herpetology publication of Leonhard Stejneger is available for downloading online. This book was published in 1902 and it includes drawings of the species as well as new species descriptions. It's a great resource to compare and contrast with some of the available herpetology web offerings.
http://www.coquipr.com/herppr/

Hidden Depths: Atlas of the Oceans
Explore the oceans through unique photographs from the ocean depths and state-of-the-art maps. Previously unpublished 3D views and images of the oceans will help reveal the amazing structure of the oceans. The impact the ocean has on the land we live is evident from hurricanes, pollution, tsunamis, and sea level rise. Man's history with the sea is also outlined from old sea charts and wrecks to the latest in submersible technology, satellite imagery, and echo sounding. Check out the YouTube overview.
http://uk.youtube.com/watch?v=4SkSI1m-By8

High School Environmental Center Website from EPA
This EPA website helps high school students explore and learn about their environment and ways to protect it. The website helps high school students find reliable environmental information, not just on EPA's website, but through other links as well. It links to air and water issues, waste and recycling, conservation, health and safety, ecosystems, and community environmental conditions.

www.epa.gov/highschool/

High Tides Documentary
The Weather Channel presents *High Tides*, a 30-minute special, part of the cable channel's Forecast Earth series. The documentary covers land subsidence and storm surges along the Louisiana coast, flooding along the Maryland coast after Hurricane Isabel, and the use of air gap and tide station technology in Tampa Bay. It also tracks the historical use of tide predictions and how modern technology provided by NOAA has improved our understanding of tides.

Highlights from Migratory Species and Climate Change: Impacts of a Changing Environment on Wild Animals
This report from UNEP and the Convention on Migratory Species aims to raise awareness about the effects of climate change on migratory species. Climate change is regarded as the main cause of loss of biodiversity in the future. The report features case studies that assess impacts of climate change on migratory species, and identifies possible solutions and mitigation measures. Note: if you have trouble opening the report, try accessing it through Internet Explorer.
http://www.cms.int/publications/pdf/CMS_CimateChange.pdf

Historical Happenings at Fish & Wildlife
The U.S. Fish and Wildlife Service offers a monthly e-newsletter with notes on cultural resource management in the Fish & Wildlife Service. The newsletter contains news of note, training opportunities, and requests for information.
eugene_marino@fws.gov

Historical Hurricane Tracks
The Historical Hurricane Tracks tool from the NOAA Coastal Services Center is an interactive mapping application that allows you to search and display more than 150 years of historical Atlantic Basin and East-Central Pacific Basin tropical cyclone data. This updated version allows you to query and display data by storm name, location, and even zip code.
http://hurricane.csc.noaa.gov/hurricanes/

Hitchhikers Guide to Exotic Species
The Massachusetts Institute of Technology Sea Grant Program has produced the Hitchhikers Guide to Exotic Species. The guide contains color photographs and information on several introduced species that can be found along the New England coast, as well as some native species for comparison purposes, and is printed on waterproof paper.
http://massbay.mit.edu/

Hofstra University Marine Lab Handbooks
St. Ann, Jamaica-based Hofstra University Marine Lab has developed an array of handbooks available free upon request. The handbooks vary in length and complexity, and have been written to help with lectures, field trips, student projects, and tourist activities.
http://people.hofstra.edu/faculty/john_f_morrissey/HUML/Handbooks.htm .

Holbrook Global Field Expeditions
Lifelong learners may consider joining one of these international environmental workshops for teachers or field programs for students. In collaboration with state, national and international partnerships, these programs are designed to offer the opportunity to explore topics focused on environmental literacy. The field-based learning seminars travel to Hawaii, Galapagos Islands, and other locations.
http://www.holbrooktravel.com/pages/educationExpeditions/default.aspx

Holding on to the Green Zone
The Bureau of Land Management, in collaboration with the University of Wisconsin-Extension and the USDA Cooperative State Research, Education and Extension Service, offers *Holding on to the Green Zone: A Youth Program for the Study and Stewardship of Community Riparian Areas*. The program engages students in activities to explore and understand the role and importance of riparian areas. A Student Action Guide and a Leader Guide are available for download.
http://www.blm.gov/wo/st/en/res/Education_in_BLM/riparian_module.html

Holiday Tips—Environment-Friendly
Eco-friendly tips for the holiday season:
http://www.use-less-stuff.com/ULSDAY/42ways.html
http://www.earth911.org/master.asp?s=misc&a=misc/xmas/holiday.html
http://www.nwf.org/backyardwildlifehabitat/seasonaltips.cfm
http://www.ciwmb.ca.gov/PublicEd/Holidays/NoWaste.htm
http://www.care2.com/channels/solutions/home/343

Hot Science - Cool Talks
The Hot Science - Cool Talks outreach lecture series is presented by the Environmental Science Institute and the Jackson School of Geosciences in Austin, Texas. Programs include pre-lecture activities, discussions following the lectures, and an Internet broadcast for those who cannot attend. For every lecture there is a CD-ROM that includes the PowerPoint presentation used during the lecture, detailed notes for each slide, links to web and other additional resources on the subject material, and more.
http://www.esi.utexas.edu/outreach/lectures.html

HotChalk's Lesson Plans
HotChalk's LessonPlansPage.com links to over 3,500 free lesson plans. They can be searched by subject, specific topic, and more. Lesson topics include wetlands, 3D models of ocean animals, and more.
http://www.lessonplanspage.com/

How to Get Free Classroom Supplies
Edutopia offers an article in which educators share tips for stocking up on classroom supplies without reaching into their own wallets.
http://www.edutopia.org/free-school-supplies-fundraising-donation

How We Know What We Know About Our Changing Climate
Authors Lynne Cherry and Gary Braasch have released *How We Know What We Know About Our Changing Climate*, a new book for middle school-age children that explains climate science. The book presents scientific and photographic evidence gathered by scientists around the world. A preview of the book is available on the website. A teacher's guide is available for the book.

http://www.dawnpub.com/shopping_cart/INDEX.CFM?ProductID=135&do=detail

Human Dimension Wheel
The Coastal Services Center has created an educational tool called the "Human Dimension Wheel." It provides information about many of the social science tools used to address coastal resource management issues. It's a good way to introduce your students to the benefits of understanding the human dimensions of resource management.
http://ekman.csc.noaa.gov/socialscience_2/wheel.jsp

Human Toll of Climate Change
The Center for American Progress has created an interactive map on the human toll of climate change. Compiled from multiple sources, the map provides scientific information on a variety of climate change threats and plots the information geographically to show areas of concern. Contributions of scientific research to the database are invited.
http://maps.scienceprogress.org/climate/index.php

Humpback Whale Awareness Month and Whale Count – Hawai'i
February is Humpback Whale Awareness Month in Hawai'i, an effort that includes distributing information to libraries throughout the state, lunchtime whale watches, a lecture series, and other events. Because whale population numbers are still relatively unknown, Hawaiian Islands Humpback Whale National Marine Sanctuary, the University of Hawaii's Marine Option Program, and the Kaho`olawe Island Reserve Commission engage the community in an annual census count.
http://hawaiihumpbackwhale.noaa.gov/

Humpback Whale Migration Game
Humpback whales are found in the oceans worldwide. They hold the record for the longest migration among mammals. Play the interactive Migration Game to find out more about humpback whales and how you can help protect them.
http://sanctuaries.noaa.gov/whales/main_page.html

Hurricane Digital Memory Bank
Hurricane Digital Memory Bank: Preserving the Stories of Katrina, Rita, and Wilma
The project has collected first-hand accounts of these hurricanes, along with archives of blog postings, podcasts, and on-the scene visual documentation. From the homepage, visitors can browse an interactive map of images submitted to the archive and also add their own materials to the existing archive. The site includes personal stories submitted by those who experienced the effects of the hurricanes.
http://hurricanearchive.org/

Hurricane Information for Educators
Following both Hurricanes Katrina and Rita, teachers around the country are helping students understand hurricanes. Many education websites have been set up to provide teachers with the background information and educational materials needed. The following were gathered from a variety of listservs.

- Resources from the National Science Teachers Association (NSTA)
  - Severe Weather SciGuide: http://sciguides.nsta.org
  - NSTA's SciLinks

    - Grades K-4, Storms: http://www.scilinks.org/retrieve_outside.asp?sl=566356104410551033
    - Grades 5-8, Hurricanes: http://www.scilinks.org/retrieve_outside.asp?sl=4735895674333355$741922112222$55557766
    - Grades 9-12
      Hurricane Fundamentals: http://www.scilinks.org/retrieve_outside.asp?sl=818144108888
      Hurricane Preparation: http://www.scilinks.org/retrieve_outside.asp?sl=818144109910
    - NSTA's Katrina Job Bank to help teachers forced to leave their communities. http://careers.nsta.org/katrina.asp
  - NSTA's relief efforts and new programs: http://www.nsta.org/katrina
- EE in Georgia – Hurricane Teaching Resources and Service Learning Opportunities: http://eeingeorgia.org/net/content/item.aspx?s=33997.5356.68.4863
- ED.gov Hurricane Help for Schools, for schools serving displaced students http://www.hurricanehelpforschools.gov/
- Association of State Floodplain Managers white paper on rebuilding the Gulf Coast after Hurricane Katrina: http://www.Floods.org/PDF/ASFPM_HurricaneKatrina_WhitePaper_090905.pdf
- Incident News, with information about spill response actions: http://www.incidentnews.gov/
- Environmental Literacy Council http://www.enviroliteracy.org/article.php/258.html
- Forming Hurricanes poster (see educational resources, below)

Hurricane Portal
Hurricanes: The Greatest Storms on Earth
NASA offers these websites with background information, data, images, and weblinks about hurricane formation, anatomy, climatology and more. The Hurricane web portal is designed for viewing and studying hurricanes with a variety of measurements from satellite-based NASA instruments.
http://disc.gsfc.nasa.gov/hurricane/index.shtml
http://earthobservatory.nasa.gov/Library/Hurricanes/

Hurricane Preparedness
The goal of the Hurricane Preparedness website is to inform the public about hurricane hazards and provide knowledge which can be used to take action. This information can be used to save lives at work, home, while on the road, or on the water. The site includes information about storm surge, high winds, tornadoes, flooding, and more. It offers information about how individuals and families can better prepare for possible disasters.
http://www.nhc.noaa.gov/HAW2/english/intro.shtml

Hurricane Resources
The destruction from Hurricane Katrina will raise questions in the classroom regarding hurricane frequency, strength, duration and effects. Teachers can address these questions and examine hurricane data in the following BRIDGE Data Activities:

Haunted by Hurricanes: http://www.vims.edu/bridge/index_archive1004.html

Access National Hurricane Center data to examine long-term hurricane patterns and questions regarding the impact of global climate change.

Hurricanes! http://www.vims.edu/bridge/index_archive0899.html
Basic background information about hurricane formation is featured in this activity, along with introductory hurricane mapping tips.

Without an Ark: http://www.vims.edu/bridge/index_archive0403.html
Learn about some of the short-term and long-term effects of storm flooding on selected freshwater and estuarine organisms using data from the U.S. Geological Survey and plot Hurricane Floyd floods.

BRIDGE-recommended resources:

- Forces of Nature: Hurricanes: http://www.nationalgeographic.com/forcesofnature/interactive/index.html?section=h
- Hurricane Andrew Lessons: http://octopus.gma.org/surfing/weather/andyindex.html
- Hurricane Fran Lessons: http://octopus.gma.org/surfing/weather/franindex.html
- National Hurricane Center: http://www.nhc.noaa.gov/

Additional websites with images following Katrina:

- Earth Observatory Newsroom: http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3
- Global Security: http://www.globalsecurity.org/military/facility/new-orleans-imagery.htm
- NOAA's National Geodetic Survey: http://alt.ngs.noaa.gov/katrina

For more hurricane resources visit the Storms section on the BRIDGE Atmosphere page: http://www.vims.edu/bridge/index_climate.html

HyperStat Online
The HyperStat Online website contains an online introductory statistics textbook complete with sections on normal distributions, confidence intervals, prediction, and the logic of hypothesis testing. Visitors to this site can learn basic concepts of statistics, presented in a fashion that is both lucid and jargon-free. The website includes a number of external links to related resources, including a visual statistics site and a statistics "primer."
http://davidmlane.com/hyperstat/

Ice Stories: Dispatches from Polar Scientists
The Exploratorium celebrates the International Polar Year 2007-2008 by giving cameras to a group of penguin biologists, glaciologists, cosmologists, geologists, and marine scientists working in Antarctica and the Arctic. Visitors can learn about the thoughts and experiences of the scientists working in these two regions. Check out the archived materials, upcoming webcasts, and more.
http://www.exploratorium.edu/poles/index.php

Iced In
The Bridge features Data Activities to supplement curriculum material with timely and seasonal resources. **Iced In** explores the effects of ice in the Great Lakes, and how the United States and Canadian Coast Guards work to predict and react to this natural hazard. The activity also discusses the formation of the Great Lakes and their importance to North American commerce. Students will evaluate and draw conclusions from archived ice data and make comparisons between predicted and observed data.
http://www.marine-ed.org/bridge/index_archive0204.html

Ichthyology & Other Slimy Words
The Cabrillo Marine Aquarium, San Pedro, California, offers public classes, marine laboratory workshops, field trips, and voyages for all ages. Their *Ichthyology & Other Slimy Words* workshops allow you to explore the inner and outer workings of sharks and other fish through dissection, fish printing, and more. Two sessions are offered, July 19-23 and August 23-27. They also provide many other programs.
http://www.cabrilloaq.org/education.html .

ICRI IYOR Symposium
The International Coral Reef Initiative will be hosting a symposium on January 25, 2008, showcasing IYOR activities taking place around the world, allowing participants to meet, share, brainstorm, and coordinate their IYOR plans.
http://www.iyor.org/news/

ICT in Schools: A Handbook for Teachers
ICT in Schools: A Handbook for Teachers or How ICT Can Create New, Open Learning Environments is principally designed for teachers and educators who are currently working with, or would like to know more about, Information and Communication Technologies (ICT) in schools. A major theme in the book concerns how ICT can create new, open learning environments and their instrumental role in shifting the emphasis from a teacher-centered to a learner-centered environment.
http://unesdoc.unesco.org/images/0013/001390/139028e.pdf

ide@s
The Interactive Dialogue With Educators Across the State (ide@s) website offers educator resources that have been aligned to the state education standards and are readily available on the Internet. The website brings together teacher-reviewed and tested lessons, interactive tools, video, and other resources which can be used in the classroom or for curriculum development purposes. The subject list includes environmental education, science, service-learning, and more.
http://www.ideas.wisconsin.edu/

If Reefs Could Talk
Mark your calendars to watch live broadcasts from Aquarius, the world's only underwater habitat, September 10-26, 2007. The September mission on Aquarius, located in the Florida Keys National Marine Sanctuary, is entitled *If Reefs Could Talk*. In addition to the Internet broadcasts, the mission will include several educational components.
http://oceanslive.org
http://www.uncw.edu/aquarius/

Illinois Natural History Survey
The Illinois Natural History Survey offers on-line field guides to amphibians and reptiles of Illinois with species accounts with photographs, distribution maps, and brief entries on description, habitat, status, and more. The website also links to collections of crustaceans, mollusks, fish, birds, mammals, and more.
http://www.inhs.uiuc.edu/cbd/collections/collections.html

Illustrated Coral Glossary
The Coral Reef Information System (CoRIS) Glossary of Scientific and Technical Terminology contains nearly 3,000 technical terms, with their definitions, explanations, and illustrative materials where appropriate. The glossary contains terms concerned with ecology, biogeography, morphology, mapping, fisheries, oceanography, geosciences, conservation programs, and much more.
http://www.coris.noaa.gov/glossary/welcome.html

iLoveSchools.com
iLoveSchools.com is a free matchmaking service for education. School teachers request materials and supplies while school supporters search for a school in need of their gifts of money, new or used goods or other educational supplies. iLoveSchools.com supports any institution that educates children, including pre-schools, home schools and private schools.
http://www.iloveschools.com/index.php .

Immersion Presents: Black Sea 2007
Live video updates from August 18-26, 2007 from the Black Sea will be offered on the Internet and through Internet2, made possible by Immersion Presents in partnership with the Institute for Exploration, the Institute for Archaeological Oceanography, and NOAA's Office of Ocean Exploration. These updates will feature expedition researchers and will chronicle the exploration of two very different shipwrecks in Turkey and the Ukraine.
http://www.immersionpresents.org/

Immersion Presents: Secrets of the Gulf
Starting with live broadcasts March 4-9, 2007, Dr. Robert Ballard and a team of researchers will launch a virtual expedition to the Gulf of Mexico paralleling the actual research expedition. An important theme of the expedition will be connectivity. For the virtual expedition, Immersion Presents will develop an interdisciplinary multimedia curriculum that will include an Adventure Series with hands-on activities exploring the region's geography, geological history, human history, biology, ecology, conservation and careers; Curriculum Extensions to meet the needs of upper elementary and middle school classrooms; interactive content for the website; live broadcasts; and more.
http://www.mysticaquarium.org/index.cgi/1290
http://www.immersionpresents.org/

Immersion Presents through the Internet
The Immersion Presents team is working to provide schools with a viable auditorium quality live broadcast option for sites without access to Internet2. A collaboration between Mystic Aquarium & Institute for Exploration, the University of Rhode Island, and NOAA, they feature live broadcasts from one or more real-world scientific expeditions each year and include hands-on science activities and much more.
http://www.immersionpresents.org/

Impacts of a Warming Arctic: Arctic Climate Impact Assessment
In the Arctic Climate Impact Assessment, an international team of 300 scientists has determined that the Arctic is warming at nearly twice the rate as the rest of the planet. Increasing greenhouse gases from human activities are projected to make it even warmer, according to the four-year scientific study of the region.
http://amap.no/acia/

Implementation and Management of Marine Protected Areas
The December 2005 issue of the journal Conservation Biology provides a special free-content section dedicated to implementation and management strategies for marine protected areas (MPA), with cases drawn from sites worldwide. The special section was based on a symposium on MPAs held at the 2003 SCB Annual Meeting in Duluth, Minnesota, USA. To access the articles, click on the link for the December 2005 issue (Volume 19), then scroll down to the special section.
http://conbio.net/SCB/Publications/ConsBio/Search

In Search of the Bottom Dwellers
The Flower Garden Banks National Marine Sanctuary and the National Center for Coastal Ocean Science conducted fish surveys and mapping operations on board NOAA Ship *Nancy Foster* in the sanctuary. You can follow the mission with logs, background information, and more.
http://sanctuaries.noaa.gov/missions/2007nancy_foster/welcome.html

In the Deep Ocean
The Ocean Technology Foundation (OTF) has a new science center exhibit, *In the Deep Ocean.* The exhibit explores the past, present and future of our oceans. Its centerpiece is a 12-foot interactive model of an undersea station called Ocean Base, where people can live for weeks or months at a time. This habitat is one of OTF's long-term goals. Watch for curriculum related to Ocean Base on the website in the future.
http://www.virtualtour.semapp.org .

In-School Field Trips - Florida
Vone Research offers three programs that engage students while teaching science, language arts, social studies, and math. The in-school field trips are the Marine Archaeology Exploration Program, the Marine Ecology Exploration Program, and the Adaptation Ecology Exploration Program. Students become marine archaeologists or ecologists and discover the excitement of Florida, cultural and natural sciences, and archaeology or ecology while researching real artifacts or specimens found in Florida. Contact Kristen Hoss at voneresearch@bellsouth.net

In Search of Giant Squid Curriculum Guide
Compiled by the Smithsonian Institution Traveling Exhibition Service, NOAA's Ocean Exploration Program, and others, this curriculum is geared for 5-8 grade students with special "roadmaps" for older or younger audiences. The guide includes lesson plans, instructive websites, student worksheets, answer keys, and more.
http://www.sites.si.edu/exhibitions/gaint_squid_curriculum_guide.pdf

Index of NASA Earth Science Portal Stories
The Institute for Global Environmental Strategies develops articles on NASA-sponsored education products and programs in Earth science. All products featured have passed the NASA Earth Science Education Product Review. An archived index of the stories is

available on the website. Browse for resources that may be incorporated into the curriculum or used to help introduce a topic to students. *OceanWorld* and *Honey, I Shrunk the Beach* are just two resources of possible interest to this group.
http://www.strategies.org/education/index.aspx?sub=education&sub2=eartharticles

Indonesian Discovery Links from NSTA
The discovery of nearly 100 new species in Indonesia made worldwide headline news this month. The National Geographic News article offers news and photos on this latest discovery, while NSTA's SciLinks online teacher-approved Internet service identifies several grade-specific websites and resources to help you expand your lessons without spending hours searching the web. Note that the online SciLinks sites are normally available to NSTA members only, but are available for a short time for non-members.

- Grades K-4:
  http://www.scilinks.org/retrieve_outside.asp?sl=638234471421103310661011
- Grades 5-8:
  http://www.scilinks.org/retrieve_outside.asp?sl=638234471455103310661011
- Grades 9-12:
  http://www.scilinks.org/retrieve_outside.asp?sl=638234471499103310661011

http://news.nationalgeographic.com/news/2006/02/0207_060207_new_species.html

Information and Communication Technology Literacy Map
The National Science Teachers Association and the Partnership for 21st Century Skills, have released a Science Information and Communication Technology (ICT) Literacy Map. The guide demonstrates how educators can develop science lessons that combine learning skills such as information and communication skills, with tools such as the Internet and multi–media production tools. It guides K-12 educators through a wide range of learning skill examples, and cites specific student outcome examples.
http://www.21stcenturyskills.org/matrices/default.asp

Information Center for the Environment – Biological Inventory of the World's Protected Areas
The Information Center for the Environment, in cooperation with the United States Man and the Biosphere program, the Man and the Biosphere program of the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and others, has produced databases containing documented, taxonomically standardized species inventories of plants and animals reported from the world's protected areas, with separate links for Biosphere Reserves, and another for all Protected Areas reported.
http://www.ice.ucdavis.edu/bioinventory/bioinventory.html

InnoCentive
The InnoCentive Open Innovation community offers problem-solvers the opportunity to earn money while solving some of the toughest problems facing the world today. There are challenges in a wide variety of disciplines, from Business and Entrepreneurship to Engineering and Life Sciences, each with a significant cash award. While there are no current marine-based challenges, the idea of open innovation with cash rewards may be of interest to some on this listserv.
http://www.innocentive.com/

Inspirational People
Dive Into Your Imagination is a company that creates educational products and activities to educate people of all ages. The website's Kid's Corner showcases both kids and

scientists people who are inspirational and motivational. The website also offers information about shooting video and photos, along with other sections.
http://www.diveintoyourimagination.com/kids-corner/

Interactivate
Not marine, but very cool for those with high-speed Internet access. Interactivate is free, online interactive graphics and courseware for exploration in science and mathematics, with the emphasis on mathematics. The site is structured around collections of activities, lessons, and discussions and is browsable by subject, topic, audience, and resource type.
http://www.shodor.org/interactivate/guide/

Interactive Estuary Poster
Check out this new feature on the Padilla Bay National Estuarine Research Reserve education web site. To access it, select Education, then the Kids Page. Move the cursor around to an animal or plant to bring up more information about it.
www.padillabay.gov .

Interactive Sea Turtle Activities for Kids
The Caribbean Conservation Corporation has a webpage of sea turtle games for kids. While you're on the website, check out the rest of their extensive offerings.
http://www.cccturtle.org/turtletides.php?page=games

Inter-American Biodiversity Information Network
The IABIN was created in 1996 as an initiative of the Santa Cruz Summit of the Americas meeting of Heads of State. Steadily gaining momentum, there are now 34 countries in the Americas that have officially named IABIN focal points. The website has extensive links to biodiversity databases, a search engine (both under tools), and other information.
http://www.iabin.net/defaulteng.html .

International Action on Global Warming
International Action on Global Warming (IGLO) is designed to raise worldwide public awareness about global warming and the particular ways that the polar regions profoundly influence the earth's climate, environments, ecosystems, and human society. The website includes a toolkit, a collection of educational tools and resources and includes downloadable hands-on activities, on-line interactives, and more; news and information; information about professional development opportunities; and more.
http://www.astc.org/iglo/index.htm

International Brant Monitoring Project
The International Brant Monitoring Project monitors the migration of a small sea goose, the brant. Project participants gain a greater understanding of the importance of local ecosystems and global environmental health through the observation of brants and sharing of information between participants in three countries. The project brings together participants that include students, wildlife biologists, national estuarine research reserves, the U.S. Fish and Wildlife Service and others along the Pacific flyway.
http://www.padillabay.gov/brant/index.html .
http://www.padillabay.gov/educationcurriculum.asp .

International Coastal Cleanup
The International Coastal Cleanup, September 18, 2004, September 16, 2006, sponsored by the Ocean Conservancy, is the world's largest one-day volunteer effort on behalf of the marine environment. Youth participation is a major key to success. Each year, groups such as schools, scouts, and churches take advantage of the unique opportunity offered by the cleanup. This website offers teacher resources along with activities and games.
http://www.coastalcleanup.org/pub1/index.cfm

International Coral Reef Information Network
The Coral Reef Alliance (CORAL) manages the Coral Reef Education and Outreach Library as part of the International Coral Reef Information Network (ICRIN), the communications arm of the International Coral Reef Action Network. ICRIN provides internet resources for coral reef conservationists and houses a royalty-free Photobank and the International Directory of Coral Reef Organizations.
http://www.coralreef.org

International Coastal Cleanup
Join thousands of people around the world on September 17, 2005 for the International Coastal Cleanup. A few opportunities around the U.S.:

- L.A. County, with over 55 cleanup locations. California Coastal Cleanup Day is coordinated in Los Angeles County by Heal the Bay in conjunction with the California Coastal Commission, Los Angeles County Department of Beaches and Harbors. http://www.healthebay.org/volunteer/ccd/
- New Jersey will have 4 cleanup sites along the Southern New Jersey Shore. http://www.southjersey.com/articles/?articleid=13379
- Florida cities are hosting coastal cleanups throughout Florida. Search individual cities in addition to this Palm Beach website http://www.volunteersolutions.org/uwpbc/org/opp/5843836.html

International Geosphere-Biosphere Programme
The International Geosphere-Biosphere Programme is a research program that studies the phenomenon of global change. The research goals of the program are to analyze the interactive physical, chemical, and biological processes that define earth system dynamics; research the changes that are occurring in these dynamics; and research the role of human activities on these changes.
http://www.igbp.net/

International Migratory Bird Day
Environment for the Americas invites you to participate in International Migratory Bird Day 2008, May 10, 2008. The initiative focuses attention on migratory birds' journeys between summer and winter homes. This year, the bird conservation focus is *Tundra to Tropics: Connecting Birds, Habitats, and People*. The website includes downloadable materials, activity ideas, lists of bird festivals, and more.
http://www.birdday.org/

International Migratory Bird Day
International Migratory Bird Day celebrates the migrations of birds between their breeding grounds in the U.S. and Canada and their non-breeding grounds in Mexico, Central and South America and the Caribbean. 2004's theme is *Collisions: Clear the Way for Birds,* while the theme for 2006 (May 13) celebrates the *Boreal Forest: Bird*

Nursery of the Americas. Examine the obstacles birds may encounter in flight and explores the many ways to minimize their impacts, the importance of the boreal forest to breeding birds, and threats to the forests, including habitat loss and climate change. Additional links to in-depth information are available.
http://www.birdday.org/imbd.htm

International Polar Day – Land and Life
International Polar year 2007-8 celebrated its fifth polar day, focusing on Land and Life. The World Ocean Observatory presents global, live events to connect students and teachers in classrooms with scientists in the field. After the live webcast, the materials are archived for continued reference. Check out the other materials that have been added to the World Ocean Observatory event archive.
http://www.thew2o.net/events/polaryear/events.htm

International Polar Year
The polar regions play key roles in our global environment. Many important broad and interlinked research challenges involving both polar regions exist today. The International Polar Year (IPY) 2007-2009 will be an intense, coordinated campaign of polar observations, research, and analysis that will be multidisciplinary in scope and international in participation. IPY will use today's powerful research tools to better understand the key roles of the polar regions in global processes.
http://dels.nas.edu/us-ipy/index.shtml
http://www.ipy.org/

International Polar Year
On March 1, 2007, students and teachers around the world helped launch the International Polar Year in their classrooms. The website includes links to a few activities that can be carried out around the world in classrooms, science centers, parks, galleries, and at home. Check out this wonderful website for news and background information, picture galleries, education resources, and much more.
http://www.ipy.org/index.php?/ipy/detail/ipy_2007_2008_school_launch_event/

International Polar Year Integrated Collaborative Education Planning Workshop and Website
The Integrated Communication Effort strategic planning online workshop was held from March 17 to 31, 2006, in order to identify key science concepts and messages for the International Polar Year and to support broad, diverse and international collaboration and participation in this event. The website will offer update information on education communication messages and actions, including documentation of the workshop, a resource list for implementing educational programs, key concepts, and more.
http://coexploration.org/ipy/ice/

International Society for Reef Studies
Located within the Florida Institute of Technology, the International Society for Reef Studies (ISRS) is designed to disseminate its findings on both living and fossil coral reefs. "Reef Encounters" (right side, pull-down menu) will give an overview of some of the projects the organization is currently working on.
http://www.fit.edu/isrs/

International Year of the Reef
The International Coral Reef Initiative designated 2008 as the International Year of the Reef (IYOR 2008). The initiative hopes to strengthen awareness about the ecological, economic, social, and cultural value of coral reefs and associated ecosystems; improve understanding ofl threats to coral reefs and generate practical and innovative solutions to reduce these threats; and generate action to develop and implement effective management strategies for conservation and sustainable use of these ecosystems.
http://www.iyor.org/

Intruders in Paradise
Intruders in Paradise: Invasive Species in Florida, a Teachers Guide is now available for easy downloading from the Tampa Bay Estuary Program website. This teaching guide is specifically about invasive species in Florida. Designed for middle-school students, the guide contains classroom activities, website references, a master vocabulary list, fact sheets about individual invasive plants and animals commonly found in Florida, and additional resources. CDs of the guide also are available by contacting Nanette Holland at nanette@tbep.org.
http://www.tbep.org/isteachersguide/index.html

Invasive Plant Atlas of New England
This site includes an atlas with images and descriptive information for the invasive and potentially invasive plants in New England. Visitors can create customized maps that document these species by utilizing the online records database. The website also allows users to browse a list of species for which data has been collected thus far.
http://invasives.eeb.uconn.edu/ipane/

Invasive Species eFieldTrip - Online
The U.S. Fish and Wildlife Service presents a live eField Trip on April 5, 2005, on invasive species. Students can ask questions and participate in a live web chat with experts to learn about invasive species. This is a moderated chat and a moderator will screen all input to ensure only appropriate questions are entered into the chat room.
www.eFieldTrips.org/Invasives

Invasive Species Lectures On-Line
The Virtual Library of the American Institute of Biological Sciences contains plenary lectures by biologists recorded at AIBS annual meetings. Additional content includes presentations from the AIBS National Roundtable series. You can view synchronized audio and video of all presentations, plus slides and transcripts of presentations. The theme of the 2004 meeting was *Invasive Species: The Search for Solutions*.
http://www.aibs.org/virtual-library/ .

Invasive Species of Everglades National Park
Take your students on an electronic field trip to the Everglades National Park to explore invasive species. The eFieldTrip consists of three major components: a trip journal, a virtual visit, and posting questions via the Ask the Experts Web Form.
www.eFieldTrips.org

Investigating the Climate System
Investigating the Climate System offers problem-based modules for studying clouds, energy, precipitation, weather, and wind. Learning activities, assessment rubrics, and

prerequisite knowledge are included in these down-loadable booklets, correlated to national academic standards for Grades 5-12.
http://spacelink.nasa.gov/products/Investigating.the.Climate.System/ .

Investigating the Ocean
NOAA's National Environmental Satellite, Data, and Information Service, together with the Science House of North Carolina State University and Sea Grant, offer students six inquiry activities to investigate the ocean and the issues we face. The activities use satellite data and other online resources to explore the underwater world.
http://www.science-house.org/nesdis/index.html

Investigations of Daily High-Low Temperatures
Using this online activity from ESRI, students can analyze the spatial patterns of daily temperature extremes and examine the relationship of coasts, latitude, and altitude to temperature extremes across the U.S. in a hands-on, GIS-based environment.
http://blogs.esri.com/Info/blogs/gisedcom/archive/2009/03/06/investigating-temperature-extremes-in-the-usa-with-gis.aspx

IOOS Messaging Materials
The Integrated Ocean Observing System (IOOS) is a system of systems that routinely and continuously provides quality controlled data and information on current and future states of the oceans and Great Lakes from the global scale of ocean basins to local scales of coastal ecosystems. It is a multidisciplinary system designed to provide data in forms and at rates required by decision makers to address seven societal goals.
http://www.ocean.us/node/978

IPY in the Classroom
In support of the International Polar Year, NASA scientists are participating in field expeditions to Earth's polar areas and conducting additional research focused on the poles of Earth and other planets and moons. This web page offers convenient links to a variety of NASA and NASA-sponsored projects with IPY-related classroom activities and resources.
http://www.nasa.gov/audience/foreducators/k-4/features/F_IPY_in_the_Classroom.html

Iron Science Teacher
Not marine science, but this website shows how any object can be used to convey different science messages. The San Francisco Exploratorium offers a myriad of on-line Iron Science Teacher presentations, parodying the Japanese TV program, *Iron Chef*. The downloadable webcasts showcase science teachers as they devise demonstrations around an everyday item such as a plastic bag, a milk carton, or red tape. Other areas of the website offer hands-on activities, science news, a magazine, and more.
http://www.exploratorium.edu/iron_science/index.php

The Island Institute
Since 1983, the Island Institute has employed a wide range of individuals, including photographers, artists, policy experts, and others, all in the name of maintaining the viability of the fifteen year-round island communities in the Gulf of Maine. Website resources include information about fellowship opportunities, working waterfront initiatives, links to initiatives of interest, educational resources, and much more.
http://www.islandinstitute.org/

Islands on the Edge
The award-winning film, *Islands on the Edge - A Look at Climate Change in the Caribbean*, is now on YouTube in both standard and high definition. The film is split into two parts as it exceeds the maximum video length allowed on YouTube.
http://www.youtube.com/watch?v=k2Z-t5U-NpA
http://www.youtube.com/watch?v=_XDpdMftd10&feature=related

iSpecies.org
The term "mashup" was originally used to describe the mixing together of musical tracks, but now refers to websites that weave data from different sources into a new service. They are becoming increasingly popular, especially for plotting data on maps. iSpecies, a species search engine, is a test of E O Wilson's idea of a web page for each species. The data displayed are generated "on the fly" by querying other data sources
http://darwin.zoology.gla.ac.uk/~rpage/ispecies/

IUCN Caribbean Fishes Weblift
The Caribbean Fishes Specialist Group is composed of ichthyologists and fishery scientists who are engaged in research and conservation of fishes in the Caribbean region. They have created a weblift that provides links to on-line databases around the world that contain information about Caribbean fishes.
http://caribbeanfish.org/english.html

IUCN Publications Available in Two Formats
An IUCN online publishing pilot project offers publications in both HTML and PDF format. Two main advantages to this new system include easy capture by search engines and on-line access to cross references, both within the publication and also to outside sources. Two of many such publications include *Protected Landscape Approach: Linking Nature, Culture and Community*, and *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*.
www.iucn.org/wcpa/pubs/taskforce.htm#cities
http://www.iucn.org/bookstore/booksonline.htm

2007 IUCN Red List of Threatened Species
The 2007 IUCN Red List of Threatened Species has been released. There are now 41,415 species on the IUCN Red List and 16,306 of them are threatened with extinction. The website includes species case studies by region, background information about the list, links to video and photos, fact sheets about threatened species, and much more.
http://www.iucn.org/themes/ssc/redlist2007/index_redlist2007.htm

IYOR Public Service Announcements and Messaging Campaign
The International Year of the Reef 2008 is a worldwide campaign to raise awareness about the value and importance of coral reefs and threats to their sustainability, and to motivate people to take action to protect them. NOAA and partners have supported the production and distribution of a series of 30 second TV public service announcements and a united messaging campaign to educate the US public concerning ocean-coral reef and coastal environmental education.
http://www.iyor.org/

IYOR Web Seminar Series
The Australian Research Council offers downloadable presentations through their online seminar on coral reef futures, sponsored by the ARC Centre of Excellence for Coral

Reef Studies. As part of its contribution to IYOR 08, the seminar series is designed to deliver scientific outcomes to the community in an informative and useful way. Topics include MPAs, climate change and coral reefs, adaptive management, and more.
http://www.coralcoe.org.au/events/webseminar/iyorwebseminar.html

JASON Expedition: Disappearing Wetlands
This year's mission for the JASON expedition to the bayous of Louisiana is to better understand what wetlands are, why they are disappearing, and how to best manage these ecosystems in Louisiana, in your neighborhood, and around the world. As students model the work of real researchers, they will gain proficiency in a range of core disciplines, including: math, technology, geography, history, language arts, and life, physical, earth and space sciences.
www.jason.org .

Jean-Michel Cousteau: Ocean Adventures
The six-part TV series premiering on PBS stations this April, *Jean-Michel Cousteau: Ocean Adventures*, is produced by KQED Public Broadcasting and the Ocean Futures Society. The series illuminates the need for better understanding and sustainable management of the oceans' natural treasures. The website includes standards-based lesson plans, informal activities, on-line games, and more, designed for middle school but easily adaptable for other grades.
http://www.pbs.org/kqed/oceanadventures/

Jellyfish Gone Wild
Jellyfish Gone Wild features photos and videos of jellyfish, stinging statistics about jellyfish swarms, and explanations of how and why jellyfish swarms form. The report, available as text or interactive display, provides an overview of the science of jellyfish swarms, tinged with humor. The website also offers additional resources, including jellyfish anatomy, life cycle, and links to other information.
http://www.nsf.gov/news/special_reports/jellyfish/index.jsp

Jetstream - An Online School for Weather
This NOAA website provides educators, emergency managers, or anyone interested in learning about weather with comprehensive, well-organized, colorfully illustrated curricula designed to help teach about the Earth's atmosphere. The self-contained modules include complete lesson plans and review questions.
http://www.srh.noaa.gov/jetstream/matrix.htm

Jiminy Cricket's Environmentality Challenge
Through Jiminy Cricket's Environmentality Challenge, students are encouraged to blend the idea of thinking and acting environmentally at school, at home, and in the community into their daily lives. The downloadable Environmentality Challenge Handbook can be used to guide a class project. A message board is available for teachers to share stories, ask questions and provide feedback to each other.
http://disney.go.com/environmentality/jcec/home.html

John Muir Manuscript Letters
The Wisconsin Historical Society provides access to more than 100 pages of original letters written by John Muir, with the original handwritten letters side by side with typed versions and their transcriptions.
http://www.wisconsinhistory.org/turningpoints/search.asp?id=1224

Joint Oceanographic Institutions
Joint Oceanographic Institutions is a consortium of oceanographic research institutions that serves the U.S. scientific community through management of large-scale, global research programs in the fields of marine geology, geophysics, and oceanography. The website offers ocean drilling science information, professional development opportunities, and on-line educational activities and lesson plans based on scientific ocean drilling data.
http://www.joiscience.org/joi

Journal of Online Learning and Teaching
The objectives of the Journal of Online Learning and Teaching are to enable faculty to use technology effectively in teaching and learning and also to enable academic programs to design and deploy academic technology. The journal is published quarterly.
http://jolt.merlot.org/

Journey of the Loggerhead:
This interactive DVD on marine turtles, from Environmental Media, was designed and filmed in the company of countless staff and volunteers of local nesting beach monitoring programs, domestic and international agencies, colleges and universities, aquaria, nature centers, and rehabilitation programs. The DVD contains GIS data, satellite tracking information, still photographs, extensive interviews, a curriculum correlations guide and a 26-minute video about the loggerhead and other marine turtle species.
http://www.envmedia.com/production/loggerhead/index.htm .

Journal of Coastal Research
The Coastal Education and Research Foundation has released a special summer 2008 issue of its on-line journal, *The Journal of Coastal Research*, devoted entirely to research conducted in the National Estuarine Research Reserve System. The special issue, *Research and Monitoring of NERRS Aquatic Ecosystems*, focuses on biological monitoring and studies of the linkages between physical and biological components of estuarine ecosystems.
http://www.jcronline.org/perlserv/?request=get-toc&issn=1551-5036&volume=55&issue=sp1&ct=1

Journey North
Journey North begins again in February. It is a free online program engaging students in a study of wildlife migration and seasonal change, following tulips, monarch butterflies, whooping cranes, gray whales, and more. Students share their own field observations with classrooms across the hemisphere. In addition, students are linked with scientists who provide their expertise directly to the classroom. The Annenberg Channel also offers free Journey North video programs, teaching tools, and lessons, and more.
http://www.learner.org/jnorth/

Journey North
Journey North is a free online program engaging students in a study of wildlife migration and seasonal change. K-12 students share their own field observations with classrooms across the hemisphere tracking migration patterns of birds and mammals, the budding of plants, changing sunlight, and other natural events and are linked with scientists who provide their expertise directly to the classroom. Find standards-based lesson plan, activities, and information.

http://www.learner.org/jnorth/ .

Journey North on the Annenberg/CPB Channel
The Annenberg/CPB Channel is a free satellite channel for schools, colleges, libraries, public broadcasting stations, public access channels, and other non-commercial community agencies. One current highlight is Journey North, an Internet-based program that engages students in investigations of wildlife migration and seasonal change.
The 150 page Teacher's Manual comes in a tabbed three-ring binder which contains 35 interdisciplinary lessons, classroom organization techniques, and more.
http://www.learner.org/channel/series127.html

Journey North Begins
Begin tracking the arrival of spring and the migrations of numerous wildlife species using the Journey North web site. Journey North is a free online program engaging students in a study of wildlife migration and seasonal change, following tulips, monarch butterflies, whooping cranes, gray whales and more. Students share their own field observations with classrooms across the Hemisphere. In addition, students are linked with scientists who provide their expertise directly to the classroom.
http://www.learner.org/jnorth/

Journey North Begins
Journey North offers a free 10-week geography project, a Mystery Class, starting January 31, 2005. Teachers and students in grade 4-12 classrooms are invited to participate, in which students try to find ten secret classes “hiding” around the globe. Young geographers must use reasoning, graphing, and research skills to pinpoint exact locations of the mystery classes.
http://www.learner.org/jnorth/tm/mclass/About.html

Journey South
Students get hands-on experiences with nature and wildlife by participating in the international Journey North program. The fall component, Journey South, tracks the migrations of birds, whales, and butterflies, as well as the growth of tulips from bulbs.
http://www.jnorth.org/

Journey South Begins
Track migration across the Northern Hemisphere. Investigate seasonal change, geography, and much more. Students share their own field observations with classmates across North America and analyze data from other classroom and professional scientists. Each study features standards-based lessons and challenges, weekly migration updates, interactive maps, connections with field scientists, and more. They also provide guidance to conduct local observations and fit them into a global context.
http://www.learner.org/jnorth/

Journey South with the Whooping Cranes
Follow the flight of whooping cranes south to the Gulf Coast wetlands. Lessons, activities, and information are available on the Journey North website. The Journey North program airs on the Learner Channel on November 3, 2005.
http://learner.org/redirect/november/jnorth90.html

Journey to Planet Earth for Grades 6-12
The Journey to Planet Earth video series has been re-edited for grades 6-12 to help teachers explain to students the science behind some of today's headlines. Teachers can receive a 30-day free preview of the entire 10-episode series or individual episodes, by emailing your name, institutional mailing address, and phone number to screenscope@screenscope.com. The website includes ecosystem profiles, teacher guides, action kit, and more.
http://www.pbs.org/journeytoplanetearth

Juan de Fuca Ridge Expedition
REVEL expedition, June 14-July 13, 2004, explored the deep ocean off the Pacific Northwest coast on the research vessel Atlantis. During this expedition to the Juan de Fuca Ridge, 200 miles west of Washington and British Columbia, scientists, engineers and educators used an Autonomous Underwater Vehicle to study the transfer of heat from hydrothermal vents plumes into the ocean.
www.ocean.washington.edu/outreach/revel .

K-12 Teaching Resources from Delaware Sea Grant
The University of Delaware, Graduate College of Marine Studies and the Sea Grant College Program offer a variety of free or low-cost resources to K–12 teachers seeking marine science information and curriculum materials. Check out the Neat Stuff with the Interactive Habitat, quick-loading on-line videos and presentations, and the Catch of the Day.
http://www.ocean.udel.edu/public/teacher.html

Keep Oceans Clean Campaign
A multi-media public service ad campaign designed to educate, energize, and excite, this campaign aims to encourage everyone to protect the oceans from the harm caused by marine debris. The website includes links to educational materials and background information. Check the website out for new materials, including games, PSAs, and more.
http://www.keepoceansclean.org

Keeping Habitats Healthy eFieldTrip
The eFieldTrip, *Keeping Habitats Healthy: We All Can Help!* is the latest educational outreach program in the Bureau of Land Management's *Share the Adventure* series. The eFieldTrip has three major components – a virtual visit, a trip journal, and Ask the Experts, open April 29-May 1, 2008.
http://www.efieldtrips.org/Habitat/index.htm

Kelp Forest TV Shows
Dr. Bill Bushing is currently involved in the production of a proposed commercial cable TV show, *Munching & Mating in the Macrocystis*. The show will focus on the marine life, ecology, and conservation issues related to the giant kelp forests of southern California. The introductory episode is available for downloading from the website.
http://www.starthrower.org/products/tv%20show/M&M%20tv%20show.htm

Kenai Fjords Tours' Marine Science Explorers Program
The Seward-based *Marine Science Explorer Program* turns a whale watching boat into a floating laboratory/classroom where passengers become active observers and explorers, exploring Resurrection Bay. Students use hydrometers, Secchi disks, plankton nets,

microscopes, and observation to learn about the Kenai Fjords area. The Prince William Sound Explorer Program explores glaciers, wildlife, weather and navigation.
http://www.kenaifjords.com/76.cfm

Kentucky PRIDE
Kentucky PRIDE (Personal Responsibility in a Desirable Environment) unites volunteers with government resources to clean the region's waterways, end illegal trash dumps, and promote environmental awareness and education. PRIDE's educational projects include Project Clean Streams, a campaign to teach students about the importance of good water quality; and Water Quality Assessment and Stream Monitoring training for teachers with free curriculum and water monitoring equipment.
http://www.kypride.org/

Key to the Sea
Key to the Sea is Heal the Bay's free marine environmental education program for teachers and elementary school children (K-5) throughout Los Angeles County. Students learn about watershed stewardship, stormwater pollution prevention, and marine conservation, accomplished through hands-on educational activities culminating in a field trip to the beach. Teachers receive professional development training before the field trip along with standards-based curriculum.
http://www.healthebay.org/key2sea/

Kids as Planners: A Guide to Strengthening Students, Schools and Communities through Service-Learning
The *Kids As Planners: A Guide To Strengthening Students, Schools And Communities Through Service-Learning* book provides teachers, school administrators, students and community partners with a process for designing, implementing and evaluating a service-learning project. It demonstrates how service-learning can effectively meet many educational reform objectives: standards-based learning, character education and school-to-career initiatives. The book includes examples, tools and strategies.
http://www.kidsconsortium.org/books_newsletters.html

KIDZONE
The National Wildlife Federation presents this all-new website, with ideas for specific age groups from toddler to teen. The pages contain online games, nature-related activities, and lots of other information and projects. The focus is terrestrial, but there are plenty of interesting ideas.
http://www.nwf.org/kidzone .

Kinetic City
Developed by the American Association for the Advancement of Science, this website offers an assortment of science experiments, on-line games, activities, and projects. As an example, *A Touch of Class* is an on-line classification game, while the Grinder explores biodiversity. There are also downloadable leader guides for the activity kits.
http://www.kineticcity.com/

La Fete d'Ecologie - Louisiana
The Barataria-Terrebonne National Estuary Program and Foundation are gearing up for this year's La Fete d'Ecologie: Barataria-Terrebonne, on November 15, 2008 in Thibodaux, Louisiana. This educational festival highlights the natural, cultural, and

historical resources of the Barataria-Terrebonne National Estuary with food, music, educational kids' activities, and more.
http://lafete.btnep.org/

La Fete d'Ecologie: Barataria-Terrebonne - Louisiana
The Barataria-Terrebonne National Estuary Program and Foundation offered "La Fete d'Ecologie: Barataria-Terrebonne," on September 30, 2006 in Thibodaux, Louisiana. This educational festival highlights the natural, cultural, and historical resources of the Barataria-Terrebonne National Estuary with food, music, educational kids' activities, and more. La Fete d'Ecologie educates people about the environment that they live in, the history of the region, and the unique blend of cultures found in the estuary.
http://www.btnep.org/client_files/nl_files/fete%2006%20crablines(1).pdf

Lab Out Loud
The National Science Teachers Association (NSTA) has launched *Lab Out Loud*, a biweekly series in which hosts discuss science news and education with leading scientists, researchers, science writers, and others. The hosts are high school teachers from Wisconsin keenly interested in sharing ideas via the web, and the website includes the downloadable episodes along with links to associated materials.
http://www.nsta.org/publications/laboutloud.aspx

LaCoast
The Louisiana Coastal Wetlands Conservation and Restoration Task Force website contains information and links relating to coastal restoration projects in coastal Louisiana. The Louisiana Wetland Education Coalition provides an education website to help distribute materials and workshop information that are focused on wetlands information. The education pages include a summary of wetland functions and values, the Louisiana Wetland Web Quest with guided questions, videos and PSAs, and more.
http://www.lacoast.gov/

Landsat Image Mosaic of Antarctica
A team of researchers has created a new map of
Antarctica, Landsat Image Mosaic of Antarctica (LIMA), which offers geographically accurate, true-color, high-resolution views, created from more than a thousand images from three years of Landsat satellite observations. The website includes links to a flying tour of the McMurdo area, educational materials, downloadable versions of the mosaic, and more.
http://lima.nasa.gov

Landscapes of the Heart
Scholars, writers and environmentalists are invited to submit manuscripts for consideration in an expanded edition of the book *Landscapes of the Heart* – one that will cross the boundaries of ecology, economics, law, culture, health, the social sciences and the humanities.
http://www.telusplanet.net/public/aleksiuk/homepage/call_for_papers .

LandScope America Preview
LandScope America website, with a planned full release in fall 2008, will be an online resource for the land-protection community and the public. The site will bring together maps, data, photography, and information about the environment from a variety of sources and present them in dynamic and accessible formats. The goal is to inspire and

inform collaborative place-based conservation in the U.S. by increasing the pace and effectiveness of land-protection investments in every state.
http://www.landscope.org/preview/Home.html

Last Journey of the Leatherback
This documentary from the Sea Turtle Restoration Project, about the plight of Leatherback sea turtles, is available to teachers and non-profit educational organizations at discounted teachers' price, along with a free teacher's kit. It is appropriate for ages 12 and up. The DVD version is available in English and Spanish.
http://seaturtles.org/press_release2.cfm?pressID=220
http://www.seaturtles.org/pdf/ACF36A.pdf

LeadAmerica
LeadAmerica is a youth leadership organization which sponsors college-accredited, academic-, and career-focused leadership programs for promising young leaders. The Ambassadors Abroad programs provide students with a dynamic, academic, and interactive introduction to the complex historical and contemporary issues facing nations around the world.
http://www.lead-america.org/

Learn about Fisheries
Tteach about the country's commercial and recreational fisheries with help from The Bridge's Human Activities sections. The listing of links to teacher-reviewed fisheries websites contain information for all grade levels and ages, with fact sheets, lesson plans, and more. Check out the interactive games that demonstrate the importance of the world's fisheries and how to preserve them. Learn about over-fishing, the different kinds of gear used to catch fish, by-catch, and the importance of water quality.
http://www.marine-ed.org/bridge/index_fisheries.html

Learning about Renewable Energy
This website provides basic information about solar, wind, biomass, hydrogen, and geothermal power. Students can view a video on how solar panels work, learn about advanced vehicles, alternative fuels, energy delivery and storage, and more. The website also offers information about internships, fellowships, and professional development opportunities.
http://www.nrel.gov/learning/

Learn About Weather, Climate
The USA Today website offers a weather links page, with frequently asked questions and categorized links to USATODAY.com weather background information. There are animated graphics, the basics of weather science, and more. It may take a couple of clicks to find what you're looking for, but the explanations and graphics are easy to understand.
http://www.usatoday.com/weather/wresources.htm

Learning Center on Caribbean Weather and Climate
The Learning Center on Caribbean Weather and Climate is designed for a wide range of users, especially from the secondary school level upwards. The general, fundamental phenomena that create weather and climate are explained, including atmospheric composition, solar radiation, the hydrological cycle, and more. Learning projects in the Caribbean are presented alongside tips and resources for teachers.

http://cawedu.net/index.htm .

Learning Landscapes
The new Bureau of Land Management's website contains resources and information for kids, teachers, and learners of all ages. The Kids section includes links to History Mysteries, Burning Issues, Silent Invaders, and more. The Teachers section includes classroom activities and teachers guides along with links to background information.
http://www.blm.gov/wo/st/en/res/Education_in_BLM/Learning_Landscapes.html

Learning for Sustainability
This website offers an online resource for improving participation and engagement in environment, health, and development for groups working to support multi-stakeholder learning processes. This website offers a guide to on-line resources and highlights a number of activity areas, including topics such as networking, dialogue, adaptive management, and evaluation. The growing role of the Internet is treated as a separate section. Feed back is welcomed.
http://learningforsustainability.nethttp://learningforsustainability.net

Learning Resources at the Royal BC Museum
The website of the Royal BC Museum, British Columbia, hosts a variety of information about topics drawn on the museum's research and public programming. On-line programs offer information about endangered species, whales, the giant Pacific octopus, and more. Included are activity sheets, lesson plans, and background information.
http://www.royalbcmuseum.bc.ca/programs/index_programs.html

Learning Science in Informal Environments
The National Research Council report, *Learning Science in Informal Environments: People, Places, and Pursuits*, reviews science learning across settings and learner age groups and over varied spans of times, and stresses the need for professional development among educators in the field.
http://www.nap.edu/catalog.php?record_id=12190

LearningScience.Org
Using the National Science Education Standards as their framework, learningscience.org is an organization dedicated to sharing the newer and emerging "learning tools" of science education. Tools include real-time data collection, simulations, inquiry-based lessons, interactive web lessons, among others, can help connect students with science in ways that were impossible just a few years ago. Links include science as inquiry, life science, science and society, and more.
http://www.learningscience.org/index.htm

LearningSpace
The LearningSpace website is offered through Open University in Britain. It contains dozens of different online courses, categorized into disciplines such as education, science and nature, and history. Registration, though not required, allows visitors to discuss the materials in a forum, write journal entries, and complete different quizzes. Units include Global warming, Finding information in science and nature, and Inclusive education: knowing what we mean.
http://openlearn.open.ac.uk/

Lehigh Earth Observatory's Envirosci Inquiry
The LEO EnviroSci Inquiry website is an inquiry-based earth and environmental science website aligned to a variety of education standards. A main goal is to present science to K-12 students in a historical perspective by engaging in a detailed study of the Lehigh River watershed. The focus on this watershed presents learners with an opportunity to observe how industry has impacted the environment over time. Be sure to look through Coastal Explorations under Geology, the Educator's Guide, and the GIS data.
http://www.leo.lehigh.edu/envirosci/index.html .

Less Than One Campaign
SeaWeb and the Ocean Wilderness Network, a non-profit coalition of regional and national organizations dedicated to protecting the ocean, have launched *Less Than One,* a public awareness campaign calling for greater protection of the ocean through the establishment of a network of fully protected marine reserves along the U.S. Pacific Coast.
www.lessthanone.org

Lesson Plans Inc.
Lesson Plans Inc. is a science curriculum resource for high school physical science and life science teachers. The website offers high school science teachers curriculum that are aligned to California state standards. While the website isn't completely populated, check out the lesson plans on ecology, scientific method, and more.
http://www.lessonplansinc.com/index.php

Lessons in Conservation
The Center for Biodiversity and Conservation at the American Museum of Natural History has launched a new online journal, *Lessons in Conservation* (LinC), designed to provide educators and students with up-to-date resources in biodiversity conservation. All materials in LinC are peer-reviewed, and are a part of NCEP teaching modules. Easily modifiable versions of the materials found in LinC, along with additional teaching modules, are available on the website.
http://ncep.amnh.org/linc/

Lessons Learned About Collaboration
The Eisenhower Mathematics and Science Consortia and Clearinghouse Network is producing a series of Lessons Learned reports from its 12 years of work in mathematics and science reform. The first publication, *What Experience Has Taught Us About Collaboration*, looks at how collaboration is characterized in the literature, presents strategies and steps for building effective collaborative relationships, and explores several "deep structure" issues that represent barriers to collaborative work.
http://www.mathsciencenetwork.org/collaboration.pdf .

Lessons Learned from Large Scale Environmental Restoration
The Northeast Midwest Institute has released *Large-Scale Ecosystem Restoration: Lessons for Existing and Emerging Initiatives.* The downloadable report outlines the importance of multi-stakeholder collaboration and consensus; understanding local and regional governance; comprehensive planning that includes science, economics, and partnership; implementation strategies; and accounting methods that include projecting and tracking expenses, enforcement of actions and ecosystem health status.
http://www.nemw.org/restoration_products.htm

Let the River Run Silver Again
Let the River Run Silver Again is an environmental conservation story for students ages 10-15 and the teachers, parents, and others who mentor them. It is a source of information and insight for those who want to learn about and benefit from the success of others as well as those who are interested in developing environmental restoration programs in their own watershed. The greater part of the book follows students from one elementary school in Maryland through restoration efforts.
http://www.mwpubco.com/LetRiverRunSilver.htm

Life Cycle of a Mineral Deposit
The USGS offers the online teacher's guide, The Life Cycle of a Mineral Deposit - A Teacher's Guide for Hands-On Mineral Education Activities. The guide covers a range of topics including the use of mineral resources in everyday life and how minerals are mined. There are ten different activity-based learning exercises that can be used to educate students on basic geologic concepts and the processes of finding and identifying resources from any given mineral deposit.
http://pubs.usgs.gov/gip/2005/17/

Life of a Vertebrate Fossil
Through the Smithsonian's Natural History Museum Department of Paleobiology website, visitors learn what paleontologists do in each stage in the life of a vertebrate fossil. Short video clips, interactive diagrams, and photographs show how fossils are prepared for examination, how scientists unravel the stories of these paleontological finds, and how fossils are stored and preserved.
http://paleobiology.si.edu/LVF/#start

Life on an Ocean Planet
Current Publishing Corporation offers a high school marine science program for students to discover, explore, and investigate the world of ocean and aquatic sciences. *Life on an Ocean Planet* is correlated to the National Science Teachers Association's SciLinks Internet site. It balances its content with student-tested investigations and hands-on activities to ensure students achieve science understanding. The text uses an interdisciplinary approach to integrate the curriculum.
http://www.currentpublishingcorp.com/

Life on the Edge
The inaugural issue of *Life on the Edge*, a quarterly newsletter of the Jacques Cousteau National Estuarine Research Reserve, was recently published and is posted on the reserve website. This publication highlights the current research, education, and stewardship being performed by the reserve.
http://www.jcnerr.org/index.htm

LIFE Program
Learning in Florida's Environment (LIFE) is an initiative to establish a series of field-based, environmental-science, education programs around Florida. Each program will represent a partnership between the Florida Department of Environmental Protection and a local school district. The goal of each program site is increased student achievement and teacher professional development in science. The website offers news, contact information, and more.
http://www.dep.state.fl.us/secretary/ed/

Life Story of the Queen Conch
The life story of the Queen Conch, *Strombus gigas*, is available in Spanish, French or English on this website, by CD, or available for downloading in pdf format. (Note: the pdf loads very slowly). The book is a revised and updated edition of *La vie des Lambis* by Katherine Orr and Liliane Frenkiel published in 1986 in Guadeloupe and used in the French Caribbean for educational purposes.
http://www.mda.cinvestav.mx/biblioteca/strombus/inicio.htm .

Limnology and Oceanography
A special issue of the peer-reviewed journal *Limnology and Oceanography* advances the understanding of eutrophication in freshwater and marine ecosystems. The issue, available on-line, provides a valuable multidisciplinary synthesis of the current understanding of the causes and effects of excessive amounts of nitrogen and phosphorus entering lakes, rivers, and coastal waters. The articles also identify gaps in existing knowledge to help guide future research endeavors.
http://aslo.org/lo/toc/vol_51/issue_1_part_2/index.html

LiMPETS Website Redesign
The Long-term Monitoring Program and Experiential Training for Students, known as LiMPETS, is an environmental monitoring and education program for students, educators, and volunteer groups throughout California. Approximately 3,500 teachers and students along the coast of California are collecting rocky intertidal and sandy beach data as part of the LiMPETS network.
http://limpetsmonitoring.org/

Linkages and LAND-L List
The International Institute for Sustainable Development supports Linkages, offering news, information, and analysis on international environment and sustainable development, negotiations, and policy making. Many lists are available, including OCEANS-L, CLIMATE-L, WATER-L, and more. The latest launch is LAND-L, allowing subscribers to post announcements related to desertification, land degradation and drought, sustainable land management events, new initiatives, and more.
http://www.iisd.ca/email/subscribe.htm

Linking Girls to the Land
Linking Girls to the Land is an interagency partnership between Girl Scouts of the USA's Elliott Wildlife Values Project and federal natural resource agencies. The partnership works toward the vision that every girl will have an opportunity to participate in conservation and outdoor programs. It encourages partnerships between Girl Scout and federal natural resource agency representatives on national and local levels in order to offer more joint conservation and outdoor programs to 3.8 million Girl Scouts nationwide.
http://www.epa.gov/adopt/patch/index.html

Lionfish Invasion
This USGS website offers a good visualization of the progressive invasion of lionfish into eastern North American waters. These map layers are a compilation of lionfish sighting reports in North America from 1992 though 2008, offering geographical and historical information to show distribution over space and time.
http://fl.biology.usgs.gov/lionfish_progression/lionfish_progression.html

Lionfish Invasion Newsclip
A segment featuring research on the invasion of the Indo-Pacific Lionfish into the western Atlantic and Caribbean was featured on NBC Nightly News, June 30, 2008, and is available for viewing on this website. NBC worked closely with REEF, NOAA, the National Aquarium in Washington DC and others to produce the story.
http://www.msnbc.msn.com/id/3032619/#25462218

List of Caribbean Marine Protected Areas
A list of Caribbean marine protected areas was gleaned from the *Reefs at Risk* publication and the World Resources Institute. The website also includes important metadata and descriptor information. In addition, users can copy the latitude and longitude information and paste it directly into Google Earth.
http://www.coral.aoml.noaa.gov/mpa/sites/

Listen: Making Sense of Sound
The Exploratorium, a hands-on museum in San Francisco, offers a set of online activities giving users the opportunity to listen closely to the particular sounds of the natural world. Listening Guides include suggestions about listening to wildlife, urban environments, and more. The Online Activities sections lets users practice new ways of listening and test their skills.
http://www.exploratorium.edu/listen/index.php

Listen for Whales
Listen for Whales is a project of Cornell Lab of Ornithology's Bioacoustics Research Program that is working to protect Right Whales from the shipping coming in and out of Boston harbor. The website offers background information, interactives, and links to more resources and information.
http://www.listenforwhales.org/

Litter Clean-Up Initiative
The concept of the Nicodemus Wilderness Project is to provide incentives for youth to explore and expand their horizons through volunteerism, environmental stewardship, and development of writing skills. The Apprentice Ecologist Program aims to engage 1000 kids and teens in a wilderness or nature litter clean-up project by 2006.
http://www.wildernessproject.org/volunteer_apprentice_ecologist.shtml

Little Cayman Research Centre
The Central Caribbean Marine Institute announces that the Caribbean's newest field station, the Little Cayman Research Centre, fringed by the coral reefs of Bloody Bay Marine Park, is open to researchers. Shallow lagoon, wall, and deep ocean habitats are all within swimming distance of the field station. The coral reefs of Little Cayman are isolated from continental and anthropogenic influences and water quality is excellent.
http://www.reefresearch.org

Live (and Archived) from Stellwagen Bank National Marine Sanctuary
Join NOAA scientists and archaeologists from the National Undersea Research Center at the University of Connecticut and the Stellwagen Bank National Marine Sanctuary on July 15, 2006 as they explored the shipwreck of the coal schooners *Frank A. Palmer* and *Louise B. Crary* via a remotely operated vehicle (ROV).
http://www.nurc.uconn.edu

Live Earth
Live Earth, a 24-hour concert on July 7, 2007, will bring together top musical acts with the proceeds from the concerts going to create the foundation for a new, multi-year global effort to combat the climate crisis.
http://liveearth.msn.com

Live from IPY!
Live from IPY! celebrates the International Polar Year by transporting the public to remote polar locations through live from the field calls and Internet presentations. Registration and participation is free. Upcoming presentations include archaeological research at Nuvuk on August 5, 2008 and High Arctic Change '08 from Svalbard, Norway on August 6, 2008. Previous expeditions are archived. *Live from IPY!* continues to transport the public to remote polar locations through live from the field calls and Internet presentations.
http://www.polartrec.com/live-from-ipy/overview

Living Marine Legacy of Gwaii Haanas V: Coastal Zone Values and Management around Haida Gwaii
The Gwaii Haanas National Park Reserve and Haida Heritage Site, on the Pacific coast of Canada, has released a 413-page report synthesizing nearly all information available about the site, including traditional indigenous knowledge, modern human uses, geology, biodiversity, habitat distribution, and more. For a hard copy of the report, contact Norm Sloan or provide an FTP site to which the document may be sent. The website includes background information
Contact Norm Sloan at norm.sloan@pc.gc.ca

Living Waters: Aquatic Preserves of Florida
A one hour documentary, "*Living Waters: Aquatic Preserves of Florida*", highlights 12 aquatic preserves in Florida. Clyde Butcher, the Department of Environmental Protection through the Florida Coastal Management Program and the Office of Coastal and Aquatic Managed Areas cooperated with several sponsors to create this educational and artistic documentary to educate, inform and entertain, letting us experience the complexity of the essential components of these water-bound ecosystems.
http://www.liveoakproductiongroup.com/Aquatic%20_Preserves/AP_Home.html .

Local Fisheries Knowledge Project
Looking through the lens of marine fisheries, high school students learn about history, culture, science, language arts, and business as part of NOAA's pilot Local Fisheries Knowledge Project. This new website highlights a pilot education project in which high school students interview fishermen and others in related industries. The site includes a description of the project, its educational framework, and will be updated as the project progresses.
http://www.st.nmfs.gov/lfkproject/ .

Locally-Managed Marine Area Guidebook
A new book offers step-by-step guidelines to help coastal communities and conservation partners plan and maintain locally managed marine areas (LMMAs). The downloadable guidebook, *Locally-Managed Marine Areas: A Guide to Supporting Community-Based Adaptive Management* (CBAM), is published by the LMMA Network, an initiative to help LMMAs in the Western Pacific benefit from the collective experience of their practitioners.

http://www.lmmanetwork.org/

Loggerhead Lessons
The College of Charleston's Project Oceanica offers *Loggerhead Lessons: A Web-Based Educational Resource* for middle school. All lessons are inquiry-based and aligned with National Science Standards. In addition to the lessons, the website includes pre- and post-tests, answer keys, and the Loggerhead Board Game. (Editor, Rachel Teller)
http://oceanica.cofc.edu/LoggerheadLessons/LoggerheadHome.htm

Long Island Sound Curricular Resource Guide
Connecticut Sea Grant offers the *Long Island Sound Curricular Resource Guide*. Funded by the EPA – Long Island Sound Study, the 148 page guide is a resource for educators teaching about Long Island Sound. The sections include background information about the sound, activities, lesson plans, science lessons at a field site, and resources. Print copies are free (except shipping), and electronic copies should be available by September 2009.
Contact Karen Massaro at Karen.Massaro@uconn.edu

Long-term Monitoring Program and Experiential Training for Students (LiMPETS)
NOAA's National Marine Sanctuary Program introduces the LiMPETS network for middle school, high school, and other volunteer groups to monitor the rocky intertidal, sandy shore, and offshore areas of the five west coast sanctuaries (Olympic Coast, Cordell Bank, Gulf of the Farallones, Monterey Bay and Channel Islands). The collected data allows users to follow long-term changes. All of the information in this website is public and free to be used in any way.
http://limpets.noaa.gov/ .

Looking at the Environment from the WorldWatcher Project
The WorldWatcher project at Northwestern University recruited teacher leaders in environmental science to support *Looking at the Environment*, a new research-based GIS-based environmental science curriculum for high school.
http://www.worldwatcher.org

Lophelia II 2008: Deepwater Coral Expedition: Reefs, Rigs, and Wrecks
NOAA's Ocean Exploration and Research Program has launched the *Lophelia II 2008: Deepwater Coral Expedition* website. It highlights the first cruise of a 4-year project funded by the US Mineral Management Service and the NOAA Office of Ocean Exploration and Research to explore new deepwater coral communities at both natural and man-made sites in the Gulf of Mexico. Educators have developed an Ocean Explorer Expedition Education Module for the mission.
http://www.oceanexplorer.noaa.gov/explorations/08lophelia/welcome.html

Losing Louisiana
This multi-media website offers a visual look at Louisiana after Hurricane Katrina. The site offers an aerial view of the region, complete with interactive elements that allow users to click on a number of locations. Within each section are a series of photographs, augmented by audio that include interviews with coastal restoration experts and locals affected by the hurricane, videos offering explorations of some of the sites are profiled. Also included is a history of the levees as well as information about subsidence.
http://digitalartwork.net/wetlands/losinglouisiana/index-ie.html

Loxahatchee River District Environmental Poster Series
The Loxahatchee River District in South Florida is pleased to announce the debut of its environmental poster series. The first poster features the seven species of seagrass found in the Loxahatchee River Estuary and southern Indian River Lagoon. The poster provides a way to educate the public about the importance of seagrasses and how residents can alter their actions to minimize their impact on seagrasses. The poster, along with other materials, is available for downloading from the website.
http://www.loxahatcheeriver.org/videos.php

Lucas Miller, the Singing Zoologist
Lucas Miller, the singing zoologist, uses music, stories, puppets and humor to teach about monarch butterflies, wetlands, animal defenses, endangered species, and other nature-related topics. On the website, listen to examples of his songs, from wetlands to invasive species and more.
http://www.lucasmiller.net/

Maggie's Earth Adventures
Maggie's Earth Adventures is an educational website offered in both English and Spanish. Animated stories address environmental issues such as over-fishing, invasive species, animal habitats, and more. Online interactive games and downloadable standards-based activities in four subject areas are available. Teachers can sign up for a free weekly activity packet with self-directed lesson plans at the emergent reader, primary, and upper elementary level.
http://www.missmaggie.org/

Magic Porthole
Horizon International has created a way for young people to experience coral reefs through the Magic Porthole™ experience. The Magic Porthole takes visitors into the world of coral reefs with videos, photographs, reef creatures who will be guides, games to enjoy while making discoveries about the lives of boxing crabs, and more. Check back periodically for additional resources, as the website has just come on-line. These include a memory game, a Special Environment Achievement contest, news, and more.
http://www.magicporthole.org/

Magic Porthole Coral Reef Playing Cards
In advance of the International Year of the Reef, Horizon International has launched its Magic Porthole coral reef playing cards with photographic mirror-images of coral reef creatures. One version of the cards has all the same backs so they can be used to play card games, while a second version has backs with information about the species so they can be used for memory games and flash cards. The website includes a variety of resources, news, and more.
http://www.magicporthole.org/

Making Connections for Bird Conservation
Partners in Flight has published *Making Connections for Bird Conservation: Linking States, Provinces & Territories to Important Wintering and Breeding Grounds*. This document offers maps which summarize migratory connections between individual U.S. states, Canadian provinces and territories, and the regions that support the same birds at the other end of migration. The document includes maps of migratory connections for each state, province and territory, and a series of appendices.

http://www.partnersinflight.org/pubs/ts/04-Connections

Making Waves
NOAA's National Ocean Service (NOS) Communications and Education Division has launched a weekly podcast, *Making Waves*. The podcasts highlights current activities, recent discoveries, and other happenings around NOS and will be launched each Friday. The website also offers links from each episode, along with downloadable transcripts of the podcasts.
http://oceanservice.noaa.gov/podcast.html

Managing Ecosystems, Managing Fisheries Webinar
The webinar, *Managing Ecosystems, Managing Fisheries: How do EBM and EBFM Relate?* explores the relationship between ecosystem-based management and ecosystem-based fisheries management. A recording will be available.
www.ebmtools.org/about_ebm/meam.html

Managing Tourism and Biodiversity
This User's Manual on the Convention on Biological Diversity's Guidelines on Biodiversity and Tourism development is a revised version of a draft prepared pursuant to a meeting of experts. In addition to the user's guide, the manual includes checklists and additional resources.
http://www.biodiv.org/doc/programmes/socio-eco/tourism/tourism-manual-en.pdf

Mangrove Video
The Mullet Pond Coalition offers an on-line video showcasing the ecological diversity and value of Mullet Pond in Simpson Lagoon, St. Maarten. This five minute video provides a view into the underwater world and wildlife encountered among the mangrove trees and seagrass. It also outlines why Mullet Pond is so environmentally important and how it may be under threat. This video can be seen along with others on the popular website, You Tube.
http://www.youtube.com/watch?v=lQEgQhy8QAE

Manta Ray Catalogue
A catalogue of individual manta rays visiting the Flower Garden Banks National Marine Sanctuary is available at the sanctuary offices and online. Markings on the undersides of each animal are unique and help scientists to try to learn more about these animals. The website also offers a downloadable poster.
http://flowergarden.noaa.gov/science/mantacatalog.html

Mapping Human Activity in the Marine Environment: GIS Tools and Participatory Methods
This report summarizes a workshop convened by the National MPA Center focused on mapping human activity in the marine environment using GIS tools and participatory methods. The goal of the workshop was to develop general design criteria for practical participatory methods to collect spatial data on human use patterns to inform local and regional MPA planning processes. The report identifies the types of data needed and includes recommendations for collecting the data types both at regional and local levels.
http://www.mpa.gov/information_tools/social_science.html

Mapping an Ocean Sanctuary – GIS in the Classroom
Mapping an Ocean Sanctuary introduces the techniques and applications of geographic information systems. Developed by the Center for Image Processing in Education and the Channel Islands National Marine Sanctuary, in collaboration with Sustainable Seas Expeditions, the six lessons teach fundamental marine and environmental concepts. Students work with case studies, data, and images from the Channel Islands, California.
http://www.cinms.nos.noaa.gov/edu/edu_teacher.html

MAREX Teacher Resources
University of Georgia Marine Extension Service hosts a teacher resource page with background information on coastal Georgia, field guides, and more. Field guides highlight coastal Georgia flora and fauna. The first curriculum offered is on marine debris; others are planned for future distribution. While on the website, make sure to check out the upcoming professional development opportunities.
http://www.marex.uga.edu/aquarium/TchrRes.html

Marine Animals and Human Noise
NOAA Fisheries and scientists from various academic institutions are sponsoring a free national lecture series on marine mammals and human noise, at public aquariums and marine laboratories around the country. The objective of this unique series is to present current scientific information about human sources and uses of sound in marine environments, the physics of sound and hearing, and biological and behavioral factors that relate to noise impacts.
http://www.nmfs.noaa.gov/prot_res/acoustics/lecture.htm .

Marine Aquarium Council Certification and Standards
The Marine Aquarium Council's mission is to conserve coral reefs and other marine ecosystems by creating standards and certification for those engaged in the collection and care of ornamental marine life from reef to aquarium. It offers certification, training, outreach, and more.
http://www.aquariumcouncil.org/

Marine Biology Website
MarineBio.org is a nonprofit volunteer organization of marine biologists, students, professors, and conservation advocates working to share the wonders of the ocean realm to inspire education, research, and a sea ethic. The website includes links to the marine biology news, research, games, species information, photo galleries, and more.
http://www.marinebio.org/

Marine Conservation Biology: the Science of Maintaining the Sea's Biodiversity
Marine Conservation Biology brings together leading experts to apply the lessons and thinking of conservation biology to marine issues, offering insights on the nature of marine biodiversity, threats, and what can be done to recover the biological integrity of the world's estuaries, coastal seas, and oceans. Sections examine distinctive aspects of marine populations and ecosystems; threats to marine biological diversity; place-based management of marine ecosystems; and the human dimensions of marine conservation.
http://www.islandpress.org/books/detail.html/SKU/1-55963-662-9

Marine Conservation Photo Gallery From Norbert Wu
Underwater photographer Norbert Wu has established a website where photographs taken under his Pew Fellowship are available at a nominal cost as a discretionary service to valid nonprofits and researchers.
www.norbertwu.com/pew/index.html

Marine Cultural and Historic Newsletter
NOAA's National Marine Protected Areas Center distributes the monthly *Marine Cultural and Historic Newsletter*. It includes news and updates from around the world, providing a short summary followed by the link to the original news site and/or relevant agency website. Sections include Federal Agencies; Activities in States and Territories; From the Halls of Academia; Global Perspectives; The Reference Library; and Upcoming Events. Access the newsletter through the MPA Center's Cultural Resources website.
http://www.mpa.gov/information_tools/cultural_resources.html

Marine Debris 101
NOAA's Marine Debris Program is a national and international effort focused on identifying, reducing, and preventing debris in the marine environment. This educational website seeks to inform people about the sources, impacts, and solutions of the marine debris issue. The website offers downloadable brochures, posters, fact sheets, guidebooks, and activity books tailored to specific audiences, including beachgoers, fishermen, boaters, students, and educators.
http://marinedebris.noaa.gov/marinedebris101/welcome.html

Marine Debris Animation
The National Marine Sanctuaries offers an online marine debris flash animation. At the end of the animation is a Response Blog, allowing the public to tell how they will make a difference.
http://sanctuaries.noaa.gov/makeadifference/

Marine Debris CDs
Marine Debris of the Northwestern Hawaiian Islands: Ghost Net Identification is an effort to increase public awareness of the Northwestern Hawaiian Islands derelict fishing gear problem. This 2-disc set includes a CD document on marine debris in the Northwestern Hawaiian Islands and a narrated DVD slide show presentation that illustrates the magnitude of the marine debris problem in the NWHI and focuses on the removal process through the eyes of a marine debris diver.
Contact Kerry Irish irish@hawaii.edu or Molly Timmers at molly.timmers@noaa.gov
http://www.nmfs.hawaii.edu/cred/mdr.php

Marine Debris to Energy Project
The New Hampshire Marine Debris to Energy Project studies marine debris at sea and on the shore, incorporating waste-to-energy and recycling as part of cleanup efforts. The website includes individual beach debris breakdowns, a reporting form, and more. Individual beach maps will be available in the future.
http://www.nhmarinedebris.org/

Marine Debris Module
This module looks at marine debris' impact on the Northwestern and Main Hawaiian Islands and performing related scientific investigations. It is designed for grades 4-12. Students will examine issues related to current scientific studies, develop and implement

their own related scientific investigations, and use their findings to take positive actions related to stewardship in their own backyards. The website includes a downloadable Teacher's Guide, introductory materials and scientific articles, and much more.
http://www.hawaiiatolls.org/research/NWHIED2005/resources/MDM/MDM.html

Marine Debris Program
NOAA's Marine Debris Program has identified four strategies to address marine debris: identification, monitoring, research, and information transfer; reduction through removal; prevention, including education and outreach; and emergency response. The website includes background information, a glossary, links to education and outreach programs, a glossary, and more.
http://marinedebris.noaa.gov/welcome.html

Marine Debris Video and Slidepacks
The Offshore Operators Committee offers information about marine debris in both English and Spanish. The website has pdf, PowerPoint, and downloadable videos about marine debris. While geared toward people who work offshore on oil and gas production platforms, they offer good information and demonstrate how even simple actions can help.
http://www.offshoreoperators.com/marinedebris/

Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas
This paper in the July/August 2007 edition of the journal BioScience proposes a new global system for classifying coastal and shelf areas. Intended to help identify and address gaps in conservation coverage, the system divides the world's coastal and shelf areas into 12 "realms". Each realm is then subdivided into "provinces", which in turn consist of ecoregions - with a total of 232 ecoregions worldwide. The authors expect the classification to be useful for conservation planning.
http://www.aibs.org/bioscience-press-releases/070628_new_tool_for_marine_conservation.html

Marine Ecosystems and Management
The first issue of *Marine Ecosystems and Management*, a new quarterly newsletter on marine ecosystem-based management worldwide, has been produced by the same team as *MPA News*, and is funded in part by the David and Lucile Packard Foundation. To subscribe, send an email to meam@u.washington.edu. Type "subscribe" on the subject line and include your name, mailing address, and daytime phone in the text of the message.
http://depts.washington.edu/meam/

Marine Education Interactive Lessons
Maryland Sea Grant offers interactive, downloadable lessons and references on their website. Lessons include Biofilms and Biodiversity, What is the Key to Classification, and Oysters in the Classroom. The website also includes a link to their quarterly newsletter, workshops, and more.
http://www.mdsg.umd.edu/Education/lessons.html

Marine Education Resource Kits
The Woods Hole Oceanographic Institution is offering, free to educators (other than shipping charges), eight different students' books on ocean science, along with teacher's classroom resources. The books are suitable for intermediate readers, are filled with

remarkable images, and conform to national science teaching standards. They are available (while supplies last) as Classroom Kits with 30 copies of one title plus teacher's resource material or Book Packages of 5 of each title (40 books).
http://www.whoi.edu/seagrant/whatsnew/turnstone.html

Marine Education Society of Australasia
MESA - the Marine Education Society of Australasia, Inc. website has a number of resources which can help you to teach about marine and coastal environments. These include teaching units on the Great Barrier Reef and coastal areas (including sample activities for young students), Field Activities for Coastal and Marine Environments, a monthly newsletter, and more.
http://www.mesa.edu.au/teachers.asp

Marine Education in Urban Settings
The Sea Grant Program at the University of Southern California offers resources and helps educators teach marine science and environmental stewardship to urban youth, ensuring that minority students in urban areas have opportunities to learn about the marine environment. Programs include the Island Explorers Program, Parent/Child Education Program, Girls and Boys Science Camps, and the Island Scholars Program. The website includes online activities, links to more information, and a career guide.
http://www.usc.edu/summer
http://www.usc.edu/org/seagrant/MSEdu.html

Marine Fisheries Series Activity Guide
PBS and Habitat Media offer an on-line Marine Fisheries Series Activity Guide to help you dive deeper into the topics covered in the Marine Fisheries documentary series. The guide includes six peer reviewed activities correlated to national science and social studies education standards. The guide links with each of the hour-long documentaries, *Empty Oceans, Empty Nets* and *Farming the Seas*.
http://www.pbs.org/emptyoceans/educators/index.html

Marine Highlights from World Conservation Union Congress
The 3rd IUCN World Conservation Congress was held from November 17-25, 2004 in Bangkok, Thailand. The IUCN Global Marine Programme has brought together the marine highlights from this event that include information on adopted resolutions, recommendations, and news on the main themes discussed, including the high seas, marine protected areas, coral reefs, and marine invasives.
http://www.iucn.org/themes/marine/pdf/PostWCC_KeyMarineMsgs.pdf

Marine Job Postings
If you have a job related to marine or coastal environmental issues for any career background (e.g. educators, oceanographers, marine biologists, anthropologists, lawyers, engineers), please email it to: oar.sg.knauss.joblist@noaa.gov. This listserv is distributed to over 300 people in these fields (many who are Knauss Sea Grant Fellowship alumni) and numerous marine and coastal societies and universities. Contact Nikola Garber at Nikola.Garber@noaa.gov

Marine Mammals Ashore: A Field Guide for Strandings
This updated manual for understanding and dealing with stranded marine mammals describes rescue operations, how to organize a response team, and how to deal with the media and the public. It includes basic information on marine mammal biology, life

history, and health, and an extensive bibliography. The 372-page second edition features water- and tear-resistant paper, a vinyl cover, and durable plastic coil binding.
http://www.aqua.org/research_marinemammalsashore.html

Marine Mammals Ashore: A Field Guide for Strandings
The National Aquarium in Baltimore announced reduced prices for *Marine Mammals Ashore: A Field Guide for Strandings* by J.R. Geraci and V.J. Lounsbury (1998). The CD-ROM includes the Field Guide (a comprehensive manual for understanding and dealing with a stranded seal, manatee, dolphin, whale, or sea otter), a multimedia overview of the CD-ROM including discussions by marine mammal experts from around the world, photographs, and more.
mmashore@aqua.org

Marine Matters
The Marine Matters website, funded by World Wildlife Fund Canada, is about awareness, respect, conservation and wise use of what drifts, swims, crawls, floats, walks, and breathes in the ocean. The website provides information to assist with marine planning and highlighting activities ranging from grassroots outreach to formal education. The goal is to facilitate development of a community and conservation-based marine strategy for Haida Gwaii/Queen Charlotte Islands – a blueprint for Islanders to chart their maritime future. The website includes background information, maps, links to publications, downloadable lesson plans, and much more.
http://www.marinematters.org/index.html

Marine Mineral Studies
The U.S. Department of the Interior's website on marine mineral mining on the Outer Continental Shelf is primarily concerned with providing information about the environmental impact that dredging activity has on marine life, with links to renourishment projects. The Kid Connection offers downloadable booklets and directions for simple experiments which allow kids to see erosion and sedimentation in action, along with links to careers in marine minerals.
http://www.mms.gov/SandAndGravel/MarineMineralStudies.htm

Marine Navigation in the Age of Exploration
The Seattle Art Museum hosted the exhibition, Spain in the Age of Exploration, 1492-1819. To accompany it, they developed an interactive website illustrating the use of four ancient nautical instruments: the quadrant, astrolabe, octant, and chronometer. Each instrument's section includes pictures, a bit of history, and a description of how it was used.
http://www.seattleartmuseum.org/exhibit/interactives/spain/launchWin.htm

Marine and Ocean Sciences ePrints @ Plymouth
The Marine and Ocean Sciences ePrints @ Plymouth is a digital archive providing access to papers produced by the staff of the Marine Biological Association of the United Kingdom, Plymouth Marine Laboratory, and the Sir Alister Hardy Foundation for Ocean Science. Articles from 1887 to 1938 have been loaded so far, along with a few more recent additions. You can run searches and access the full text at sabellla, or download a particular document by following the links from the second website.
http://sabella.mba.ac.uk
http://www.mba.ac.uk/nmbl/publications/pub_lists/publications.htm

Marine Ornithology
Marine Ornithology presents peer reviewed contributions concerning international seabird science and conservation. *Marine Ornithology* is supported and published biannually through a partnership between global seabird societies. A reference site, it offers complete, downloadable peer reviewed articles on seabirds, covering such subjects as population dynamics, marine debris issues, diseases, and more.
http://www.marineornithology.org/index.html

Marine Photobank
The Marine Photobank, a program of SeaWeb, is a free resource of ocean imagery that highlights pressing ocean issues and includes accompanying downloadable Photo Stories. The Marine Photobank was founded in response to a lack of readily available, high quality underwater and above water marine imagery. Images are available at no cost for non-commercial purposes as well as for media use. Some subjects covered are Marine Pollution and Trash, Fishing Methods, and Reefs in Peril/Coral Bleaching.
http://www.marinephotobank.org/home.php

Marine Protected Areas and Coastal Communities
This website from the Caribbean Natural Resources Institute offers tools and resources for managers with a focus on marine protected areas and sustainable coastal livelihoods, to help them better understand and respond to the needs of coastal communities. The website includes downloadable reports, case studies, guidelines, and training materials, along with links to other websites.
www.canari.org/mpa.htm

Marine Protected Areas Inventory Online
NOAA's National Marine Protected Areas Center, in cooperation with the Department of the Interior, has released the online inventory of the nation's marine protected areas (MPAs). This comprehensive inventory catalogs and classifies marine protected areas within US waters. Both tabular and GIS spatial data can be down-loaded, as well as mapping products and analysis reports created using the MPA Inventory data.
http://www.mpa.gov/helpful_resources/inventory.html

Marine Sanctuaries Conservation Series
The Marine Sanctuaries Conservation Series provides a forum for on-line publication and discussion of complex issues the National Marine Sanctuary Program faces. Topics of published reports may include descriptions of educational programs, discussions on resource management issues, and results of scientific research and monitoring projects. The Series will facilitate integration of natural sciences, socioeconomic and cultural sciences, education, and policy development.
http://www.sanctuaries.noaa.gov/science/conservation/welcome.html

Marine Sanctuaries Issue of *Current*
The education program of NOAA's National Marine Sanctuary Program is featured in quarterly issue of the National Marine Educators Association's *Current: The Journal of Marine Education* (Volume 21, Number 1, 2005). The issue illustrates how national marine sanctuaries serve as living classrooms where learners of all ages can see, touch, and learn about America's ocean and Great Lakes treasures.
Contact Michiko Martin at Michiko.Martin@noaa.gov

Marine Sanctuaries Media
The National Marine Sanctuary Foundation has teamed with Marine Sanctuaries Media for this website, which offers the public the opportunity to purchase high-resolution images from the National Marine Sanctuaries library of exclusive content. The library contains more than 200,000 high-resolution images from within the national marine sanctuaries around the United States and American Samoa.
http://www.marinesanctuariesmedia.com

Marine Science Lab Manuals
AMSCO offers textbooks and support materials to the educational community. The course texts, review, and test prep books reflect national and state standards for curriculum and assessment. They offer each new title available for downloading from their website, for a limited time. They also provide sample chapters from some additional titles. In addition, they provide a 30-day free trial on selected Amsco titles in digital format.
http://www.amscopub.com/frameset.htm

Marine Technology Society Club
The Marine Technology Society has launched the Marine Technology Society Club, a free club for students (grades 6-12) who have a thirst for knowledge about technology and the oceans. Members receive a bimonthly newsletter featuring information on careers, academics, student programs, and stories about technology and the people who use technology to investigate and understand the oceans. Members will also have access to an experts directory.
http://www.mtsociety.org/youthclub.cfm\

Marine Virtual Explorer: Hydrothermal Vents on the East Pacific Rise
The *Marine Virtual Explorer* is a simulation of a research dive in the Alvin submersible to a hydrothermal vent field on the East Pacific Rise, part of the global mid-ocean ridge system. Mid-ocean ridges are volcanic and, of course, underwater. When you put all the heat and all the water together, you get spectacular hydrothermal activity.
http://pangea.stanford.edu/marve/

MarineMap
MarineMap, a web-based decision support tool, has been designed to allow stakeholders and resource managers to experiment with different MPA designs on their own computers, at their own pace. MarineMap was developed to meet the specific needs of the California's Marine Life Protection Act Initiative. The consortium that developed MarineMap is interested in adapting it for use in other marine spatial planning efforts.
http://marinemap.org/marinemap/

MarineNZ
MarineNZ is a conservation and education website from the Mountains to Sea Conservation Trust. The site features underwater photos, videos, and information. There are resources for teachers and students, along with interviews with people working in marine conservation. The aim of the website is to inform, to educate, and to inspire marine conservation projects around New Zealand. The website includes news from New Zealand and around the world; feature stories on New Zealand's marine reserves, people in marine conservation, and more; science, resources, and more.
http://www.marinenz.org.nz/

Maritime Archaeology Expedition to Papahanaumokuakea 2008
If you missed the maritime archaeology expedition in July 2008 to the Papahanaumokuakea Marine National Monument in the Northwestern Hawaiian Islands, you can still follow the adventure online through daily blogs and highlight videos. Make sure to follow the links to the shipwrecks, with details of each infamous wreck and survivors' ordeals.
http://sanctuaries.noaa.gov/missions/2008pmnm/

Maritime Heritage of America's Underwater Treasures
The NOAA National Marine Sanctuaries Maritime Heritage Program has launched a new website highlighting their commitment to preserving historical, cultural and archaeological resources within the National Marine Sanctuaries. The site includes background information about maritime archaeology, our whaling past, native cultures and more. You can also follow archaeologists' mission logs during an expedition to create high resolution photo-mosaics of shipwrecks in the Florida Keys.
http://sanctuaries.noaa.gov/maritime

Maritime History of Massachusetts
The National Park Service's National Register of Historic Places and Maritime Heritage Program created this guide to the maritime history of the Bay State. Visitors can explore the sites through a series of interactive maps and then read essays that deal with maritime commerce, shipbuilding, the U.S. Navy, and lighthouses and lifesaving stations. The website offers a brief history of each destination.
http://www.cr.nps.gov/nr/travel/maritime/

Mark Trail Activity Book
Mark Trail's *Living on the Wild Side Responsibly* is a fire education activity book, appropriate for grades 3-6, about living near wildlands. The activities in this book address either all or part of some of the National Achievement Standards depending on how thoroughly the activity is completed or if expansions to the base activity are created. (Note: it is not downloadable from the website.)
http://www.sref.info/spotlight/News_Item.2006-07-13.4738

Marsh Mania – Texas
The Galveston Bay Foundation will host the annual Marsh Mania planting event on May 31, 2008. The goal of this restoration project is to involve local citizens in hands-on wetlands restoration activities while increasing awareness and appreciation of wetland habitats and functions.
http://www.galvbay.org/events_marsh.html

The Marsh Project
Environmental Concern, Inc. has expanded their schoolyard habitat curriculum into the Marsh Project, a comprehensive approach to schoolyard wetland habitats design, construction and utilization that involves the entire school – administration, faculty, facility managers, and most importantly students. The five-step process includes teacher training; habitat design; on-going technical support and guidance; wetland construction; and AZA certification as a wildlife friendly schoolyard.
http://www.wetland.org/EC%20main/edu_marsh.htm

Maryland Coast Day
Maryland Coast Day, September 16, 2006 in Berlin, Maryland is celebrated with a festival at the beach, replete with Eastern Shore eats, arts, crafts, live animal touch tanks, canoe rides, surf casting, sand castle building, along with more than 30 conservation organizations showing what they do to protect the coast.
www.mdcoastalbays.org

Massachusetts Coastal Zone Management Publications
A new annual magazine from the Massachusetts Office of Coastal Zone Management, *Coastlines*, is available online. It focuses on coastal and marine habitats and explores these habitats as critical components of sound coastal management. Other publications include CZ-Mail, available tools and publications, upcoming workshops and events, and grants. Guides include a Personal Watercraft Management Guide, a Volunteer's Handbook for Monitoring New England Salt Marshes, and more.
http://www.mass.gov/czm/publications.htm

Massachusetts Ocean Education Guide Website
The Massachusetts Coastal Zone Management Ocean Education Program has developed a dynamic directory of state ocean education resources. The directory includes field trips, speakers, curricula, after school programs, workshops, films/videos, newsletters/periodicals, library/resource centers, volunteer opportunities, and other programs designed to assist K-12 educators in teaching about the Massachusetts' ocean resources.
http://www.mass.gov/czm/oceanmanagement/education/guide/index.htm

Math and Science Song Information, Viewable Everywhere
Math And Science Song Information, Viewable Everywhere (MASSIVE), is a database containing information on more than 1700 science and math songs. The songs, suitable for a variety of ages and of varying sound quality, are both silly and serious. Visitors can search on a song or listen to MASSIVE radio, "an Internet radio station devoted entirely to science/math songs."
http://www.science-groove.org/MASSIVE/ .

Mathematics across the Curriculum
Mathematics across the Curriculum features an "electronic bookshelf" of materials for teaching math through art, history, literature, & music, as well as science, engineering, and other disciplines traditionally associated with math. Topics include misleading averages, bar codes, data analysis, expert systems, information theory, and much more.
http://www.math.dartmouth.edu/~matc/eBookshelf/index.html

MaudNESS Cruise
This website offers archived reports of a 56-day cruise into the Southern Ocean (Antarctic) to learn about conditions and events that cause ocean circulation, a key factor in setting the climate around the world. The story is told through the journal of a 5th grade teacher aboard the icebreaker ship. Learn about crew members (their roles and backgrounds), the science, and day-to-day life aboard a research cruise.
http://www.esr.org/maudness_cruise/cruise_main.html

McDonald and Woodward Publishing
McDonald and Woodward Publishing offers a variety of natural history books of interest, including an award-winning environmental education title, *Let the River Run Silver*

Again! Other topics include water quality, watershed management, and wetlands publications. Resource management/protection titles, technical publications, and field guides from other publishers are also available.
http://www.mwpubco.com/

Meaningful Bay Outdoor Experience
NOAA's Chesapeake Bay Office is committed to connecting individuals and groups to the Bay through their shared sense of responsibility and action. The office administers the *Bay Watershed Education and Training Program*, B-WET, to provide a meaningful outdoor experience for school students in the watershed, and to provide teacher training supporting meaningful outdoor experiences for students.
http://noaa.chesapeakebay.net/education.htm

Measuring Coral Reef Ecosystem Health: Integrating Societal Dimensions
Measuring Coral Reef Ecosystem Health: Integrating Societal Dimensions, from the World Bank, identifies causes of the rapid deterioration of coral reefs being witnessed today through indirect impacts from human activities, including overfishing, destructive fishing practices, chronic pollution, sedimentation from degraded watersheds, and physical alteration associated with coastal development, tourism, oil, and gas exploration. The report offers a framework for measuring societal dimensions of coral reef ecosystem health and applies it to the Mesoamerican Reef.
http://www.cep.unep.org/newsandevents/news/2006/measuring-coral-reef-ecosystem-health

Media Watch on Climate Change
The EcoResearch Media Watch on Climate Change provides a continuous update of media coverage on climate change and related issues from 150 news media sites.
http://www.ecoresearch.net/climate/

MedPAN
MedPAN is an European Union-funded initiative to network MPA managers in the Mediterranean whose aim is to facilitate exchange between Mediterranean marine protected areas in order to improve the efficiency of the management of these areas. The website, available in English and French, features a directory of Mediterranean MPAs by country, MPA-related documents, and more. Documents include the workshop proceedings on Education and Communication in Marine Protected Areas.
http://www.medpan.org

Meet David Doubilet - Alabama
Dauphin Island Sea Lab is offering two chances to meet National Geographic Photographer-in-Residence, David Doubilet. *Cocktails with the Critters*, on May 3, 2007, will take place at Five Rivers in Mobile, Alabama. On May 4, 2007, Mr. Doubilet will host a multi-media presentation, Water Planet - a Look beneath the Surface.
http://press.disl.org/1_31_07doubiletl.html

Mercury is Rising
Mercury (Hg), toxic to most organisms, is present in the natural environment in small quantities. However, through industrial activities such as coal-burning power plants, humans cause the release of mercury into the atmosphere at concentrations higher than would naturally occur. The mercury then rains down with precipitation and is deposited on land and in water. The Data Analysis Teaching Activity (DATA), *Mercury is Rising*

allows students to learn about the sources and effects of mercury in our waters, and the reasoning behind limiting the amount of some fishes we eat.
http://www2.vims.edu/bridge/DATA.cfm?Bridge_Location=archive1203.html
http://www.marine-ed.org/bridge

Mesoamerican Coral Reef Watch Program
A website has been launched to encourage individuals, tourism operators, and organizations to submit regular reports of coral reef health throughout the Mesoamerican region. The primary aim of the site is to provide information and education regarding bleaching events, detect early stages of coral bleaching events over a wide geographic range, and to use coral bleaching as a means to communicate the broader impacts of climate change on the Mesoamerican Barrier Reef.
http://www.marcoralwatch.net/

Messages from the BRIDGE
http://www.marine-ed.org/bridge

- ***Kids in Boats***. This Australian site includes boating safety resources and student activities about navigation, map reading, weather, and tides.
  http://www.safeboating.org.au/Boating/Kids_in_Boats/
- ***Newton's Apple*** offers two lesson plans that focus on scuba diving and the bends.
  http://www.tpt.org/newtons/15/scuba.html
  http://www.tpt.org/newtons/11/bends.html

These recreational sites offer safety messages for students, and address important ocean science subjects such as physics, chemistry, and the atmosphere. For more ocean recreation links, visit the Bridge Recreation page http://www.marine-ed.org/bridge/index_recreation.html.

Meeting Standards Naturally
A free CD-ROM, *Meeting Standards Naturally*, developed for K-12 educators, was developed by the Environmental Education and Training Partnership (EETAP) which is funded by the U.S. EPA's Office of Environmental Education. The CD explores how teaching about the environment can be used to achieve national education standards for core disciplines, discusses what environmental literacy means, and how it helps prepare students to effectively make environmental decisions that impact their daily lives.
http://www.eetap.org/html/new_products.php#CDROM .

Message in a Glider
In April, Rutgers University scientists and students will send an underwater robotic glider on a mission to cross the Atlantic Ocean. The 3,300 mile voyage will take at least 6 months for the slow-moving low-energy glider. Classrooms around the country are invited to participate in this adventure, by sending a message in the glider and following the journey as the glider crosses the ocean.
http://rucool.marine.rutgers.edu/atlantic/bottle/

Meteorology Education and Training
Designed as part of the Cooperative Program for Operational Meteorology, Education and Training, the Meteorology Education and Training website provides a wide range of resources. Within the Topics section, visitors will find information on fields such as fire weather, coastal weather, basic climate, and space weather. The

Resources area offers learning modules, covering convective storm matrices, an introduction to anticipating hazardous weather and community risk, and more.
http://www.meted.ucar.edu

Methods for Ecological Monitoring of Coral Reefs
Methods for Ecological Monitoring of Coral Reefs, published by the Australian Institute of Marine Science, provides a comprehensive guide to methods for monitoring all aspects of coral reef ecology. The report also offers advice on establishing a monitoring program
http://www.aims.gov.au/pages/facilities/bookshop/monitoring-methods/monitoring-methods.html .

The Microbe Zoo
This virtual zoo, part of the Digital Learning Center for Microbial Ecology at Michigan State University, is filled with exotic specimens from the microscopic worlds around, inside of, and on us. The zoo includes pictures of microbes; data about their size, scientific classification, feeding habitats, and more; and descriptions of how the microbes fit into and interact with their environment and other microorganisms. Zoo specimens are arranged in habitat pavilions, including Water World.
http://commtechlab.msu.edu/sites/dlc-me/index.html .

Microbial Life
The Science Education Resource Center at Carleton College offers Microbial Life, focusing on the ecology, diversity, and evolution of microorganisms. Learn about marine microbes and extremophile microbes that live in inhospitable environments. Explore the Gulf of Mexico Dead Zone and red tide through case studies. Find out about microbial observatories and extreme environments.
http://serc.carleton.edu/microbelife/index.html

Microdocs
Microdocs - Short Attention Span Science Theater offers a new ecological sustainability education resource. The website hosts more than thirty, 2-4 minute micro-documentaries written by leading scientists. Supporting each microdoc is text expanding on the concepts introduced by each film and links to further reference material. The main topic explored is ecological sustainability, taking the viewer for a quick trip around coral reefs of the world.
http://www.stanford.edu/group/microdocs/index.html

Micropolitan Museum
Hosted by Microscopy UK, the Micropolitan Museum exhibits images of microorganisms in the freshwater collection, marine collection, and insectarium. Exhibitions within the first two collections include forams, diatoms, desmids, and more. The images are accompanied by brief captions.
http://www.microscopy-uk.org.uk/micropolitan/index.html

MidwestFrogs
This website offers downloadable frog calls and documentary video clips of scientists discussing frog issues, including declining amphibians and malformed frogs. This is not just about the Midwest.
http://www.midwestfrogs.com/

Migration Science and Mystery – A Distance Learning Adventure
Students in grades 5-8 are invited to join millions of shorebirds as they migrate, through webcasts, web chats with experts, videos, and more. The Migration Science and Mystery distance learning adventure takes participants on a journey totaling more than 6,500 miles from Panama to Alaska with stopovers in between. The programs will be broadcast live, and wildlife biologists will be on site to talk about migration and answer questions. Migration is underway, so register now to participate in the journey.

- Bay of Santa Maria, March 22, 2007
- San Francisco Bay, April 19, 2007
- Fraser River Delta, April 24, 2007
- Stikine River Delta, May 3, 2007
- Copper River Delta, May 10, 2007
- Arctic Slope on May 17, 2007

The website offers downloadable lesson plans.
http://migration.pwnet.org

Migratory Species: Biological, Cultural, and Economic Assets of the Americas
Migratory Species: Biological, Cultural, and Economic Assets of the Americas offers an overview about the importance of migratory species, the Western Hemisphere Migratory Species Initiative and its products to date, migratory species conventions, and conservation challenges and solutions. The publication is also available in Spanish and French.
http://www.eco-index.org/migratory/

Millennium Assessment Reports
The Millennium Ecosystem Assessment assessed the consequences of ecosystem change for human well-being. This involved the work of more than 1,360 experts worldwide, from 2001 to 2005. Their findings provide a scientific appraisal of the condition and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to conserve and use them sustainably. The website includes full reports, synthesis reports, slides and graphics, and more.
http://www.millenniumassessment.org/en/Index.aspx

Millennium Ecosystem Assessment
The new Millennium Ecosystem Assessment collates research from many specific locales to create the first global snapshot of ecosystems. The report was assembled by the U.N. Environment Program and includes contributions by 1,300 authors from 95 countries. The Millennium Ecosystem Assessment Synthesis Report presents a synthesis and integration of the findings of the four working groups, condition and trends, scenarios, responses, and sub-global assessments.
http://wdc.nbii.gov/ma.
www.MAweb.org

Millennium Ecosystem Assessment Toolkit
The Millennium Ecosystem Assessment is a study of the global environment and human well-being. Island Press has developed a toolkit called *Millennium Ecosystem Assessment, A Toolkit for Understanding and Action: Protecting Nature's Services. Protecting Ourselves.* This toolkit describes the assessment, ecosystem services, and valuation, and lays out lessons learned from effective policies and practices to increase human well-being and to solve environmental and development problems.

http://www.islandpress.org/MAToolkit

Millennium Coral Reefs Landsat Archive
NASA announces the availability of 1,490 Landsat 7 images of coral reefs in an Internet-based library for the Millennium Coral Reef Project. The collection was created in a partnership which includes NASA, international agencies, universities, and other organizations to provide natural resource managers a comprehensive world data resource on coral reefs and adjacent land areas. This archive contains standardized data that is tiled, zoomable, and downloadable via FTP.
http://seawifs.gsfc.nasa.gov/cgi/landsat.pl

Milstein Hall of Ocean Life Resources
The American Museum of Natural History's Milstein Hall of Ocean Life offers a variety of online resources and activities explaining key concepts related to the ocean's diverse and complex web of life. Resources include a downloadable educator's guide and associated activities, along with additional resources on ocean life, the properties of water, ecosystems, conservation, and more. The website also offers reference lists of books and websites.
http://www.amnh.org/education/resources/halls/oceanlife/

Minerals Management Service Marine Education Materials
The Minerals Management Service manages more than a billion offshore acres and collects billions of dollars in mineral revenues annually. *MMS Ocean Science*, the agency's bimonthly magazine, reports on research, including biological resources (fish, turtles, birds, whales), habitat resources (water quality, sediment quality), and socioeconomic resources (communities, archaeology, fiscal impacts). The Alaska, Pacific, and Gulf of Mexico regions provide lesson plans, posters, and teacher guides.
http://www.mms.gov/mmskids/ , http://www.mms.gov/alaska/kids/ , www.gomr.mms.gov, http://www.mms.gov/omm/pacific/kids/educate.htm, and http://www.gomr.mms.gov/homepg/lagniapp/lagniapp.html .

The Missing Link
Not marine related, but deeply intriguing. The Missing Link is a monthly podcast on the strange history of science, medicine, and technology. The website includes the archived materials, along with lists of suggested readings for those who are looking for additional information. These podcasts are for people who are scared of science but deeply intrigued by it, and for scientists who know there must be a better back story than what's told in the sidebars of their textbooks.
http://missinglinkpodcast.wordpress.com/

Mitigating Coastal Hazards
The Association of State Floodplain Managers offers an on-line handbook, *No Adverse Impact in the Coastal Zone*. The handbook provides a vision, principles, and tools that communities can use to help mitigate the effects of coastal hazards. The No Adverse Impact principle holds that the actions of a community or property owner should not adversely impact other people or the coastal resource.
http://www.floods.org/noadverseimpact/cnai_handbook_10-06.pdf

Mixing It Up
Mixing It Up is a compilation of 25 articles from the National Science Teachers Association's elementary school member journal, *Science & Children*. The collection of

teacher-tested methods blends science with math, language and the arts. Each article is categorized by grade Science Education Standards. They include lesson plans and idea starters using interdisciplinary, integrated, and thematic approaches.
http://store.nsta.org/searchBasic.asp?searchTerm=Mixing+It+Up

Mobile Manatees
Dauphin Island Sea Lab has established Mobile Manatees, a program that encourages the public to report their sightings of these animals in Alabama waters, particularly in Mobile Bay. By calling the toll-free number or visiting the website to e-mail sightings, the public can help scientists find, study, and protect these vulnerable creatures. The program is part of a larger study that will include aerial and ground surveys of manatees in Mobile Bay and research to determine what manatees eat while in the Bay.
http://manatee.disl.org

The Mollusks: A Guide to Their Study, Collection, and Preservation
This new volume, entitled *The Mollusks: A Guide to Their Study, Collection, and Preservation*, is the work of 29 international contributors. The book includes chapters on collecting and cleaning shells, SCUBA, dredging, archival methods, digital and film imaging, dredging, and more. There are chapters covering all seven extant classes of mollusks as well as fossil mollusks. The book is geared to the amateur as well as the professional biologist. The first 25 pages may be downloaded for free.
http://universal-publishers.com/book.php?method=ISBN&book=1581129300

Monitor National Marine Sanctuary
The Monitor National Marine Sanctuary protects the wreck of the famed Civil War ironclad *USS Monitor*, best known for its battle with the Confederate ironclad Virginia in Hampton Roads, Va., on March 9, 1862. The revised website offers student activities, downloadable lesson plans for teachers, updates on past expeditions, a listing of upcoming events, and more.
http://monitor.noaa.gov

Monitoring for Marine Invasive Species
The Massachusetts Office of Coastal Zone Management offers the guide, *Monitoring for Marine Invasive Species: Guidance and Protocols for Volunteer Monitoring Groups,* online. It includes information on site selection, monitoring protocols, safety, and identification resources.
http://www.mass.gov/czm/invasives/monitor/monitoringprotocol.htm

Monterey Bay Aquarium Learning Center
The Monterey Bay Aquarium website hosts a number of educational materials for both students and teachers. The Kid's Corner has numerous on-line activities and games, including art projects, puzzles, music, and much more; a career corner; live web cams, and more. The Teacher's Place offers standards-based teaching units, a Sea Searchers Handbook, and a quarterly newsletter. There's also an animal field guide and an on-line dictionary.
http://www.mbayaq.org/lc/

Monterey Bay Photo Database
The Sanctuary Integrated Monitoring Network, SiMoN, has launched a new photo database containing 1,200 digital images of species, habitats, locations, and issues of

the Monterey Bay National Marine Sanctuary. You can search or browse thumbnails of images then download a high resolution version for educational purposes.
http://sanctuaries.noaa.gov/education/tour/gallery.html

MPA Blog
The IUCN's World Commission on Protected Areas has launched The Official MPA Blog to offer news and views from IUCN/WCPA. The system allows users to link the site as a news feed; search through news for particular subjects or through a structured archiving of old posting; and email stories of interest to friends and colleagues directly from the website.
http://officialmpa.blogspot.com/

MPA Virtual Library
The National Marine Protected Areas Center, in collaboration with the NOAA Central Library, hosts the MPA Virtual Library to facilitate access to information on MPAs. The MPA Virtual Library serves as a searchable database of print, electronic, and web-based resources on U.S. and international marine protected area issues. The resources described and linked to in the MPA Library are organized by bibliography, conferences and workshops, institutions and organizations, and web sites.
http://www2.mpa.gov/mpa/mpaservices/virtual_library/virtual_library.lasso

MPAs – Local and Traditional Fishing Community Perspectives
The International Collective in Support of Fishworkers has launched a new website on MPAs, providing perspectives from local and traditional fishing communities. The website currently includes an overview of MPAs, an outline of international legal instruments protecting the resource rights of local communities, and summaries of case studies from five countries: Brazil, India, Mexico, South Africa, and Thailand.
http://www.icsf.net/icsf2006/jspFiles/mpa/

MSN Virtual Earth
MSN's Virtual Earth website draws on detailed aerial photographs of the United States. Visitors can look at photographs of their home, school, or other location. Visitors can also type in city names, and zoom in on various features at their leisure. The software works directly from the website.
http://virtualearth.msn.com/

MTV Switch
Switch is MTV Networks International's Global Climate Change Campaign. It is available in English and Spanish. The website offers ads, videos, tips from Environmentors, and a blog.
http://www.mtvswitch.org/

Museums and the Web
Museums and the Web offers museum specialists the opportunity to learn about each other's work, engage in online discussion, and share information about research activities. Discussion topics include educational practices and in-house evaluation practices.
http://conference.archimuse.com/

Museum of Comparative Zoology: Entomology Primary Type Specimen Database
The Museum of Comparative Zoology at Harvard University has an incredible collection of insects on their website. This online database contains records for primary types in the entomology collections of the Museum of Comparative Zoology (MCZ). In addition to type label data, type stage and status, the database includes high-resolution images of the type specimens. Check out the other department databases (e.g.ichthyology), too.
http://mcz-28168.oeb.harvard.edu/mcztypedb.htm

Museums in the Sea
The Florida Coastal Management Program and partners are developing Museums in the Sea, offering a virtual tour of Florida's Underwater Archaeological Preserves. Learn about Florida's underwater heritage, ecological, and recreational tourism opportunities at eleven shipwreck locations around the state. Through the website, visitors can choose a shipwreck, take a guided underwater tour of the wreck site, watch a narrated history of the vessel, and observe the marine life that lives in the wreckage.
http://www.museumsinthesea.com/

Museum of New Zealand Te Papa Tongarewa
The website of the Museum of New Zealand Te Papa Tongarewa offers visitors the opportunity to navigate the site in English or Maori. First-time users will want to take a look at Tai Awatea, or Knowledge Net, which offers interactive modules that offer insight into the peoples of the Pacific Islands along with other materials. The website also allows visitors to explore some of the hazards that happen in New Zealand - earthquakes, volcanic eruptions, and tsunami.
http://www.tepapa.govt.nz/TePapa/English/

Museum of Underwater Archaeology
The Museum of Underwater Archaeology introduces students to the work of underwater archaeologists and maritime historians. Explore shipwrecks, lost colonies, and underwater archaeological projects around the world. Learn about the six steps in conducting an underwater archaeology project. Resources include a teaching kit, a worldwide site map, and more.
http://www.uri.edu/artsci/his/mua/MUA.htm

Musical Plates Project
Musical Plates, from the Center for Innovation in Engineering and Science Education, is a multidisciplinary project that challenges students to tap into real-time earthquake data, interact with experts online, and publish their investigative work on a special website. Four core activities teach students how to access and interpret online earthquake and volcano data and use this information to solve real-world problems. The website offers a teacher guide, reference material, projects, ask an expert, and more.
http://www.k12science.org/curriculum/musicalplates3/en/index.shtml

My Environmental Education Evaluation Resource Assistant
The website, My Environmental Education Evaluation Resource Assistant (MEERA), provides evaluation resources for formal and non-formal environmental educators. Current offerings include professionally selected and reviewed how-to guides and other resources for evaluating environmental education programs as well as a discussion forum. Future offerings will include searchable examples of evaluations of environmental education programs.
http://meera.snre.umich.edu/

My Green Job
KABC-TV's *Green Right Now* offers this series, profiling people who working in the emerging green economy. Read the stories of how they started working in these sometimes-new fields, learn about their training, and get their advice on how you can move into the green-collar workforce.
http://www.greenrightnow.com/kabc/2009/04/10/special-report-my-green-job/

My NASA Data Lesson Plans
Each lesson on MY NASA DATA provides students an in-depth opportunity for learning to access and use authentic satellite data. Each unit plan provides an implementation guide including at least three lessons, related activities, and resources. The datasets provide information on the atmosphere, ocean, and land surface and are available online along with lesson plans, teacher-friendly documentation, computer tools, and an Earth science glossary. Science project starter ideas are also available.
http://mynasadata.larc.nasa.gov/unit_lessons.html

My Wonderful World
The GLOBE Program has joined a coalition in a public-engagement campaign designed to give students tools, improving the geographic literacy of young people ages 8-17 by motivating parents and educators to expand geographic learning in school, at home and in their communities. The website provides a variety of resources, including suggestions for family activities, links to geography games and online adventures for kids and teens, classroom materials for educators, and more.
http://www.mywonderfulworld.org/

Myrtle's Coastal Adventure
Myrtle's Coastal Adventure 5th Grade Activity Booklet explores Georgia's coastal world. The booklet provides information on Georgia's islands, an offshore word find puzzle, fish identification, word banks, flora and fauna comparisons, and more.
http://www.knowtheconnection.com/pdf/Myrtles%20Coastal%20Adventure.pdf

Mystery Class – Exploring Sunlight and the Seasons
Teachers and students in grades 4-12 classrooms are invited to participate this winter and spring in Journey North's Mystery Class project, February 2-May 15, 2009, in which students try to find ten secret classes hiding around the globe, using the changing sunlight at each site as the clue.
http://www.learner.org/jnorth/tm/mclass/About.html

Mystery of the Megaflood
The dusty scablands of eastern Washington are the result of a massive flood that moved across the region. This website, created by the NOVA program on PBS, provides a number of complementary online materials. These include an interview with an expert and interactive features.
http://www.pbs.org/wgbh/nova/megaflood/

Narragansett Bay Estuary Program
The Narragansett Bay Estuary Program website features a downloadable journal, an interactive feature on projected sea level rise in Rhode Island, links to publications, and more. Check out the journal articles, including *A Tale of Two River*s - articles on efforts to secure federal Wild & Scenic designation for the Taunton River in Massachusetts and

Buckeye Brook in Rhode Island, *Bay in Brief*" featuring river restoration projects, *StormSmart Coasts Prepares Mass. Communities*, and more.
http://www.nbep.org/index.html

NASA Data Lesson Plans
Four new lesson plans on climate have been developed by teachers who are alumni of the 2007 MY NASA DATA summer workshop. MY NASA DATA is a project to enable K-12 teachers and students, as well as citizen scientists, to explore the large volumes of data that NASA collects about the Earth from space. Students use scientific inquiry and math skills as they access and display microsets of the Earth System. Additional lessons explore coral bleaching, Great Lakes snow analysis, and many more.
http://mynasadata.larc.nasa.gov/User_lessons.html

NASA e-Clips
NASA eClips are short video segments available for downloading. The video clips are designed to inspire students to learn more about science, technology, engineering and mathematics, and to understand the application of these subjects in the real world. More videos will be added in the future, but those currently available include *Why are Oceans Salty, What is Weather*, and more.
http://www.nasa.gov/audience/foreducators/nasaeclips/index.html

NASA Earth Explorers Series
This monthly NASA series introduces a variety of learning adventures and lesson plans designed for K-12 educators and students. The articles focus on the investigators researching a wide variety of topics, with links to further information. Recent issues have investigated migrating land and marine animals, ocean satellites, women in science, and more.
http://science.hq.nasa.gov/education/earth_explorers/index.html

NASA Earth Sciences Expert Directory
The NASA scientists and NASA-funded researchers in this expert directory represent over 30 scientific disciplines, from oceanography and ecosystems to natural hazards and global climate change. In addition, each expert has expressed an interest in working with the news media. Search by field or name.
http://experts.nasa.gov/

NASA Education e-Newsletter
The NASA Science Mission Directorate-Earth Science Education Update is a monthly email newsletter describing the latest news, programs, events, and resources related to NASA's earth science education program. It also includes related earth system science education news from other agencies and organizations. Current and back issues of this report are available on the website.
http://science.hq.nasa.gov/education/edreports/index.html

NASA Education Website
The NASA education pages have been updated and can be launched from the new website homepage. Basic navigation includes news, sections for kids, students, and educators, and education programs. The site includes a search engine, which will help you find programs included in previous *Information Exchange* newsletters. Check out Windward, a simulation game that challenges students to outsmart the weather to win a sailboat race around the world.

http://education.nasa.gov/home/index.html

NASA Hurricane Education
NASA has developed several educational tools including posters, visualizations and graphics, and classroom activities on hurricanes. The website offers links to news, research, and educational materials.
http://www.nasa.gov/mission_pages/hurricanes/main/index.html

NASA Images – Visible Earth
NASA presents The Visible Earth, a catalog of over 32000 images and animations of our home planet. Topics include Human Dimensions (environmental impacts, natural hazards, etc), Hydrosphere, Oceans, and more.
http://visibleearth.nasa.gov/

NASA International Polar Year Website
This website offers a one-stop shop for the latest NASA images and videos on polar exploration combined with a searchable storehouse of related information.
http://ipy.nasa.gov/

NASA Oceanography Website
See what NASA does in the field of oceanography. NASA Oceanography conducts a program of satellite missions and research projects with its partners to enable global ocean science. This website has links to NASA missions, projects, partnerships and educational materials. For more information, check out
http://oceans.nasa.gov/Home.htm

NASA Presentation Series – Washington, DC
NASA Goddard Space Flight Center and the Library of Congress continue a series of free public presentations by NASA scientists on current science topics. All programs will be held in Washington, DC. Webcasts are typically posted for each program a couple of months after the event.
http://www.loc.gov/rr/scitech/events/events.html

NASA SCI Files™ and The Case of the Ocean Odyssey
The NASA SCIence Files™ is an award-winning series of instructional programs for grades 3-5, integrating mathematics, science, and technology through the use of Problem-Based Learning (PBL), scientific inquiry, and the scientific method. The series seeks to motivate students to become critical thinkers and active problems solvers. Each episode in the series includes a 60-minute instructional broadcast, an educator's guide, a unique interactive online PBL activity, plus instructional resources.
http://scifiles.larc.nasa.gov

National Aquatic Invasive Species Tool Kit
The Florida Aquarium has joined a National Sea Grant project. State Sea Grant offices from across the nation have assembled to design and produce an aquatic invasive species tool kit for use in American Zoo and Aquarium Association zoos and aquariums. The Florida Aquarium will be a collaborative author for an interactive public program to be implemented across the country, which will be a part of a tool kit including fact sheets, materials, DVDs, curriculum, and other educational resources.
Contact Debbi Berger at Dberger@flaquarium.org

National Archeological Database Reports Module
The National Archeological Database, Reports module, is an expanded bibliographic inventory of over 350,000 reports on archeological investigation and planning, mostly of limited circulation. This "gray literature" represents a large portion of the primary information available on archeological sites in the U.S.
http://www.cast.uark.edu/other/nps/nadb/nadb.mul.html

National Atlas of the United States
The online National Atlas of the United States is designed to make it easy to find, get, and use geographic information about our nation. Natural phenomena and human activities, such as water quality, tropical cyclone data, toxics release inventory, and ecoregions, are just some of the data layers that you can select from. The maps can be displayed on-line or printed. An additional section hosts subject matter articles.
http://www.nationalatlas.gov/

National Center for Case Study Teaching in Science
The National Center for Case Study Teaching in Science, based at the University of Buffalo, has developed a number of helpful resources. Visitors to the website can review the case study collection divided into topical areas, check out upcoming conferences and workshops, and more. Case studies on the website of possible interest include weather forecasting, invasive species, a section on ecology and the environment, geology, geography/GIS, and much more.
http://ublib.buffalo.edu/libraries/projects/cases/case.html

National Coastal Condition Reports
The National Coastal Condition Reports from the EPA summarize the condition of ecological resources in the coastal waters of the United States and highlight several exemplary federal, state, tribal, and local programs that assess coastal ecological and water quality conditions. The *2005 National Coastal Condition Report II* rates the overall condition of U.S. coastal waters as fair. The reports are downloadable from the website by region, and include graphics.
http://www.epa.gov/owow/oceans/nccr/

National Coastweek
National Coastweek is coordinated by the Coastal States Organization in conjunction with NOAA, state Coastweek and Coast Day observances, and in partnership with a variety of federal government agencies and national coastal and ocean organizations. Events are held around the country to celebrate the vibrancy of our coastal communities and beauty of our coastal resources. Start the celebration with the Ocean Conservancy's International Coastal Cleanup, and bring it to a close with National Estuary Day.
http://www.living-edge.org

National EE Week
The National Environmental Education & Training Foundation (NEETF) will coordinate the second annual National EE Week, April 16 to 22, 2006. Participating schools, environmental education organizations, education associations, nature centers, zoos, museums, aquariums and state and federal agencies can use National EE Week to prepare for Earth Day and involve thousands of educators and millions of students.
http://www.eeweek.org

National Ecological Observatory Network
The National Ecological Observatory Network (NEON) project is a continental-scale research instrument consisting of geographically distributed infrastructure, networked via state-of-the-art communications. NEON will provide nationally networked research, communication, and informatics infrastructure for collaborative and interdisciplinary measurements and experiments on ecological systems. NEON will provide learning environments for students and foster integration of research and education.
http://www.nsf.gov/bio/neon/start.htm ,

National Energy Education Development Project
NEED (National Energy Education Development) develops curriculum and conducts teacher training for K-12 teachers and students. The program is focused on the production, uses and science of energy in all its forms. The NEED program and website includes curriculum materials, professional development, evaluation tools, and an awards program. Note that you may be more successful opening some of the pdf files from the website if your Adobe Acrobat Reader© is already open.
www.need.org .

National Environmental Education Week
National Environmental Education Week, April 12-18, 2009, promotes understanding and protection of the natural world by actively engaging K-12 students and educators of all subjects in an inspired week of environmental learning and service before Earth Day. This year's EE Week theme is *Be Water Wise!* Registered partners have access to a wide variety of free environmental education resources, including a school water auditing tool and water quality monitoring resources.
http://www.eeweek.org/

National Environmental Education Week
National Environmental Education Week promotes understanding and protection of the natural world by actively engaging K-12th grade students and educators of all subjects in a week of environmental learning and service before Earth Day. This year will focus on Carbon Footprints. Participants can access a wide variety of free environmental education resources, including standards-based environmental education lessons and activities.
http://www.eeweek.org/register.htm

National Environmental Education Week
National Environmental Education Week, April 15-22, 2007, April 12-18, 2009, *Be Water Wise!* offers a full week of educational preparation, learning, and activities in K-12 classrooms, nature centers, zoos, museums, and aquariums. An on-line Nature Bee which will encourage student identification of wildlife habitats, flora, and fauna in their communities. Questions will be posted in March, 2007. Become a formal partner by registering on the home page.
http://www.eeweek.org/

National Environmental Education Week
National Environmental Education Week, April 10 - 16, 2005 and April 16-22, 2006, is a full week of educational preparation for Earth Day and will involve some 400,000 educators and 15 million students. Educators can participate by conducting environmental education programming during the week. Check out the "To-Do List" and

"Tools and Links" sections on the site for suggested activities, ideas, and resources to involve, educate, and inspire.
http://www.eeweek.org

National Environmental Education Week
National Environmental Education Week, April 13-19, 2008, offers a full week of educational preparation, learning, and activities in K-12 classrooms, nature centers, zoos, museums, and aquariums; the week's theme is *Carbon Footprints*. The website includes a participant toolkit, teaching resources, nature journaling blog, and much more. Become a formal partner by registering on the home page.
http://www.eeweek.org/

National Environment Research Council
The Natural Environment Research Council is a leading funding agency for academic research and training in the environmental sciences at higher education institutions across the United Kingdom. The website contains a number of general interest publications, such as the quarterly magazine, *Planet Earth*. In addition, the science activities pages highlight summaries and background materials, along with links to some of the work that is done under the auspices of the council grants.
http://www.nerc.ac.uk/funding/science.shtml

National Estuaries Day
The last Saturday in September is National Estuaries Day. The annual event offers a national campaign with festivities across the country. The website also links to EstuaryLive, a free, interactive field trip over the internet hosted by the NOAA's National Estuarine Research Reserves in collaboration with the U.S. Environmental Protection Agency's National Estuary Programs.
http://www.estuaries.gov/

National Extension Water Outreach Education
The Water Outreach Education - Facilitating Access to Resources and Best Practices Project is a collaborative effort of the United States Department of Agriculture Cooperative State Research, Education, and Extension Service and other public and private clean and safe water partners to identify and promote the use of Best Education Practices and improve access to education resources and strategies. Check out the many downloadable resources available on the website.
http://wateroutreach.uwex.edu/

National Fire Plan
The National Fire Plan was developed with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. The website also includes success story case studies, a state-by-state project list, and a link to Firewise, with community education materials. There are many fire related lesson plans available on the web. Check out the Mammoth Cave National Park's Fire Curriculum for grades 4-8. It can be easily adapted to your region.
www.fireplan.gov
http://www.nps.gov/maca/FireCurriculum.pdf

National Geographic Classroom Companions and Resource Library – Global Fish Crisis
The National Geographic Magazine Community is a partnership between EdNet and National Geographic. The Resources section offers a library of material on numerous subjects, easily searchable by keyword. April 2007 highlights the Global Fish Crisis with articles, lesson plans, multi-media, and more.
http://www.ngsednet.org/community/resources_view.cfm?community_id=168&resource_id=7388

National Geographic Crittercam
The Crittercam is a research tool using a video camera temporarily attached to animals (including marine mammals) to study their behavior. The National Geographic Channel hosts a TV series highlighting Crittercam footage and research. Samples of the videos are available on the website, along with excerpts from the shows.
http://www.nationalgeographic.com/channel/crittercam/ .

National Geographic Kids Website
The website shows the amazing diversity of animals, people, and our beautiful world. Students can learn about the planet, play games, watch videos, print out experiments, and more.
http://kids.nationalgeographic.com/

National Geographic Xpeditions
The National Geographic Xpeditions website hosts the lesson plan, *Taking Care of Our Oceans*. In this lesson, students consider why so many people live near the coast and learn about the impacts of this trend on ocean animals. They will make posters to educate coastal residents and visitors about human impacts on marine life.
http://www.nationalgeographic.com/xpeditions/lessons/14/gk2/seascare.html

National Geographic Xpeditions Lesson Plans
The National Geographic Xpeditions Lesson Plans have been written by educators and tested in the classroom. Categories include the world in spatial terms, places and regions, environment and society, and more. A recent addition, Human Footprint, shows how everything we consume, use, and discard over a lifetime has an effect on our planet. Others include Wave Properties, River Sources and Stories, and more.
http://www.nationalgeographic.com/xpeditions/lessons/

National Geophysical Data Center
NOAA's National Geophysical Data Center website includes a climate timeline tool which to demonstrate the transformation of the Earth's climate over the past 100,000 years, along with interactive hands-on activities that include an origami balloon of global elevations and a dodecahedron globe that offers a three- dimensional visualization for use by students and teachers. Visualizing Data area offers animated dives to the bottom of the Marianas Trench, coastal relief imagery, Great Lakes bathymetry, and more.
http://www.ngdc.noaa.gov/education/education.html

National Historic Trails – Certification
The U.S. Fish and Wildlife Service is increasing its focus on the National Trails System. It is interested in gaining recognition for refuges and hatcheries along National Historic Trails, forming partnerships which help landowners protect and preserve their historic trail properties, and share them with others. It is also increasing its role with National

Scenic Trails that cross lands it administers and increasing its participation in the National Recreation Trails program, nominating 18 trails for designation for 2005. Contact Nathan Caldwell, (703) 358-2205, nathan_caldwell@fws.gov
http://data2.itc.nps.gov/parks/poex/ppdocuments/Certification%20Brochure%20web_view.pdf

The National Hurricane Survival Initiative
This website offers information about hurricane preparedness to the general public. The site includes a storm readiness checklist, a hurricane questionnaire, and basic hurricane evacuation procedures. The "Storms Stats" area provides a primer on what exactly hurricanes are along with concise summaries of the wind and water damage that hurricanes can inflict. The site's materials are also available in Spanish.
http://www.hurricanesafety.org/home2.shtml

National Library for the Environment
The National Council for Science and the Environment hosts the online National Library for the Environment. Visitors can view Congressional Research Service reports, environmental news, and more. The reports can be searched by topic (such as biodiversity or climate change), or through a keyword search engine. Additional offerings include links to foundations providing environmental grants and educational resources.
http://www.ncseonline.org/NLE/

National Marine Debris Monitoring Program Final Report
The Ocean Conservancy has released key findings from the National Marine Debris Monitoring Program, a five-year national study of trash in the ocean. The goal of the study was to set a nationwide scientific baseline of the marine debris problem in the U.S. The downloadable report can help federal and state agencies and local communities better understand where trash in the ocean is coming from and assist them in developing solutions for preventing this serious problem.
http://www.oceanconservancy.org/site/PageServer?pagename=mdm_debris

National Marine Sanctuaries Education Website
NOAA's National Marine Sanctuary Program has launched a new education website to enhance public awareness, understanding and appreciation of the marine environment. Take a Sanctuary Tour of image galleries or explore the section for teachers, which includes curriculum, online activities, professional development opportunities, high tech learning, multicultural programs and much more. You can also take a virtual dive in a submersible, download puzzles, read online story books and engage in digital labs.
http://sanctuaries.noaa.gov/education .

National Marine Sanctuaries Expeditions
Expedition coverage for five current or upcoming missions within the National Marine Sanctuaries Program is available online. These projects launch with a complete set of background materials, including maps, mission plans, team bios, history essays, technology features and more, providing web site visitors with everything they need to know about an upcoming expedition. Once underway, the teams send back daily expedition logs with photos and videos that are posted to the web site.
http://sanctuaries.noaa.gov/missions/welcome.html

National Marine Sanctuaries Media Library
NOAA's Office of National Marine Sanctuaries has launched an online multimedia library offering public access to thousands of high-resolution, ocean-related photos, and videos taken by NOAA scientists, educators, divers, and archaeologists. The National library database contains a collection of high-quality still images and video footage featuring all 13 national marine sanctuaries and the Papahānaumokuākea Marine National Monument.
https://marinelife.noaa.gov/media_lib/index.aspx

National Marine Sanctuaries Online News
The National Marine Sanctuary Program offers a monthly e-newsletter to keep subscribers informed about the many program activities and accomplishments that take place within the national marine sanctuaries and marine national monument. The website allows visitors to download several past issues of the printed newsletter and instructions on how to subscribe to the monthly e-newsletter.
http://sanctuaries.noaa.gov/news/sw/

National Marine Sanctuaries of the West Coast
Learn more about the National Marine Sanctuaries of the West Coast through this downloadable 16-page guide. Explore the habitats, wildlife and culture of the five sanctuaries in California and Washington State, and learn how they are all interconnected by ocean currents. The guide also offers advice on how to practice daily conservation and get involved.
http://sanctuaries.noaa.gov/education/teachers/awareness_outreach.html

National Marine Sanctuary Calendars
The National Marine Sanctuary Foundation has produced six dynamic calendar products filled with brilliant, colorful photos taken in our national marine sanctuaries. Choices include three wall calendars, a phone/address book, a desk blotter, and a monthly pocket planner. Half of all proceeds from sales will benefit the Foundation's nationwide education and outreach efforts.
http://nmsfocean.org

National Marine Sanctuary Program YouTube Channel
Discover the marine life and extraordinary habitats that make up your nation's 13 marine sanctuaries and one marine national monument. Find out more about our continuing efforts to conserve these ocean and coastal treasures. Check out videos about Sanctuary Sam, whale disentanglement, turtles, sharks, and more.
http://www.youtube.com/sanctuaries

National Ocean Economics Program
The National Ocean Economics Program provides a full range of the most current economic and socio-economic information available on changes and trends along the U.S. coast and in coastal waters. The program is funded by federal, state, university, and private grants and contracts. Check out this updated website.
http://noep.mbari.org/

National Ocean Sciences Bowl
The National Ocean Sciences Bowl (NOSB) prepares the next generation of marine scientists, policy makers, teachers, explorers, researchers, technicians, environmental advocates, and informed citizens. The NOSB provides an educational forum for

students to excel in math and science and receive national recognition for their diligence and talents. The competition generates student and teacher interest and excitement about science and the oceans, fosters collegiality, teamwork, and factual recollection.
http://www.nosb.org/

National Ocean Sciences Bowl
The upcoming National Ocean Sciences Bowl regional competitions will be held on February 9, and February 23, 2008. The national competition will be held in Seward, Alaska, April 25-27, 2008. This year, the materials distributed for the national competition will highlight the International Polar Year. More than 200 research projects are planned, involving more than 50,000 people and 60 nations.
http://www.nosb.org/

National Ocean Service Discovery Centers
NOAA's National Ocean Service has launched the NOS Education Discovery Center, presenting educational materials about the breadth of scientific research, technology, and activities conducted by NOS in the areas of oceans, coasts, and charting and navigation. The Discovery Center offers Discovery Classroom, Stories, and Kits incorporating numerous multimedia features. Current topics include coral reef conservation, international collaboration, marine protected areas, and more.
http://www.nos.noaa.gov/education/welcome.html

National Park Service Teacher Resources
The National Park Service offers this set of educational resources which draws on national parks from the Delaware Water Gap to the volcanoes of Hawaii. The materials are specifically designed for teaching geology, but can easily be incorporated into lessons. The homepage features teacher guides and links to park programs with lessons and programs. Additional links bring visitors to information about coastal geology, soils, inventory and monitoring, and much more.
http://www.nature.nps.gov/geology/education/

National Park Week
National Park Week, April 18-26, 2009, is an annual week for celebration and recognition of National Parks. Parks can provide recreational experiences, opportunities to learn and grow, and places of quiet refuge. Check the website for a schedule of Park Week events.
http://www.nps.gov/npweek/

National Parks America Tour
Unilever's National Parks America Tour is a volunteer-driven initiative designed to engage employees, community groups, school children, scouts, and citizens of all ages in volunteer service-to-the-land activities in America's National Parks. With more than 25 events each year, National Parks America Tour volunteers assist by completing priority improvement projects.
http://www.unilevernationalparks.com/npat.html

National Parks of New York Harbor
Aiming to make National Park Service rangers as recognized in New York City as they are on the trails of Yosemite, the National Parks of New York Harbor Project, a new public-private partnership of the National Park Service and the National Park Foundation, unveiled the first phase of an effort to heighten public support and increase

access to 22 national park sites around the region of New York Harbor. Its centerpiece is an audio tour, the *Gateway to America: National Parks of New York Harbor Tour*.
http://data2.itc.nps.gov/digest/printheadline.cfm?type=ParkNewsEvents&id=14951

National Public Lands Day
Participate in National Public Lands Day, September 30, 2006, and help build upon the lasting legacy of the Civilian Conservation Corps for the greater enjoyment and enrichment of all Americans. National Public Lands Day provides an opportunity for volunteers across the nation to work together in improving our public lands.
http://www.publiclandsday.org/

National Science Digital Library
The National Science Digital Library was created by the National Science Foundation to provide organized access to high quality resources and tools that support innovations in teaching and learning at all levels of science, technology, engineering, and mathematics education. It offers an easy-to-use search engine, or browsing by selections. A special portal has been created for middle school teachers to provide a direct path to selective online resources for instruction and professional development.
http://www.nsdl.org

National Science Teachers Association's (NSTA) Resources and Resource Lists
The National Science Teachers Association periodically publishes lists of different web resources. Recent lists include

- Free Opportunities for High School Science Teachers, http://science.nsta.org/enewsletter/2004-06/high_school.htm
- Free Resources For Science Teachers, at http://science.nsta.org/enewsletter/2004-06/news_stories_high.htm
- Summer reading list for books, http://science.nsta.org/enewsletter/2004-07/highcatalog.pdf

Check the NSTA website for links to other websites, resources, and educational materials.
http://www.nsta.org/

National Sea Grant Library
This searchable database of 40,000 records is the most comprehensive collection of Sea Grant funded documents covering a wide variety of subjects including marine education, aquaculture, fisheries, coastal zone management, oceanography, marine recreation, and law. The library includes marine science K-12 activity sheets and teacher's guides. Staff lend documents, CD-ROMs, videos, DVDs, and other materials worldwide to aid scientists, teachers, students, fishermen, and others in their research and studies. All of the documents, CD-ROMs, videos and DVDs may be borrowed from the NSGL for one month and most can be obtained from the sponsoring Sea Grant programs. The website also features digital libraries on education and marine careers.
http://nsgl.gso.uri.edu/

National Service-Learning Clearinghouse
The National Service-Learning Clearinghouse offers this website supporting the service-learning efforts of schools, higher education institutions, communities, and tribal nations. Find information and relevant resources, free online resources, a library of service-learning materials, reference and technical assistance services, and more.
http://www.servicelearning.org/index.php

National Service-Learning Partnership
National Service-Learning Partnership is a national network of members dedicated to advancing service-learning as a core part of every young person's education. Service-learning is a teaching method that engages young people in solving problems within their schools and communities as part of their academic studies or other type of intentional learning activity. The website includes background information, lesson plans, professional development opportunities, and a professional services directory.
http://www.service-learningpartnership.org/

National Status and Trends Program
NOAA's National Centers for Coastal Ocean Science (NCCOS) conducts and supports research, monitoring, assessments, and technical assistance to meet NOAA's coastal stewardship and management responsibilities. The National Status and Trends Program website offers all the toxicology data from the National Status and Trends program in an easily searchable format.
http://ccma.nos.noaa.gov/stressors/pollution/nsandt/welcome.html

National Student Summit on Ocean Issues
Coastal America is partnering to host a National Student Summit on Ocean Issues, January 14-16, 2004, Washington, DC. Students, teachers, and marine educators from 14 Coastal Ecosystem Learning Centers will present their research on regional ocean issues to a panel of experts, and present their findings as a national issue paper, along with a "Proclamation of Student Commitment to Action on Ocean Issues."
Contact gene.cope@noaa.gov for more information

National Teach-in on Global Warming Solutions
On February 5, 2009, the National Teach-In on Global Warming Solutions will engage Americans in solutions-driven dialogue, including young people, national political leaders, and other key decision-makers. The website has links to information about weekly planning calls, educational resources, and more.
http://nationalteachin.org/

National Trails Day
American Hiking Society's trail awareness program, National Trails Day, June 7, 2008, inspires the public and trail enthusiasts nationwide to seek out their favorite trails to discover, learn about, and celebrate trails while participating in educational exhibits, trail dedications, gear demonstrations, instructional workshops and trail work projects. Register your event through this website.
http://www.americanhiking.org/NTD.aspx

National Undersea Research Program
NOAA's National Undersea Research Program (NURP) has launched a new website that features NURP's scientific and research discoveries in simple and easy to understand language. The site also contains a searchable database of underwater video and photos that are all public domain.
http://www.nurp.noaa.gov/

National Wetlands Research Center
The mission of the National Wetlands Research Center is to develop and disseminate scientific information needed for understanding the ecology and values of our nation's

wetlands and for managing and restoring wetland habitats and associated plant and animal communities. The on-line library includes species profiles, produced in the 1980's, of more than 100 coastal aquatic organisms, principally fish of sport, commercial, or ecological importance.
http://www.nwrc.usgs.gov/publications/specintro.htm

National Wildlife Week
National Wildlife Week is April 22-30, 2006 and the National Wildlife Federation is encouraging everyone to *Get outside and explore your community*. The website includes a marketing toolkit. Activities to get involved in include:

- Rebuild places for wildlife; wildlife-related volunteer work on April 22-23, 2006
- Read with Ranger Rick; week-long literacy and reading program
- Monitor and record spring wildlife species during National Wildlife Watch on April 29-30, 2006

http://www.nwf.org/nationalwildlifeweek

National Wildlife Refuge Week
Americans will flock to national wildlife refuges for National Wildlife Refuge Week. The National Wildlife Refuge System is pivotal role in offering outdoor recreational opportunities as well as showcasing the conservation and recovery of wildlife species on refuges across the country. Bald eagles, whooping cranes and the California condor are some of the endangered and threatened species that have been helped back from the brink of extinction by the work of biologists in national wildlife refuges.
http://refuges.fws.gov/ .

Native Hawaiian Education Program
The Native Hawaiian Education program supports innovative projects that enhance the educational services provided to Native Hawaiian children and adults.
http://www.ed.gov/legislation/FedRegister/announcements/2009-1/012309f.html

Natural Calendar
The Natural Calendar is an on-line webpage published at the beginning of each month on the LEAPS website. It details upcoming natural events in the sky and in the natural world. Sections typically include astronomy, amphibians (complete on-line guide including calls), birds, and insects. Suggestions for additional information (e.g. marine and wetland-oriented events) are welcome. While on the website, check out the frog and toad identification pages.
http://www.leaps.ms/

Natural Hazards - Earth Science Week
This year, Earth Science Week, October 10-16, 2004 focuses on Natural Hazards and the ways that Earth Scientists study hazards in order to understand their causes and minimize their impact on society. The website has a variety of educational activities grouped by suggested grade level.
http://www.earthsciweek.org/ .

Natural Inquirer Journal from USDA
This journal, *The Natural Inquirer*, was created so that scientists can share their research with middle school students. Each article describes scientific research conducted by scientists in the USDA Forest Service. The website lets you search for

articles by topic and by issue. While it focuses, naturally, on forests, topics of interest for marine educators include wildlife, habitat, and water.
www.naturalinquirer.usda.gov .

Natural Resource Technical Reports
The National Park Service offers the Natural Resource Publication series, which addresses topics that are of interest and applicability to a broad readership in the National Park Service and to others in the management of natural resources. Posted reports include the results of research that addresses natural resource management issues; natural resource inventory and monitoring activities; resource assessment reports; scientific literature reviews; and workshops, conferences, or symposia.
http://www.nature.nps.gov/publications/NRPM/nrtr.cfm

Natural Resources Year in Review
The 2005 National Park Service Natural Resources Year in Review is now available. It contains is news of the Natural Resource Challenge programs, a preliminary overview of impacts to national parks from the 2005 hurricane season, and articles on other natural resource issues. The report can be accessed on-line.
http://www2.nature.nps.gov/YearInReview/

Nature History of Alaska
This course, Nature History of Alaska, was offered during the spring semester in 2005 through the University of Alaska Southeast. The participants included students in non-science majors, who had the opportunity to investigate some of the natural aspects of Alaska landscapes. Classes included a variety of investigative field trips including birding, creek bank exploration, and an in-depth tour and examination of the sea floor mapping research work conducted in southeast Alaska waters by the NOAA research vessel *Fairweather*. For more information, contact Faith Duncan at fduncan@fs.fed.us.

Nature Journaling Weblog
In celebration of EE Week 2009's *Be Water Wise!* theme, the National EE Week website offers a series of water-themed Nature Journaling Blogs, developed in partnership with the Roger Tory Peterson Institute. The blogs provides educators ideas for incorporating nature journaling into the curriculum.
http://www.eeweek.org/nature_journal

Nature Stories Podcast
The Nature Conservancy presents the Nature Stories audio podcast, audio downloads of great stories and great places. Each week, Nature Stories will offer a new tale of people's connections with the natural world as an audio download. Many of the stories will be drawn from an upcoming public radio series, *Stories from the Heart of the Land*. Currently online are features focusing on fire, frogs, fishing culture, and more.
http://www.nature.org/podcasts/

Nautical Chart Data
NOAA's Office of Coast Survey now provides nautical chart data to The National Map, a U.S. Geological Survey Project with an application similar to Google Earth. Layered with data that can be integrated on multiple levels, The National Map ensures that key coast-to-coast geographic information is immediately available to industry and governments at all levels. Depth areas, navigation routes, buoys, and harbor facilities, are now incorporated into The National Map.

http://nationalmap.gov

Nautical Charts: Message in a Bottle!
NOAA's National Ocean Service Education section offers interactive activities, tutorials, and case studies for use in the classroom. The latest offering is *Nautical Charts: Message in a Bottle!*, designed for grades 3-5, in cooperation with NOAA's Office of Coast Survey. The activity uses animation to teach chart symbols, safe boating, and the importance of nautical charts. The website includes movies, pictures, and links to other resources.
http://oceanservice.noaa.gov/education/nautical_charts/welcome.html

Navigating Change
The goal of Navigating Change is to motivate, encourage and challenge people to take action to improve the environmental conditions in their own backyards, especially as it pertains to our coral reef ecosystems. Navigating Change promotes responsibility for the stewardship and sustainability of our islands and our ocean. Classroom videos, teacher curriculum and more are available.
http://www.hawaiianatolls.org/research/NavChange2002/index.php .

Navigating Change Teacher's Guide
The Navigating Change Teacher's Guide is a five part curriculum for grades 4-5, aligned to Hawai'i Department of Education standards. The teacher's guide includes five units that are designed to help students explore their relationships to the environment and ways that they can "navigate change" in their own communities. The instructional activities focus on science, social studies, and language arts standards as well as guidelines for culturally healthy and responsive learning environments.
http://www.hawaiiatolls.org/teachers/NavChange.php

Navigating the Nation's Marine Managed Areas
The MPA Center and NOAA's Office of Coast Survey are working jointly to include information about the nation's marine managed areas (MMAs) in the U.S. Coast Pilot® series to improve safe navigation and coastal stewardship. You can review *Navigating the Nation's MMAs*, which uses the coast of central California as a model. The purpose of this document is to provide an overview of the project and an example of how information on MMAs is intended to be presented in the U.S. Coast Pilot series.
http://mpa.gov/

NCCOS Publications Database
The National Centers for Coastal Ocean Science (NCCOS) conducts and supports research, monitoring, assessments, and technical assistance to meet NOAA's coastal stewardship and management responsibilities with a focus on coral reefs, estuaries, National Marine Sanctuaries, and coastal ocean regions, and activities focused on climate change, extreme natural events, pollution, invasive species, and land and resource use. The on-line publications database hosts reports and references.
http://www8.nos.noaa.gov/nccos/publications.aspx

Need Volunteers?
The Verizon Foundation's Employee Engagement team is inviting environmental organizations to post their volunteer projects, especially those scheduled in April and during Earth Week, on the Verizon Volunteer Connections website. Through this

website, Verizon employees will be able to review your volunteer opportunities and sign up to lend a hand with your project.
http://foundation.verizon.com/pls/cybergrants/ao_login.login?x_gm_id=1&x_proposal_type_id=250

NeMO – New Millennium Observatory
This New Millennium Observatory website allows students to explore a seafloor observatory geographically or by topic. Learn about seafloor animals, hydrothermal vents, mid-ocean ridges, axial volcano, lava flow, technology, and tools. Operate (remotely) a vehicle that takes you to the seafloor near an active submarine volcano. Explore black smoker vents, new lava flows, and unusual life forms. The website includes background information, curriculum, and interactive virtual explorations.
http://www.pmel.noaa.gov/vents/nemo/index.html

NestWatch
Cornell Lab of Ornithology, the group that offers eBird, All About Birds, The Birds of North America Online, and more, has a new citizen science project, NestWatch. Participants visit nests during spring and summer to collect simple information about location, habitat, species, number of eggs, and number of young in the nest and submit their observations online. The observations can help scientists measure the impact of such things as climate change and habitat destruction.
http://watch.birds.cornell.edu/nest/home/index

Network of Conservation Educators and Practitioners
The Network of Conservation Educators and Practitioners is a global project to improve the practice of biodiversity conservation by improving training in biodiversity conservation. The network seeks to connect those involved in doing and teaching biodiversity conservation; create and make widely available a variety of resources to teach biodiversity conservation; and develop networks and resource centers to increase mentoring and training opportunities in biodiversity conservation worldwide. A work in progress, the website includes free (registration is required) downloadable educational modules, including an Introduction to Marine Conservation Biology, The Importance of Invertebrate Biodiversity, and more. They also seek authors for additional modules.
http://ncep.amnh.org

New England Aquarium Activities
The New England Aquarium offers downloadable activities and teacher guides on their website. Check out Get to Know a Fish, How Animals Stay Warm, concept maps, and more.
http://www.neaq.org/education_and_activities/teacher_resources/classroom_resources/classroom_activities/index.php

New Jersey Environmental Digital Library
The New Jersey Environmental Digital Library brings together materials on New Jersey's environment, mostly from state government agencies, non-profit organizations, research institutes, and academic departments. The News and Features area highlights some of the latest additions, while Past Spotlights includes direct links to reports on mitigating floods on the Delaware River and *Trout in the Classroom: A Guide for Teachers*.
http://njedl.rutgers.edu/njdlib/index.cfm

New Scientist
The *New Scientist* website offers news about science and technology, with over 76,000 online content pieces. There are three channels, Space, Tech, and Environment, a YouTube channel, podcasts, blogs, and more. The content is delivered by New Scientist's editors and journalists, citizen journalists, and external bloggers. The archive hosts over 15 years of magazine content online.
http://environment.newscientist.com/home.ns

New York Public Library Digital Gallery
This large-scale digital image gallery has been years in the making and currently offers more than 275,000 items for online viewing. You can search for specific images or keywords, or browse by subject (e.g. fish), collection (e.g. Nature Illustrated or Ocean Flowers), or library division. Set aside time to explore this extensive website.
http://digitalgallery.nypl.org/nypldigital/index.cfm

New York Times Learning Network
The New York Times Learning Network is a free service for students, their teachers, and parents. The Web Exploration provides a guided web tour of different topics, including endangered species and biomes. Lesson plans are available on a wide variety of topics, written in partnership with The Bank Street College of Education in New York City for grades 6-12. Lesson plans can be searched by key word or accessed by thematic topic, including animals, insects and marine life, environmental issues, and weather.
http://www.nytimes.com/learning/

New Zealand American Submarine Ring of Fire Expedition
The New Zealand American Submarine Ring of Fire 2007 expedition site is available on NOAA's Ocean Explorer website. The expedition took 26 scientists and engineers from New Zealand, Germany, and U.S. aboard the R/V *Sonne* to Brothers submarine volcano, a site of vigorous geothermal activity north of New Zealand along the Kermadec Arc. Website coverage for this mission includes content essays, logs, images, interactive computer animations, and more.
http://oceanexplorer.noaa.gov/explorations/07fire/welcome.html

New Zealand Seeps
Seep sites in the cold, deep waters off New Zealand provided the first in situ observation of cold seep fauna in the southwest Pacific. To observe these cold seeps, which are over 3000 feet down, a video and still camera system was lowered over each site to identify seep organisms and determine the size of each seep. This innovative imaging system fed video live to scientists back on the ship, allowing them to observe the seeps and the ecosystem that exists there in real time.
http://oceanexplorer.noaa.gov/explorations/06newzealand/welcome.html

New Zealand's National Institute of Water & Atmospheric Research
New Zealand's leading provider of atmospheric and aquatic science is committed to education in New Zealand at all levels. *Water & Atmosphere* is their flagship education publication; *Aquaculture Update* and *Biodiversity Update* are industry-focused with a strong educational message. The publications are also available online. The website includes a section on activities and classroom resources, common weather and hydrological terms, and stuff for students.
http://www.niwa.co.nz/

Nicholas Talks
Nicholas Talks is an online collection of lectures available from Duke's Nicholas School and the Nicholas Institute for Environmental Policy Solutions. Throughout the year they will tape lectures at Duke that are either sponsored by the School or Institute or feature one of their researchers. MP3 files of the lectures will be available on the website. Please note that these are full lectures, so the file sizes may be large.
http://www.nicholas.duke.edu/nicholastalks

NMEA News
NMEA News, The National Marine Educators Association's quarterly on-line newsletter, keeps members up-to-date with news from regional chapters and committees, information about professional development opportunities, and communications from NMEA leadership. Check out the latest issue, available for downloading from the website. Make sure to note the extensive opportunities for students and teachers.
http://www.marine-ed.org/

No Student Left Indoors
The purpose of this website is to help K-12 teachers, homeschoolers, and other educators to conduct a Field Guide Project, creating a field guide to your schoolyard with a species account, a catalog of the animals and/or plants found in your schoolyard. The website offers lesson plans, resources, and more to help you plan and manage your project.
http://www.nostudentleftindoors.com/

NOAA 200 Years for Kids and Educators
NOAA's 200th Celebration in 2007 highlights the rich history of science, service, and stewardship provided to the American public by NOAA and its predecessors. The section For Kids and Educators offers links to online resources to help teachers, students, and parents learn about our ocean, coasts, and skies. Each section, Explore, Understand, and Protect, includes links to websites, downloadable lesson plans, and educational materials.
http://celebrating200years.noaa.gov/welcome.html

NOAA Careers
NOAA Careers is a new recruitment website designed to showcase NOAA career opportunities and all that NOAA has to offer. The website showcases a variety of career fields and allows a search for current vacancies by location or nation-wide. In addition, the website offers links to student opportunities.
http://www.careers.noaa.gov/index.html

NOAA in the Carolinas EstuaryLive
Celebrate National Estuaries Day and embark on an estuarine odyssey with the *NOAA in the Carolina*s EstuaryLive, broadcast through the Internet September 26-27, 2007 from the ACE Basin Reserve at Forth Johnson near Charleston, South Carolina. This interactive field trip features segments on local fish, birds, reptiles, salt marshes, and habitat restoration, along with other topics.
http://www.estuaries.gov/elive.html

NOAA Celebrates 200 Years
NOAA's 200th Celebration in 2007 will highlight the rich history of science, service, and stewardship provided to the American public by NOAA and its predecessors. Stories

range from the founding of the U.S. Survey of the Coast by Thomas Jefferson to the present-day activities of an agency dedicated to the protection, management, and understanding of our ocean, coasts, and skies. The website includes a section For Kids and Educators, Feature Stories, Historical Resources, and more.
http://celebrating200years.noaa.gov/welcome.html

NOAA Central Library Website
The NOAA Central Library web site features a variety of resources useful to marine educators. The ***NOAA Library Catalog*** is the gateway to the records of the NOAA Library Network's comprehensive research collection covering hydrographic surveying; oceanography, meteorology, and hydrology; living marine resources; and meteorological satellite operations. The site's ***WINDandSEA: Oceanic and Atmospheric Sciences Internet Locator*** features links to science and policy sites in the oceanic and atmospheric sciences, as well as a ***Teachers' and Students' Corner*** link in the top-of-page menu row, which links to NOAA webpages devoted to education, NOAA photo websites, science education organizations, and organizations concerned with introducing new technologies to the teaching profession. The ***Databases & Article Searching*** page provides access to citation databases, abstracts, and full-text documents; and the ***E-Journals*** page links to full-text of many journals, and tables of contents/abstracts for others. The ***NOAA History Page*** and ***NOAA Heritage Page*** provide access to information documenting the legacy of NOAA and the predecessor agencies that make NOAA America's oldest science agency. The ***Photo Collection*** features thousands of weather and space images, hundreds of images of our shores and coastal seas, and thousands of marine species images ranging from the great whales to minute plankton.
http://www.lib.noaa.gov/

NOAA Coral Reef Conservation Program Launches External Newsletter
NOAA Coral Reef News is a new monthly e-newsletter established to provide current information on the activities of NOAA's Coral Reef Conservation Program and other relevant NOAA programs. The NOAA Coral Reef Conservation Program supports effective management and sound science to preserve, sustain and restore valuable coral reef ecosystems.
http://www.coralreef.noaa.gov .

NOAA Economic Statistics
The *Economic Statistics for NOAA* booklet serves as a common reference to the latest economic benefits NOAA products and services provide to the nation's gross domestic product and the environment. It contains a consistent set of statistics helpful to NOAA management, staff and the outside community. The booklet contains statistics on the economic effects of hurricanes, fisheries, travel and tourism, and more. It can be downloaded from the website, along with other materials.
http://www.economics.noaa.gov/

NOAA Environmental Visualization Lab
The NOAA Environmental Visualization Lab offers this new website with a wealth of content, including streaming and downloadable video files, high resolution satellite images, and various educational resources. Imagery and animations will continue to be updated. For best viewing quality, it is recommended to download the video file locally by right clicking on the file link and saving to a local computer drive.
http://www.nnvl.noaa.gov/

NOAA Fisheries Bycatch Website Updated
The bycatch section of the NOAA Fisheries website has received a major update to include recent activity, including sea turtle bycatch reduction research; amending the fishery management plan for Atlantic tunas, swordfish, and sharks; management to reduce seabird incidental take; and amending the fishery management plan for the shrimp fishery of the Gulf of Mexico.
http://www.nmfs.noaa.gov/bycatch.htm .

NOAA Jeopardy
NOAA Jeopardy has been expanded to include more categories, answers, and questions. Now the game has materials for Grades K-5, 6-8, 9-12, and Honors. Contact Susan Baker for the power point game, pre-loaded with general, Honors, or Marine Mammal categories. The game is easily modified by changing the text. Additional categories may be found on the website.
http://coastalscience.noaa.gov/education/jeopardy/welcome.html
Contact Susan Baker at susan.baker@noaa.gov

NOAA's National Marine Sanctuary Education Listserv
The new National Marine Sanctuary Education Listserv is a closed list server that allows for efficient communication between America's teachers and National Marine Sanctuary Program Education Coordinators. Please use this list server for disseminating pertinent information about NOAA and National Marine Sanctuary education opportunities and other related information to the entire group.
Claire Johnson, at claire.johnson@noaa.gov.

NOAA at the National Science Teachers Association Conference
Visit the NOAA exhibit booth at the National Science Teachers Association Conference in Dallas, Texas, March 31-April 3, 2005. The NOAA booth will have information on weather, fish, and satellites, meteorologists from the Dallas area Weather Forecast Office, as well as a Speakers' Corner, which will feature talks about how NOAA sciences can be translated into the classroom. NOAA also has several free educator kits which contain educational information, inquiry-based lessons, posters, and more.

NOAA Ocean Explorer Educator E-mail Update List
NOAA Ocean Exploration has developed a new listserv for educators. The listserv will include professional development, virtual courses and other online offerings, notifications of upcoming NOAA Ocean Exploration Expeditions and launches of associated web site materials and lesson plans, and information about ocean career webcasts and web forums.
http://oceanexplorer.noaa.gov/backmatter/email_update.html .

NOAA Ocean Film Festival - Georgia
NOAA Ocean Film Festival: Coastlines is a National Estuaries Day celebration in Brunswick, Georgia, on September 30, 2006. Sponsored by Sapelo Island National Estuarine Research Reserve in partnership with Gray's Reef National Marine Sanctuary, the festival will feature a series of award winning films that highlight the nation's rich coastal habitats and maritime heritage.
http://www.sapelonerr.org/film_festival.htm

NOAA Photo Library
The new and updated NOAA Photo Library is a significant improvement on the old version, with more than 10,000 new images, new search capability, Hurricane Katrina images, and thousands of ocean exploration, coral reef, and polar photographs. Additions include remarkable lightning photography, a medley of American lighthouses, and thousands of newly digitized historical photographs detailing the work of the Coast Survey, Fisheries Commission, and the Weather Bureau.
http://www.photolib.noaa.gov/

NOAA Research Vessel Operates Petroleum Free
The 41-foot NOAA *R/V Huron Explorer* is the first U.S. research ship to operate free of petroleum products. Powered by soy biodiesel combined with bio-hydraulic and bio-motor oils, the environmentally-friendly vessel conducts research and helps to catalogue shipwrecks that lay beneath the waters of Lake Huron. The ship will help to collect data that can be integrated into the emerging Global Earth Observing System of Systems. Other NOAA boat operations are implementing similar bio-product conversions.
http://www.noaanews.noaa.gov/stories2006/s2615.htm

NOAA Science Camp
A weeklong pilot program summer session designed to expose school age children to NOAA's activities in the monitoring and protection of the environment was piloted in the Seattle area at Sand Point. The camp is for youth entering 7th and 8th grades in 2005.
http://www.nwfsc.noaa.gov/sciencecamp.cfm

NOAA Watch: NOAA's All-Hazard Monitor
NOAA's All-Hazard Monitor website draws on an array of weather-tracking devices, satellites, and more. Visitors can monitor a number of types of weather and hazards here, including tropical weather, droughts, floods, coral bleaching, harmful algal blooms, oil spills, and more. The website offers background information along with useful links to more in-depth information and educational materials.
http://www.noaawatch.gov/

NOAA YouTube Movies
NOAA's Ocean Media Center creates high definition video products showcasing the many services that NOAA provides to the public. On the YouTube channel, you'll find many kinds of videos including natural history documentaries about our national marine sanctuaries, industrial documentaries about how NOAA responds to oil spills, and historical documentaries covering wide ranging topics from shipwrecks in the Great Lakes to the history of surveying in the United States.
http://www.youtube.com/profile?user=NOAAOceanMediaCenter

NOAA's Island on Second Life
NOAA's Earth System Research Lab developed an Earth-science "island" in the online world of Second Life. On Meteora, one can soar through a hurricane on the wing of a research aircraft, rise gently through the atmosphere atop a weather balloon, or search for a hidden underwater cave on a side trip from a NOAA submarine. A virtual beach demonstrates how to recognize the onset of a tsunami, and eventually the site may enhance public awareness of rip tides, hurricanes, tornadoes and other natural disasters. Science on a Sphere makes its virtual debut with four examples of its 80-plus dramatic visualizations of planetary data, including a view of nighttime lights around the globe and a 3-D panorama of ocean, sea, and lake depths.

http://www.esrl.noaa.gov/outreach/sl/

Nominate Websites to the Bridge
Nominate new ocean science resources you have come across, or produced, to the Bridge. Nominating a site is easy and the review process will provide you with valuable feedback on what teachers liked about your site and what can be improved to make it even more useful.
Site Nomination Form – http://www.marine-ed.org/bridge/index_nomination.html

Nonformal EE Programs – Guidelines For Excellence
The *Nonformal Environmental Education Programs – Guidelines for Excellence* comprises a set of recommendations for developing and administering high quality nonformal environmental education programs. The guidelines describe six key characteristics that can help guide the program development process: Needs Assessment, Organizational Needs and Capacities, Program Scope and Structure, Program Delivery Resources, Program Quality and Appropriateness, and Evaluation.
www.naaee.org/npeee

Nonpoint Source Pollution Articles and Activities
The EPA offers a series of articles and activities about nonpoint source pollution for middle school students. The downloadable materials include background information and links to further information.
http://www.epa.gov/owow/nps/nps_edu/index.html

Nonpoint Source Pollution Discovery Kit
A new Discovery Kit on nonpoint source pollution has been added to the NOS Discovery Center. The website includes a tutorial describing the categories of nonpoint source pollution, the various pollutants that originate from nonpoint sources, and research and monitoring efforts; links to online resources; and lesson plans designed to be used at the high school level.
http://oceanservice.noaa.gov/education/kits/pollution/

Non-Point Source Pollution Model from Environment Canada's Georgia Basin Ecosystem Initiative
The *Non-Point Source Pollution Model* is an interactive environmental education tool for understanding pollution, where it comes from, and what we, as individuals, can do about it. Instructions for making the model are available on the website, along with resources and curriculum connections.
http://www.pyr.ec.gc.ca/EN/IPM/index.shtml

Nordic Underwater Archaeology
Learn about maritime archaeology worldwide, from a north European perspective. From basic background information to links to worldwide wreck databases, from tools and techniques to literature archives, this website is a good place to start on your underwater archaeology journey.
http://www.abc.se/~m10354/uwa/index.html

Normal Faults in Sand in a Shoe Box
A great deal can be learned by observing a sand box, and this instructional resource is designed to help students use sandbox models to investigate the characteristics of normal faults and parameters that influence their development. The website includes an

overview of the context in which the activity should be used, a complete set of notes for instructors, student handouts, and a list of supporting materials and references
http://serc.carleton.edu/NAGTWorkshops/structure04/activities/3872.html

Northeasters
Coastal Currents, a new publication series produced by the University of Delaware Sea Grant College Program in partnership with the Center for Applied Coastal Research, is designed to share timely information about coastal hazards and the natural processes that occur along Delaware's shoreline. The first issue covers northeasters and includes information on historic northeasters in Delaware, provides a web-based calculator for determining a northeaster's damage, and highlights storm preparedness tips.
http://www.ocean.udel.edu/seagrant/publications/images/coastalcurrents.pdf

North American Breeding Bird Survey
The North American Breeding Bird Survey website is a cooperative effort between the Patuxent Wildlife Research Center and the Canadian Wildlife Service's National Wildlife Research Centre, to monitor the status and trends of North American bird populations. Data are collected by participants along thousands of randomly established roadside routes throughout the continent.
http://www.pwrc.usgs.gov/bbs/

North American Environmental Atlas
The Commission for Environmental Cooperation works with key mapping agency partners in Canada, Mexico, and the United States to promote understanding of significant continental-scale environmental issues through the North American Environmental Atlas. Available map layers include renewable energy capacity, priority conservation areas, and other environmental themes. Users can download the shapefiles for the layers.
http://www.cec.org/naatlas/

North American Mammals
The Smithsonian Institution presents a searchable database of the approximately 400 living mammals of North America. The database may be searched by species, geographic location, conservation status, and family tree. For each mammal, visitors can view several renderings and photographs and also read a short scientific and narrative description. Visitors can create their own printable field guides by clicking a box next to each mammal's scientific name, and print these materials out as they wish.
http://www.mnh2.si.edu/education/mna/

North American Native Fishes Association
The North American Native Fishes Association is dedicated to the appreciation, study and conservation of the continent's native fishes. The website features a checklist of freshwater fishes native to North America and a *Fish in Focus* section with images and brief descriptions. The site also contains information about an award program for breeders, grant programs, related links, and more.
http://www.nanfa.org/

North Atlantic Stepping Stones 2005 Expedition
This expedition from NOAA's Ocean Explorer education program will run August 7–September 3, 2005. Scientists will explore the very old New England and Corner Stone seamount chains which range in age from 75 to 100 million years and are part of a

volcanic chain extending from Canada to the African tectonic plate. The website contains content essays and lesson plans directly tied to this exploration. These inquiry and standards-based lessons have been developed for students in Grades 5-12.
http://oceanexplorer.noaa.gov/explorations/05stepstones/welcome.html

North Cascades Institute
The North Cascades Institute seeks to inspire a closer relationship with nature through direct experiences in the natural world. Their programs help connect people, nature, and community through science, art, literature, and the hands-on study of natural and cultural history. They offer seminars, school programs, summer youth adventures, teacher education, and graduate courses. Check out the Procession of the Species Parade.
http://www.ncascades.org/

Northwestern Hawaiian Islands Education Project
From August 12 through 21, 2005, the NOAA research vessel Hi`ialakai ("embracing pathways to the sea") carried educators on NOAA's first-ever dedicated education voyage. While visiting Nihoa, Mokumanamana, and French Frigate Shoals, educators learned about the natural and human history of the Northwestern Hawaiian Islands and the challenges of restoration and resource management. Journals and activities have been and will continue to be posted to the website.
http://hawaiianatolls.org/

Northwestern Hawaiian Islands Research Expedition
From May 19 through June 11, 2006, the NOAA ship Hi`ialakai will be conducting a research expedition to the Northwestern Hawaiian Islands. The expedition includes ecosystem connectivity research, apex predator tagging and movement studies, as well as coral health assessment missions. Also stay tuned for web coverage of the upcoming NOAA ship Hi'ialakai 30-day expedition to conduct mapping, maritime heritage archaeology, and education and outreach in the islands from June 23-July 20, 2006.
http://sanctuaries.noaa.gov
http://hawaiianatolls.org/research/May2006/index.php

NOS Data Explorer
The National Ocean Service Data Explorer website allows users to search NOS data holdings, view metadata, and link to and/or download specific data sets. The data explorer offers interactive mapping tools that allow users to locate NOS products in any area in the United States and its territories through a metadata catalog. Search results provide users with metadata records and links to websites with additional information.
http://oceanservice.noaa.gov/dataexplorer/

NOW Classroom Global Warming Lesson Plan
NOW on PBS offers the NOW Classroom website, allowing teachers to select skill-based activities and lessons, incorporating their choice of NOW on PBS programs. NOW topics cover many themes, including the environment, government in action, social policy, business, and more. The NOW Classroom standards-linked lesson on global warming can help students in grades 9-12 research and form credible opinions on this topic.
http://www.pbs.org/now/classroom/globalwarming.html

Now-casting Sea State from Your Classroom
In the current Bridge DATA, Sea State, students use real-time data from the NOAA National Data Buoy Center to determine wave conditions around the coastal United States. Learning how wind is created and its effects on the sea surface, students will compare real-time wind speeds to the Beaufort Wind Force Scale in order to now-cast sea state conditions at each of the buoy sites. Use this DATA to supplement your atmosphere unit and bring real scientific data into your classroom.
http://www.marine-ed.org/bridge/index_archive0906.html

NowCOAST: Web Mapping Portal to Real-time Coastal Observations and NOAA Forecasts
NOAA's Coast Survey Development Laboratory has released an updated version of its Internet mapping portal, nowCOAST. The website allows one-stop access to real-time coastal observations and NOAA forecasts for any coastal region in the U.S. The new version features several enhancements including a new map viewer, a separate data browser window, an accompanying informational web page, and new links to additional observations and NOAA forecasts.
http://nowcoast.noaa.gov

NowCoast Website Updated
NOAA has released an updated version of nowCOAST, providing map displays of recent GOES weather satellite imagery, surface in-situ meteorological data, and sea surface temperature observations. Data and imagery are updated hourly, and National Weather Service Doppler weather radar is updated every 15 minutes.
http://nowcoast.noaa.gov/

NSDL K-6 Science Refreshers
The National Science Digital Library K-6 Science Refreshers provide quick and easy access to high-quality science content. The refreshers include interactive tutorials, diagrams, and articles that are selected and organized by grade level and subject area. The website is in beta release; help them out by providing your feedback.
http://nsdl.org/refreshers/science/

NSDL Wiki
The National Science Digital Library (NSDL) offers NSDL Wiki, which provides a collaborative online environment where users can create educational content, organize project documentation, and submit and annotate educational resources in the NSDL Data Repository. It advances their work toward the goal of creating more connections and fewer barriers to getting high quality annotations and resources into the library.
http://wiki.nsdl.org/index.php/NSDL_Wiki

NSF Special Reports
The National Science Foundation has developed a number of special reports that showcase the latest research done under their general direction. Many of these features deal directly with a host of issues of interest to this group, including predicting seasonal weather, disasters, seafloor science, the chemistry of water, and more.
http://www.nsf.gov/news/special_reports/

NSTA Free for All
The June 2005 issue of the elementary edition of NSTA's *Science Class* features more than 60 free online opportunities teachers can use to get ready for next year. Websites of note include:

- Information Today, Inc., free and fee-based online science resources for the K-12 community, http://www.infotoday.com/MMSchools/nov04/lackie_congleton.shtml
- BUBL Information Service, with subject menus including math, earth sciences, animals, and more, http://bubl.ac.uk
- Educator's Reference Desk, with access to ERIC—a database of information on education research and practice, http://www.eduref.org/

http://www.nsta.org/main/newsletters.php

NSTA Learning Center
The NSTA offers an online hub that provides on-demand professional development to help educators boost their knowledge about various science topics. The Learning Center has more than 3,000 electronic professional development resources and opportunities, including books, journal articles, web seminars, and online courses. More than 50 free, on-demand Science Object lessons allow teachers to increase their content knowledge at their own pace.
http://learningcenter.nsta.org/

NSTA Press Manuscript Central
NSTA Press welcomes proposals for new books of significant relevance and value to teachers of science grades K-college, and authors may now submit proposals of their work for consideration online at a new NSTA Press Manuscript Central site. NSTA Press publishes science content updates; books on best teaching practices; books that explicate and link to the National Science Education Standards; applications of the latest findings from science education research; and classroom activity books.
http://mc.manuscriptcentral.com/nstapress

NSTA Teacher's Grab Bag
The National Science Teachers Association's Teachers' Grab Bag is on the web. You can find hundreds of free and almost free items such as videos, publications, CD-ROMs, lab kits, and much more. The database is searchable by cost and type of product. Keep it in mind if you have items you'd like to distribute, as the current database comes up empty from a search on "marine."
http://www.nsta.org/resourcesgrabbag

NWF and Nim's Island
The National Wildlife Federation is partnering with Walden Media for the national release of the family movie, *Nim's Island*, to reach millions with a story, conservation education, and opportunities for action to protect wildlife. Check out the Our World Environmental Challenge (deadline for application, April 11, 2008), downloadable educator's guide, and more.
http://www.nwf.org/nimsisland/

OBIS-SEAMAP Digital Archive
The Ocean Biogeographic Information System – Spatial Ecological Analysis of Megavertebrate Populations (OBIS-SEAMAP) project is part of the Census of Marine Life initiative. It is a publicly-available, web-based digital archive of marine mammal,

seabird and turtle data, along with oceanographic and environmental data. Useful tools include on-line mapping capabilities, species profiles, and down-loadable data.
http://obis.env.duke.edu

Observing the Coastal Ocean: Buoys, Ships and Science
COSEE SouthEast announces a new resource for teachers and informal educators about coastal ocean observing systems. The DVD, *Observing the Coastal Ocean: Buoys, Ships and Science*, explores coastal ocean observing systems using a fully automated and narrated, graphic-rich presentation. It focuses on the installation of a buoy off the coast of the Carolinas, a guided underwater tour to investigate the buoy, and experiences of consultants, graduate students and technicians in oceanography. Contact Carolyn Robinson at carolyn.robinson@scseagrant.org

Ocean Acidification – Distance Learning
The Seacoast Science Center in Rye, New Hampshire offers a new distance education program on Ocean Acidification. Students will be introduced to ocean acidification; learn what it is, what is causing it, and what its effects could be on our oceans. These concepts will be reinforced with participation in lab experiments featuring acids and bases, pH, calcification, and the carbon cycle. The course can be tailored to fit in 40-60 minute periods or in shorter time blocks.
http://www.seacoastsciencecenter.org/programs/distance_learning.php

Ocean Acidification Webcast
The World Ocean Observatory offers information, education and public discourse about the ocean. Their first online webcast, on Ocean Acidification, aired November 13-14, 2006. This opportunity allowed students, educators, and interested individuals to participate in an ongoing series of global online events to explore ocean issues.
http://www.thew2o.net/

Ocean Adventure
The Thinkquest website, Ocean Adventure, explores the hydrothermal vents in the depths of the Earth's oceans. Learn what hypothermal vents are, where they are located, how they are formed, and why they are important. Take a virtual dive in an actual submersible to learn more about these vents and their environments. Make sure to check out the downloadable classroom activities.
http://library.thinkquest.org/18828/index.html

Ocean Adventures in the Classroom
PBS's Ocean Adventures website offers resources designed primarily for middle school educators and students, appropriate for use in both formal and informal educational settings. The themes of adaptations, ecosystems and human impact are interwoven throughout the Ocean Adventures episodes and educational materials. The website offers new educational resources including episode-based viewing guides, activities, standards-based lesson plans and in-depth articles.
http://www.pbs.org/kqed/oceanadventures/educators/

Ocean Adventures Continue
Part three of this six-part TV series airing on PBS stations is *Sharks at Risk*, July 12, 2006. This is followed by *The Gray Whale Obstacle Course*, July 19, 2006. *America's Underwater Treasures* (parts 1 and 2) will air September 20 and 27, 2006, bringing viewers to the National Marine Sanctuary System. The website includes a variety of

educational offerings, including standards-based lesson plans, informal activities, on-line games, and more, designed for middle school but easily adaptable for other grades.
http://www.pbs.org/kqed/oceanadventures/

Ocean Alaska Science and Learning Center
The Ocean Alaska Science and Learning Center, a partnership dedicated to understanding and preserving the marine ecosystem connecting Alaska's National Parks through research and education, announces the launch of its new web site. The site has information, images, video clips, and audio clips related to marine research in Alaska's National Parks. Also, review the Request for Proposals.
http://www.oceanalaska.org .

Ocean Animal Aquarium Teachers' Guide
The Marine Biological Laboratory's Marine Resources Center offers a downloadable Ocean Animal Aquarium Teachers' Guide, with lessons and activities that you can do with an ocean animal aquarium in your classroom, and ways to integrate the aquarium into daily classroom activities.
http://www.mbl.edu/mrc/services/pdf/teachers_guide.pdf

Ocean Artist
Deidre Sassano is an artist offering design and production of ocean-themed arts projects and workshops. Her "Ocean Arts" encourages creativity and conservational awareness for the oceans and their inhabitants and promotes the use of environmentally sensitive materials by utilizing recycling/recycled materials for projects.
Contact Deidre at hollow_arts@yahoo.com

Ocean Book Lists
One recurring question from teachers is "What books do you recommend? - fiction, text, and inspirational. A variety of organizations pull together recommended lists. Here are just a few lists to start with.

- Los Angeles Unified School District - http://www.usc.edu/org/cosee-west/oceanbibliog.html
- The Ocean Project's Book of the Month - http://www.theoceanproject.org/action/book.php
- Children's Environmental Literature Bibliography http://www.dnr.state.wi.us/org/caer/ce/eek/teacher/childlit.htm
- The Bridge
  - Frequently Asked Questions - http://www2.vims.edu/bridge/search/faq.cfm
  - Resource Center - http://www2.vims.edu/bridge/search/bridge1output_menu.cfm?q=literature

Ocean Book of the Month
Each month, The Ocean Project will highlight a book focused on our blue planet or environmental sustainability. Books for all age groups, non-fiction and fiction, prose and poetry will be covered.
http://seastheday.theoceanproject.org/seastheday/book/index.htm

Ocean Careers
This new resource on ocean careers comes from the Centers for Ocean Sciences Education Excellence. The website includes information on more than 50 careers, as

well as information on schools and universities that offer related training programs, internships, and jobs; professional societies, profiles, and more.
http://www.oceancareers.com/2.0/index.php

Ocean Challenge Puzzle
Visitors to NOAA's redesigned Ocean Explorer Web site can team up with other players around the globe to answer ocean science questions to reveal pieces of a puzzle. The redesigned website also includes a new section, 'For Fun.' Improved navigation and more awaits your ocean explorations.
http://www.oceanexplorer.noaa.gov

Ocean Communicators Workshop Report
The Ocean Communicators Workshop, *Communicating Science,* was held August 20-21, 2007 in Santa Barbara, California, with communicators representing ocean-related agencies, organizations, and businesses in California. The workshop identified key messages for top ocean topics in California as well as provided workshop participants with expertise and experience in communicating those messages through new and traditional media outlets. The workshop report and more are available on the website.
http://www.thankyouocean.org/oca_workshopdocs

Ocean Connections from COSEE-Florida
The Florida Center for Ocean Science Education Excellence publishes their quarterly newsletter, *Ocean Connections*, on their home page. The newsletter features information about professional development and other events, and highlights a web portal and education program each month. In addition, if you register on the website, you will be able to post your materials, lesson plans, images, articles and data sets for others to share. http://floridacosee.net/ .

Ocean Conservation Booklets
Pew Environment Group and Marine Fish Conservation Network have colorful educational booklets available for free, which provide a general background on ocean conservation and overfishing. They would be happy to ship requests of over 100 to those interested. The booklet is also available for downloading from the website.
http://www.endoverfishing.org/resources/OceanConservationBooklet2008-PewLogo.pdf
Contact Joseph Gordon at JGordon@pewtrusts.org

Ocean Currents Radio Show
Discover the depths and far reaches of the ocean realm by tuning in to these live or archived radio broadcasts. Listen as Cordell Bank National Marine Sanctuary personnel talk with experts in the field about current research, management issues, natural history, and stewardship associated with the marine environment. Check out the schedule for live broadcast dates and times, download archived radio shows, or subscribe to Ocean Currents podcasts. Check out upcoming shows or look through the archives.
http://cordellbank.noaa.gov/newscalendar/welcome.html
http://cordellbank.noaa.gov/education/radiopodcast.html
http://cordellbank.noaa.gov/education/radioshow.html

Ocean Currents Tutorial
NOAA's Ocean Service Education website offers the new Ocean Currents Tutorial, presenting an overview of some of the major factors that cause coastal and open ocean currents including tides, winds, and changes in water temperature and salinity.

Longshore, rip currents, and upwelling events are discussed in the context of the coastal environment. Coriolis, the Ekman spiral, and thermohaline circulation are discussed in relationship to the open ocean. The Roadmap to Resources presents data on ocean currents from a variety of resources, and two inquiry-based lesson plans emphasize hands-on activities using online data.
http://oceanservice.noaa.gov/education/kits/currents

Ocean Discovery Kits
NOAA's National Ocean Service has launched three discovery kits explaining the science behind NOS activities, designed to make complex subjects accessible to teachers and students at the high school level. Each kit includes an on-line tutorial, a roadmap to resources, and a set of lesson plans correlated to National Science Education Standards. Discovery Kits have been developed for Corals, Tides & Water Levels, and Geodesy.
http://oceanservice.noaa.gov/education/welcome.html .

Ocean Etiquette and Responsible Marine Wildlife Viewing
NOAA Fisheries and NOAA's National Marine Sanctuary Program have developed the Ocean Etiquette program to promote ocean stewardship. Anyone who visits, works, or plays in the marine environment and those who visit remotely (i.e. the Internet and aquariums) have an opportunity to make a difference in protecting the ocean. Ocean Etiquette is designed to provide the public with guidance on minimizing impacts to marine life and habitats.
http://www.nmfs.noaa.gov/pr/education/viewing.htm
http://www.sanctuaries.noaa.gov/protect/oceanetiquette.html

Ocean Exploration: H.M.S. Challenger and Beyond
Join the College of Exploration's Challenger Team under the sponsorship of NOAA's Office of Ocean Exploration for this upcoming virtual workshop, April 19-May 7, 2004. Dialogues with colleagues and experts will explore topics from the mid-19th century history of ocean exploration, current expeditions, and a glimpse into the future of ocean exploration.
http://www.coexploration.org/oe2004 .

Ocean Exploration – Summer Expeditions
NOAA's Office of Ocean Exploration will be launching several expeditions during the upcoming summer months of 2005. Follow along with scientists and educators through daily web logs, images, and video as they explore unknown areas of the ocean from the Arctic to the Lost City Site along the Mid-Atlantic Ridge.
New Zealand American Submarine Ring of Fire – April 3 – May 10, 2005
Hidden Ocean Expedition, June 26 - July 16, 2005
Lost City Expedition, July 15 – August 4, 2005
DeepScope, August 19 - September 4, 2005
North Atlantic Deep Sea Corals Expedition, August 5 – September 5, 2005
http://oceanexplorer.noaa.gov

Ocean Explorer on YouTube
The NOAA Ocean Explorer YouTube website offers videos for all who wish to learn about, discover, and virtually explore the ocean realm. The site provides a platform to follow explorations in near real-time, learn about exploration technologies, observe remote marine flora and fauna in the colorful multimedia gallery, read about NOAA's

200-year history of ocean exploration, and discover additional NOAA resources in a virtual library.
http://www.youtube.com/oceanexplorergov

Ocean Gazing Podcast
COSEE Networked Ocean World offers the biweekly podcast *Ocean Gazing*, highlighting the science, researchers, and sounds of Ocean Observing Systems. Find out how to detect underwater earthquakes, take photos of some of the smallest ocean creatures, measure the ocean's temperature, and more.
http://coseenow.net/category/ocean/

Ocean Guardian Activity Book
The Ocean Guardian Activity Book, created by the NOAA Office of National Marine Sanctuaries and the Marine Debris Program, is appropriate for children in grades K-3. Learn about the ocean and its importance through word searches, games, and coloring pages.
http://sanctuaries.noaa.gov/education/fun/welcome.html

Ocean Guardians
The National Marine Sanctuary Program's Ocean Guardian Kid's Club can help classes in some California counties get involved as an Ocean Guardian Classroom. The **Ocean Guardian Kid's Club** offers children an opportunity to express their insights, observations, and understanding of their natural environment through the creation of original stories, poetry, and visual art. All K-8 students are eligible and encouraged to join. The **Ocean Guardian Classroom** can help your class make a difference and promote environmental conservation at your school or in your local community,
http://sanctuaries.noaa.gov/education/kids_club.html
http://sanctuaries.noaa.gov/education/ocean_guardians.html

Ocean Leadership Employment Opportunities
The Consortium for Ocean Leadership is a nonprofit organization that represents public and private ocean research education institutions, aquaria, and industry with the mission to advance research, education, and sound ocean policy. The organization also manages ocean research and education programs in areas of scientific ocean drilling, ocean observing, ocean exploration, and ocean partnerships. As a service to the ocean community, job announcements are posted on the Ocean Leadership website.
http://www.oceanleadership.org/about/employment

Ocean Literacy
This web site and online survey are the result of a partnership of agencies and institutions concerned with improving ocean literacy. Check out the extensive links under Education Resources, Links, and National & Regional Programs.
http://oceanliteracy.org/ .

Ocean Literacy Educational Materials Available
The National Geographic Office in Santa Barbara has had quantities of the following materials available:

- Ocean Atlas Teacher's Guides
- Oceans for Life Brochures

Contact Sally Ziegler at Sally.Ziegler@noaa.gov for inquiries.

Ocean Motion
Ocean Motion is a NASA website aimed at students in grades 9-12. The website contains a review of the surface circulation of Earth's ocean and classroom investigations appropriate for various disciplines. The site features satellite and model data, quick evaluation quizzes, classroom investigations, and more.
http://www.oceanmotion.org/

Ocean Now
National Geographic's *Ocean Now* is a project to study healthy, undisturbed places in the ocean. Follow Dr. Enric Sala and a team of scientists as they explore the waters of the southern Line Islands. The crew will document and study water quality, fish populations, predator populations, and the health and diversity of the coral reefs. The website includes an Ask the Crew feature, links to educational resources, and more.
http://ocean.nationalgeographic.com/

Ocean Observing from the BRIDGE
The Bridge Data Activities have taken a new shape this fall by featuring real-time data from ocean observing systems throughout the coastal United States and the Great Lakes. The September Data Activity focuses on real time conductivity data and evaluates how changes in water's abiotic characteristics affect the water's ability to conduct electricity. The October Data Activity investigates wave energy as a possible alternative, renewable energy source in the United States.
http://www.marine-ed.org/bridge

Oceans for Life Resources
The National Geographic EdNet Oceans for Life website offers a wide selection of news articles, weather resources, maps, photos, teacher guides, interactive media activities and more. The materials can be browsed by category or alphabetically, or searched by key word. Video clips can be used in conjunction with associated lesson plans. Educators can also get a year's subscription to National Geographic magazine for a sharply discounted rate.
http://www.ngsednet.org/community/index.cfm?community_id=128

Ocean Observing Systems
For educators interested in bringing real-time coastal and open ocean data into their classrooms, the Bridge introduced its new section devoted to ocean observing system technology. Educators can find a multitude of annotated links to the country's top ocean observing websites. Also featured on the site are several classroom-ready Data Analysis Teaching Activities (DATAs) which use real-time and archived ocean observing data.
http://www.marine-ed.org/bridge/index_oos.html

Ocean Observing Systems - Promoting Lifelong Ocean Education Using
Ocean Observing Systems, both in-water and space-based, are becoming a reality. The ocean education community has begun to plan for the application of these systems' assets to science and technology learning for citizens of all ages, ethnicities, and locales and in learning environments from classrooms to sanctuaries to media. Two newly published workshop reports provide a comprehensive set of recommendations.
http://www.ocean.us/documents/workshop.jsp
http://www.geo-prose.com/projects/orion_report.html
http://www.ocean.us/

Ocean Park Stewardship Plan
National Parks contain more than 5,100 miles of beaches, coral reefs, kelp forests, wetlands, historic shipwrecks and forts, and other features that attract more than 75 million visitors every year. In 74 parks spanning 25 coastal states and U.S. territories, people come to camp, fish, snorkel, scuba dive, boat, and watch wildlife. The Ocean Park Stewardship Action Plan was unveiled, representing the commitment to restore and maintain productive fisheries, habitats, and wildlife in the ocean parks, and ensure the recreational opportunities they afford to hundreds of communities and millions of visitors.
http://www.nps.gov/pub_aff/oceans/conserve.htm

Ocean Policy Recommendations for the New Administration
Both the Joint Ocean Commission and The Ocean Foundation have prepared recommendations for the new administration.
http://www.jointoceancommission.org/
http://www.oceanfdn.org/index.php?tg=articles&topics=32

Ocean Portal
The Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) supports a web portal which provides a high-level directory for ocean data and information web sites. Links to MPA resources are currently available from the "Administration, Conservation and Policy" category, while the “Data Resources” links to databases around the world.
http://ioc.unesco.org/oceanportal/index.php

The Ocean Project Community Conservation Action Map
The Ocean Project website has a searchable map of their partner organizations that utilize the help of volunteers and members. Website visitors can click on their state or Canadian province and find a list of organizations and volunteer opportunities related to aquatic or ocean conservation in their community.
http://www.theoceanproject.org/action_map/

Ocean Race Adventure
This education website uses extreme ocean sail racing as a context for educating students about oceans, weather, and world cultures. The Volvo Ocean Race is a round the world sailing race which covers 32,500 nautical miles, makes port in 9 countries, and travels through 4 oceans over a period of eight months. Using the curriculum materials and information on the race from this site, teachers can give students an appreciation of the oceans and the Chesapeake Bay, while tracking the progress of the boats.
betsy.kulle@oceanracechesapeake.org.
www.oceanraceadventure.net

Ocean Science Concept-Driven Teaching Interactive
The jointly developed NOAA Environmental Cooperative Science Center (ECSC) / NSF Ocean Science Concept-driven Teaching Interactive (OSCI) Teaching Module blends both traditional lecture-based and concept-driven/interactive methodologies through the integration of mini-lectures, readings, writing, in-class activities and focused group discussions. The website offers prospective users a comprehensive overview of the module and understanding of its implementation.
http://www.famu.edu/oldsite/acad/colleges/esi/OSCI/

Ocean Science Links from NSTA
The issue of the August 2006 elementary and high school editions of NSTA's Science Class features the theme *Ocean Science*.
http://science.nsta.org/enewsletter/2006-08/member_elementary.htm
http://science.nsta.org/enewsletter/2006-08/member_high.htm

Ocean Stewardship: Education and Outreach
Oikonos works locally and internationally to increase ecosystem knowledge through science, art, technology, education, and applied conservation. A goal of OikonosEcosystem Knowledge is to form collaborations with education experts and develop innovative programs that disseminate project specific results to a broad diverse community. The website has a variety of downloadable marine debris information resources and an interesting gallery.
http://www.oikonos.org/projects/oceanstewardship.htm

Ocean Voyager
Mother Jones offers Ocean Voyager, a 5-week series of emails and interactive opportunities designed to introduce the general public to the state of the ocean and what can be done to improve things. Each week, participants visit another part of the world's ocean through this website and learn about a new issue, including links to positive ideas and action steps. Topics include pirate fishing, dead zones, toxins in marine mammals, global warming and polar bears, and more.
http://oceanvoyager.org/

OceanAGE Careers
Through December 9, 2005, NOAA Ocean Explorer hosted another *Ocean Careers to Inspire Another Generation of Explorer*. featuring four scientists from the Deep Atlantic Stepping Stones Expedition and the Lost City Expedition.
http://oceanexplorer.noaa.gov/edu/oceanage/welcome.html

OceanAGE Web Chats with Marine Explorers
Ocean Careers to Inspire Another Generation of Explorers (OceanAGE) invites students to interact with women and men who explore our ocean planet to better our world Explorers provide students with first-hand knowledge of careers through live interviews, profiles, and mission logs. Video profiles, biographies, and background materials related to their work are available, and the website features interactive video Web Casts.
http://oceanexplorer.noaa.gov/edu/oceanage/

OceanFest - California
Celebrate OceanFest on October 6, 2007, with the Gulf of the Farallones National Marine Sanctuary, its sister sanctuaries, and San Francisco Bay Area residents. The free beachfront festival takes place during Fleet Week and is the ideal place to watch the Blue Angels air show, participate in interactive children's activities, and much more.
http://www.farallones.org/news/event_calendar.php

OceanGLOBE
OceanGLOBE is a beach research and outdoor environmental education program for upper elementary, middle, and high school students created by the UCLA Marine Science Center. OceanGLOBE provides a mechanism for students to conduct marine science over an extended period of time, giving them experiences that anchor the

national and state science standards learned in the classroom. The website includes slide shows, photos, and classroom activities and field research guides.
http://www.msc.ucla.edu/oceanglobe/about.htm

Oceanic Research Group Resources
The Oceanic Research Group, a non-profit environmental organization dedicated to ocean conservation, has produced several educational videos that can be viewed online. Film topics include coral reefs, adaptations, manatees, and more. In addition, the Wonders of the Sea section offers information about the biology of different kinds of animals. Check out *Sharks: Predators with a Purpose,* which discusses the importance of sharks in the marine ecosystem and the troubles that they face.
www.oceanicresearch.org/education/films/predators.html

Oceanography Section of National Academies Website
The Earth and Life Studies Division of the National Academies focuses on the intersection of science and policy. The website features news, reports, projects, and upcoming events. The Ocean Studies topic area section posts recent reports and projects in ocean research and policy. There is also an electronic newsletter.
http://watson.nap.edu:8080/gateway-dels/dels/subjectNews.jsp?subject=69 .

Oceans Alive!
The Museum of Science, Boston and the Science Learning Network offer the Oceans Alive website. It features information about our water planet, including physical features and the water cycle; currents, waves, and tides; life in the sea; and an introduction to scientific exploration. Additional links to resources are included.
http://www.mos.org/oceans/

Oceans for Life Lesson Plans
The NOAA National Marine Sanctuary Program in collaboration with National Geographic Society has launched a new series of marine education lesson plans highlighting cutting-edge research, maritime heritage, cultural resources and environmental issues in our national marine sanctuaries. The multi-media Oceans for Life series of lessons and videos gives students an opportunity to explore the history, biology, and ecology of the National Marine Sanctuary System.
http://sanctuaries.noaa.gov/education

Oceans for Life Lesson Plans and Videos
NOAA's National Marine Sanctuary Program has launched a series of marine education lesson plans highlighting cutting-edge research, maritime heritage, cultural resources, and environmental issues in the national marine sanctuaries. Designed for K-12 teachers and marine educators, the *Oceans for Life* series of lessons and videos gives students an opportunity to explore the history, biology, and ecology of the National Marine Sanctuary System.
http://www.oceanslive.org/portal/index.php?module=pagesetter&func=viewpub&tid=1&pid=293

Oceans of Life—An Educator's Guide to Exploring Marine Biodiversity
World Wildlife Fund presents their new educator's guide, *Oceans of Life*. The marine biodiversity module, designed for middle-school educators and students, has background information, activities, and case studies. Appendices offer a framework, mini

case studies, marine legislation, planning charts, a glossary, a bibliography, and more. Order the guide through Acorn Naturalists.
www.acornnaturalists.com

Oceans Live
The National Marine Sanctuary Program and Immersion Presents have launched OceansLive.Org, a marine science portal to educate about the ocean, including national marine sanctuaries. In addition to watching live video from research expeditions, the portal's visitors can learn more about oceanography, marine life, conservation and preservation, marine research technologies, and the nation's maritime heritage. The portal offers lesson plans, videos, puzzles and games based on the marine environment.
http://www.oceanslive.org/portal/

OceansLive! from Monterey Bay
OceansLive! from Monterey Bay was broadcast live from the Monterey Bay National Marine Sanctuary in California from March 2-7, 2008. The expedition explored the region's ecosystems, including estuaries, kelp forests, and submarine canyons. Educational materials are available for downloading from the web portal.
http://OceansLive.org.

OceansLive Videos
OceansLive.org aims to bring the ocean world to communities worldwide and make oceans accessible and local through a multi-media system approach. Visit OceansLive.org to view new archived videos, including the Northwestern Hawaiian Islands Marine National Monument, the Hunt for the Alligator, History of the Macon, and more. Live video feeds are also available, along with downloadable complimentary educational resources.
http://oceanslive.org

OceansLive Videos - Albatross
OceansLive.org aims to bring the ocean world to communities worldwide and make oceans accessible and local through a multi-media system approach. Visit OceansLive.org to view new archived videos, including a necropsy of a Laysan Albatross chick, highlighting the effect of marine debris on seabirds, and the banding of Masked Booby and Laysan Albatross chicks on Green Island in the Kure Atoll.
http://oceanslive.org

Oceans Online
MatchACollege.com, an online resource of information for college information, offers additional web pages to help students find relevant information to help research their goals. They offer a page listing 100 websites for exploring the ocean online, with categories including explorations and expeditions, video, interactives, data and monitoring, learning and education, and more. Take time to check out their list of photo galleries. You may want to bookmark this page for future reference.
http://www.matchacollege.com/blog/2009/100-excellent-websites-for-exploring-the-ocean-online/

Ocean's Role in Weather and Climate
NOAA offers this website with materials to help you understand factors that impact the Earth's weather and climate, and how changes in temperature or air circulation are part of complex, long-term cycles. Understanding the influence of ocean conditions on the

Earth's climate and monitoring changes in ocean conditions are key to predicting climate change. The website offers classroom resources, teacher tutorials, web seminar archives, and more.
http://oceanservice.noaa.gov/education/pd/oceans_weather_climate/

Oceanus
Oceanus, the oceanography magazine produced by Woods Hole Oceanographic Institution (WHOI), continues to publish a free version on-line. The magazine explores ocean research, engineering, and education at WHOI. You can read the current issue or search retrieve articles by topic, including ocean policy, resources, sound in the ocean, and much more. The website includes information about research, interviews, fast-loading multimedia, and more.
http://oceanusmag.whoi.edu

Oceanworld
Oceanworld is a web site for middle-school, high-school, undergraduate, and graduate students and teachers interested in the ocean. It has tutorials for middle-school and high-school students, materials for middle-school teachers, an on-line textbook in physical oceanography, all course material for five college courses, and on-line resources which include links to hundreds of site with on-line data. The tutorials cover fisheries, weather, Forams, coral reefs, currents and more.
http://oceanworld.tamu.edu/

Ocracoke Shipwreck Explorer
The Ocracoke Shipwreck Survey offers a database of submerged cultural resources along North Carolina's Outer Banks, and educational outreach. Underwater archaeology, historical research, and remote sensing help locate and identify submerged cultural resources off the coast of North Carolina, after which the project researchers assess their research potential and historical significance. The website has background information, methodology and fieldwork links, educational resources, and more.
http://www.ecu.edu/maritime/Projects/OcracokeWebSite/index.htm

October Days
National Energy Awareness Month
http://www.eere.energy.gov/femp/services/energy_aware.cfm
October 3, World Habitat Day http://www.unhabitat.org/whd/2005/default.asp
October 5, World Teachers' Day http://www.ei-ie.org/worldteachersday/en/
October 9-15, Earth Science Week http://www.earthsciweek.org/
October 18, World Water Monitoring Day http://www.worldwatermonitoringday.org/

Of Sand and Sea: Teachings From the Southeastern Shoreline
Of Sand and Sea: Teachings From the Southeastern Shoreline, by Paula Keener-Chavis and Leslie Reynolds Sautter, is an introductory text which covers the ocean's geology, biology and chemistry. It is written at a reading level for middle and high school students. While you're on the website ordering a copy, check out the other offerings available at nominal or no charge. The South Carolina Sea Grant Consortium now offers the text online in pdf format.
http://www.scseagrant.org/oldsite/library/library_pubs_sos.htm
http://www.scseagrant.org/library/library_pubs_marine.htm

Offshore New Harbor Project
The Offshore New Harbor Project will study sediments deposited in Antarctica during the transition from the Greenhouse World to Icehouse World, as part of the Antarctic Geological Drilling Program (ANDRILL). The expedition team will include scientists, students, and a schoolteacher. The website will include background information, videoconferencing opportunities, and more.
http://qcpages.qc.cuny.edu/offshore_new_harbor/offshore.htm

Oil and Water Don't Mix
The Australian Maritime Safety Authority offers oil spill information and educational materials relating to oil pollution of the marine environment. The online activity, *Oil and Water Don't Mix*, is meant for primary school; additional materials include a bioremediation exercise, mathematics and oil spills, and more.
http://www.amsa.gov.au/Marine_Environment_Protection/Educational_resources_and_information/Oil_Spill_Information_and_Educational_Material.asp

Okeanos Explorer, A New Paradigm for Exploration
In 2008, NOAA will commission a ship of exploration, the *Okeanos Explorer*, which will operate with a new paradigm: most of the scientists will be ashore rather than on the ship. Exploration Command Centers in several locations in the United States will connect to the Okeanos Explorer and its sensors via satellite and high-speed Internet2 to transmit live images and other data from the seafloor. Via this "telepresence," scientists ashore will have the capability to control the exploration missions. Internet coverage includes content essays written by the mission explorers, a special Education essay written for educators, and links to content-related educational materials for teachers of students in grades 5-12.
http://oceanexplorer.noaa.gov/explorations/07blacksea/welcome.html

Ology
OLogy, the American Museum of Natural History's science website for kids ages seven through twelve, is designed as a place for kids to explore, ask questions, get answers, and more. It offers age-appropriate content in archaeology, astronomy, biodiversity, genetics, marine biology, paleontology, and physical science. Educators can find suggestions and tips on how to use the OLogy Web site in the Educator's Guides. They can also sort by grade, title, type, and topic.
http://www.ology.amnh.org

On the Half Shell
The Bridge can help you incorporate current events and real scientific data from the Center for Disease Control with the Data Analysis Teaching Activity (DATA), *On the Half Shell*. In this activity, students will learn about *Vibrio vulnificus*, analyze eight years of illness data, and evaluate trends. On the Half Shell is one of many Bridge DATAs that has been reformatted to more closely match a formal lesson plan, complete with summary, objectives, and list of vocabulary words.
http://www2.vims.edu/bridge/DATA.cfm?Bridge_Location=archive1204.html
http://www.marine-ed.org/bridge

Once Upon a Tide
The Center for Health and the Global Environment at Harvard Medical School has produced a short educational film, Once Upon a Tide. The website offers the downloadable film, along with some links to complementary lesson plans and more.

http://chge.med.harvard.edu/programs/healthyoceans/once_upon_a_tide/

One Well: The Story of Water on Earth
One Well: The Story of Water on Earth asks readers to think of all the water on earth as belonging to one well: a well which is shared by all the people and animals of the earth; a well which is influenced by all of the activities on our planet. The text presents information about where water is found on our planet, how the water cycle functions, the importance of water for plants, for animals and their habitats, and for people, and more.
http://www.umanitoba.ca/outreach/cm/vol13/no12/onewell.html

Online Access to Research in the Environment
Online Access to Research in the Environment, an international public-private consortium, enables developing countries to gain free access to one of the world's largest collections of environmental science literature. Over one thousand scientific journal titles are now available free in low income countries. Research is provided in a wide range of disciplines, including climate change, ecology, energy, environmental economics, environmental law and policy, and many others.
http://www.oaresciences.org/en/

Online Chart Viewer
The Office of Coast Survey offers the On-Line Chart Viewer. The viewer lets mariners and the public display any of the 1,000-plus nautical charts in the national suite using only an Internet browser. Each chart is updated weekly for Notice to Mariner corrections by NOAA's experienced nautical cartographers. The website can be used for planning and research, as an easy reference document for navigation for recreational boaters, and as a quick tool for professional mariners to examine recent changes in routes.
http://www.NauticalCharts.gov/viewer

Online Education Resources from the Yale Peabody Museum
The fellows at the Yale Peabody Museum have developed a variety of curriculum units that are available for downloading for use by educators in classroom settings. Offerings include *Biodiversity and Global Change: Lobster Die-off!, Happy as a Clam: Mollusks of Long Island Sound, Connecticut Population Ecology, The River Runs Through It,* and others.
http://www.peabody.yale.edu/education/ed_curric.html

Online NAAEE Directory
Take a few minutes to add your organization to NAAEE's Online Environmental Education Directory, the simple first step to building a consistent, quality process for helping EE practitioners find the resources they need. After your organization is in the system, you can gradually add descriptions of all your publications and programs, so that they are easily found by Internet searchers. Having your resources listed is also the first step in the Resource Review system, NAAEE's effort to build a culture of quality based on the Guidelines for Excellence.
http://naaee.org/cgi-bin/risee/noram/login

Online Ocean and Weather Studies
Online Ocean Studies and *Online Weather Studies* are introductory college courses developed by the American Meteorological Society (AMS) for licensing and local offering by undergraduate institutions nationwide. Topics in *Online Ocean Studies* include the ocean in the earth system, plate tectonics, marine sediments, life in the ocean, and

more. *Online Weather Studies* includes weather monitoring, the atmosphere, storms, and more. Both online courses are turnkey packages with print and Internet-delivered materials that can be offered by faculty members in a variety of teaching environments, ranging from traditional lecture/lab to completely online.
http://www.ametsoc.org/amsedu/online/info/
http://www.ametsoc.org/amsedu/online/oceaninfo/

Online Ocean and Weather Studies Diversity Project
The AMS/NSF/NOAA Online Studies Diversity Project provides expenses-paid workshops for faculty offering either course at minority serving institutions, along with additional support. Workshops will be offered in May and June, 2007.
http://www.ametsoc.org/amsedu/online/info/
http://www.ametsoc.org/amsedu/online/oceaninfo/

Online Oceanography Expeditions
Designed for students in a general oceanography college course at San Jose State University, this website provides links to online expeditions in oceanography. Topics include marine resources, visualizing beneath the sea, global circulation and the California Current, marine ecosystems, and more. Additional resources include field guides, downloadable handouts and background information, and much more.
http://oceansjsu.com/105/expeditions.html

One Stop for Ocean Sciences Education Resources
The Bridge website is a growing collection of the best marine education resources available on-line. It provides educators with a convenient source of accurate and useful information on global, national, and regional marine science topics, and gives researchers a contact point for educational outreach. The resources found on the Bridge are educator-reviewed to assure that the collection contains qualified, useful sites for formal and informal ocean sciences education. The Bridge gladly accepts site nominations via our online form. Researchers are especially encouraged to submit their education-friendly websites. If you know of a good ocean sciences education resource, share it with your fellow educators.
http://www.marine-ed.org/bridge
Site Nomination Form http://www.marine-ed.org/bridge/index_nomination.html

O'Neill Sea Odyssey in Monterey Bay National Marine Sanctuary
The *Sea Odyssey* program is a 3-hour learning experience that takes place aboard the 65-foot Team O'Neill catamaran with follow-up lessons at the shore-side Education Center. The students rotate through three stations: marine biology, ecology, and navigation. There is a curriculum guide, *Investigations in a National Marne Sanctuary*, which accompanies the different stations.
http://www.oneillseaodyssey.org/

Operation DeepScope Expedition
NOAA Ocean Exploration launched the Operation DeepScope Expedition, August 3-14, 2004. This expedition used advanced technologies, such as the sophisticated Eye-in-the-Sea underwater camera system. The Harbor Branch Oceanographic Institution's research vessel Seward Johnson and its manned submersible, the Johnson-Sea- Link, took scientists to the northern Gulf of Mexico, with basins, canyons, escarpments and methane seeps. The website includes lesson plans, logs, videos and more.
http://oceanexplorer.noaa.gov/explorations/04deepscope/welcome.html

Operation Laser Line 2006
NOAA's Ocean Explorer website highlights Operation Laser Line 2006, a 6-day research cruise from November 8-13, 2007 to survey several sites off the coast of Maui. This new technology called laser line scan (LLS) may provide a bridge between broad-scale approaches such as side-scan sonar and fine-scale video and still photography. LLS systems can detect objects as small as about one centimeter. LLS systems provide two to five times the coverage of video but less than side-scan sonar
http://www.oceanexplorer.noaa.gov/explorations/06laserline/welcome.html

Operation Laser Line Mission Summary
The mission summary from Operation Laser Line Scan 2006 has been published on Ocean Explorer. The purpose of this six-day research cruise, funded by the NOAA Office of Ocean Exploration, was to test the ability of laser line scanning technology to address questions related to the management of coral reef ecosystems. The mission summary offers an insight into some of the problems encountered with cutting edge research.
http://oceanexplorer.noaa.gov/explorations/06laserline/logs/summary/summary.html

Operation: Monster Storms
From The JASON Project, this free online curriculum is designed to teach students in grades 5-8 how powerful storms form and how advanced technology is used to better understand and forecast weather. Developed in partnership with NOAA, NASA, and the National Geographic Society, *Operation: Monster Storms* examines current research to improve forecasting, allowing communities to better prepare for storms and avoid their destructive potential.
http://www.jason.org/public/Curriculum/Curriculum.aspx?pos=1

Operation: Resilient Planet Game
The Jason Project and National Geographic offer *Operation: Resilient Planet*, a game which brings students along on real-life science expeditions with practicing researchers and explorers. Students will need to use the right tools, find the right data, and be prepared to argue their case. The game offers 3D graphics, stereo sound, and fun-to-use controls. It is correlated to National Science Education standards for grades 5-8.
http://www.jason.org/Public/Curriculum/ORPGame.aspx?pos=1

Oregon Sea Grant Resources
Oregon Sea Grant supports research, education, and public outreach to help people understand, responsibly use, and conserve ocean and coastal resources. Spend some time looking through this website and check out the research and outreach pages. Don't miss the downloadable videos on ocean acidification and invasive species.
http://seagrant.oregonstate.edu/index.html

Ornithological Research Archive
The Searchable Ornithological Research Archive is a resource for professional and amateur ornithologists. This online journal archive is produced jointly by the University of New Mexico, Association of Field Ornithologists, Cooper Ornithological Society, American Ornithologists Union, and Wilson Ornithological Society. At present, it contains seven journals, including *The Condor, Journal of Field Ornithology, Studies in Avian Biology,* and more. You can browse the journals or use the search engine.
http://elibrary.unm.edu/sora/index.php

Our Environment and Ocean Literacy
The National Geographic Society has expanded its *Our Environment & Oceans for Life* website. The website provides facts, news, and classroom activities for all teachers and their students. Some resources include a multimedia teacher's toolkit; tools and resources to instruct students on the importance of a healthy environment; "green" actions to help preserve the environment; expert scientist reports; and more.
http://www.ngsednet.org/oceans

Our Wetlands, Our World
Our Wetlands, Our World, a high school activity guide, is available for downloading from the California Coastal Commission. While site specific to Upper Newport Bay, it is easily adaptable to your region. The guide provides information and activities to help high school students learn about the importance of wetlands and to become involved in the restoration of these valuable, unique environments. California educators can also participate in upcoming professional development orientation workshops.
http://www.coastal.ca.gov/publiced/pendx.html

Out & About
Out & About is the quarterly Pacific region outreach e-newsletter from the U.S. Fish and Wildlife Service to highlight outreach success stories around the region, provide resources, offer tips to improve outreach and customer service, and encourage new outreach activities. The articles feature trainings and workshops, resources, case studies, and more. The Winter 2005 issue includes an article about Navigating Change, the Hawaiian canoe voyage with a focus on education.
http://pacific.fws.gov/ea/outreach/out&about.htm

Outdoor Safety and Survival Publications and Videos
Publications and videos produced by Alaska Sea Grant, developed by survival experts, can help save lives and increase your comfort level at sea. The messages of survival are targeted to children, parents, teachers, and youth group leaders, among others. Fourth-grade reading level publications deal with hypothermia, frostbite, and dressing for cold weather. An outdoor survival training curriculum is geared to students and their teachers in grades five through high school. A four-volume "Surviving Outdoor Adventures" for kids in grades K-12 stresses cold water survival skills, ice safety, personal flotation devices, and surviving when lost or stranded. "It Could Have Been Prevented" examines small boat safety and was produced in partnership with Alaska Native leaders.
http://seagrant.uaf.edu/bookstore/safety.html.

Outstanding Science Trade Books for Students K-12
The National Science Teachers Association, in conjunction with the Children's Book Council, releases an annual list of outstanding science books for Students. The 2004 list is out and includes books on marine-related topics. Each entry includes a brief description of the book, the name of the publisher and current price, and recommended reading levels.
http://www.nsta.org/ostbc .

Ozone Forecasts
Experimental air quality forecasts have begun. NOAA's National Weather Service will produce hourly forecasts updated twice daily for the northern U.S. from Maine to the

Carolinas and west to Indiana, Kentucky and Tennessee. The air quality forecast was developed by NOAA Research and the weather service, in partnership with the EPA. EPA's site will also include interpretive health-based air quality index maps based on the forecast guidance.
http://www.epa.gov/airnow/

Paddle Bayou Lafource, Louisiana
Back to the Bayou 2003, November 7-10, 2003, from the Barataria-Terrebonne National Estuary Program, featured a 4-day canoe and kayak trip, daytime and evening festivities, plus the opportunity to appreciate bayou communities and life along the bayou from Donaldsonville to the Gulf of Mexico.
http://paddling.btnep.org/

Papahānaumokuākea Expedition 2007
An expedition with archaeologists from the Maritime Heritage Program, the Pacific Islands Region and the Papahānaumokuākea Marine National Monument conducted non-invasive surveys on shipwreck sites at Midway Atoll, Pearl and Hermes Atoll, and French Frigate Shoals. The archaeology team's goal was to locate new wreck sites and continue the documentation of known sites. The website offers information about the mission and the wrecks.
http://sanctuaries.noaa.gov/maritime/welcome.html

Parks Online Resources for Teachers and Students
The website for the distance education program, Parks Online Resources for Teachers and Students (PORTS) uses videoconference equipment and California's K-12 High-Speed Network to deliver units of study to classrooms around the state. These interactive programs allow California State Parks to educate students about park resources, delivering parks into the classroom. The website includes complete downloadable study units, including topics such as tidepools, elephant seals, and more.
http://www.ports.parks.ca.gov/

Participatory Management Clearinghouse for Wetlands
The Participatory Management Clearinghouse has been set up to facilitate the sharing of information concerning participatory management of natural resources and disseminate field experiences. Classified thematically by ecosystems, regions, or themes, the posted documents, specific projects and case studies cover issues such as biodiversity and traditional knowledge, gender, water, equitable sharing, protected areas, and indigenous peoples. The website includes dynamic maps and a search system.
http://www.PMCnet.org .

Passport to Adventure
"Passport to Adventure" is an educational game featuring all the San Luis Obispo, California area state parks. Passport holders visit any state park from Pismo Beach to Morro Bay and seek answers to 30 questions. There are different levels of prizes for the game. All proceeds go to supporting the educational efforts of the Central Coast Natural History Association.
http://www.ccnha.org

PAST Foundation
The mission of the nonprofit educational PAST Foundation is to promote a better understanding of history and culture by teaming professional anthropologists and

historians with the public to explore potential cultural sites both locally and globally. Professional anthropologists and archaeologists are teamed with K-12 students to explore potential cultural sites in their area. Planning is currently underway for the PAST Foundation's 2005 Field School.
http://www.pastfoundation.org/

Patuxent Wildlife Research Center
The Patuxent Wildlife Research Center in Maryland has a diverse set of ongoing research projects dealing with wildlife and natural resources in and around the region. Their website offers links to a wide range of materials available on the web, including a section on frog calls (with species lists for many states and quizzes), video clips of Atlantic sea ducks, information about surface elevation tables, and much more. The education section includes ecotoxicology lesson plans, an extensive bird identification section with quiz, educational science notes, glossary, and more.
http://www.pwrc.usgs.gov/

The PBS Borders Environmental Project
Each POV Borders episode asks visitors to consider an aspect of their everyday lives in ways that challenge their preconceptions, and expand our own "borders" of understanding. Lesson plans for K-12 teachers are designed to facilitate online storytelling and sharing. Each of the three downloadable lesson plans focuses on Earth, Water, or Air. Also check out the link to the Watershed Game (http://www.bellmuseum.org/cgi-bin/start.pl?user=bellmuse&prog=start.pl&name=&submit=Let%27s%2Bgo!)
http://www.pbs.org/pov/borders/2004/educators/index.html .

Pelagic Realm Poster
This Pelagic Realm wall poster (25x36 inch) can be a useful classroom resource. It includes 109 pen-and-ink illustrations of pelagic marine life from bacteria to whales and from the surface to the deep sea. The illustrations are clustered by trophic group and depth and are accompanied by the name, taxonomic group, and maximum known size of each species. The poster is available through EBay - search Pelagic Realm poster.
http://www.ebay.com/

Pennies for the Planet
World Wildlife Fund sponsors the *Pennies for the Planet* campaign. Kids learn about three priority regions around the world, helping get them excited about conservation and connecting environmental education with environmental action. The 2003 program includes the Everglades and South Florida. The website includes links to free posters, education activities, and additional educator's materials.
http://www.worldwildlife.org/windows/pennies/

People and Reefs: Successes and Challenges in the Management of Coral Reef Marine Protected Areas
This 100-page publication was prepared by the UN Environment Programme in cooperation with the International Coral Reef Action Network. It features case studies of coastal coral-reef management initiatives worldwide, with lessons learned from each. The report introduces some of the key issues in coral reef conservation and the role of ICRAN and the UNEP Regional Seas Programme. Seven of the case studies are from the Caribbean. The report is downloadable from the UNEP website.
http://www.unep.org/regionalseas/Publications/itmems2reportfinal.pdf

The People Speak Global Debate
The United Nations Foundation project, The People Speak, encourages young people to be actively engaged on global issues and to understand the value of global cooperation. The 2007 People Speak Global Debate topic of climate change will involve high school students researching the debate topic and preparing clear, persuasive arguments for both sides of the issue. The debate topic is Resolved: Market mechanisms are preferable to regulatory approaches in reducing carbon emissions.
http://thepeoplespeak.org/peoplespeak/About/highscho

Peppy's Coral Kingdom
This children's book is aimed at educating students in Grades 1-5 about threats to coral reefs, with a heavy emphasis on coral disease and anthropogenic stressors. The book was created by a Nancy Lucas in consultation with scientists from the Marine Resources Center at Fort Johnson. The website includes links to several example pages, along with ordering information.
http://www.thirdfloorcell.com/peppy.html

Perfect Disaster
The Discovery Channel offers this website to complement *Perfect Disaster,* a series of programs on severe weather and other natural disasters. The site includes a number of historic disaster puzzles, where visitors can piece together the post-eruption locale of Pompeii and the mighty tornado that swept through Kirksville, Maryland in 1899. Other sections include information about tornados, solar storms and a hazard quiz.
http://dsc.discovery.com/convergence/perfectdisaster/perfectdisaster.html

Permafrost/Active Layer Monitoring Network
With support from NASA and the International Polar Year, the University of Alaska Fairbanks launched the Alaska Permafrost Project, a network of over 100 schools in Alaska and Yukon, Canada that measure permafrost temperature and active layer depth on a weekly basis. The network places all of their data plots and latest information on their website as well as Google Earth. The website also offers other education materials.
http://www.uaf.edu/permafrost/

Peter's Online Typing Course
For those still using the hunt and peck method but unable to build up speed, check out Peter Hudson's free website. It's a place for "beginning typists and frustrated hunt-and-peckers who want to move from four-finger typing to full-blown touch typing."
http://www.typing-lessons.org/

Pew Fellowship Nominators
The Pew Fellows Program in Marine Education solicited nominators for Pew Fellowships. Their goal was to recruit a diverse group of nominators who have knowledge of outstanding individuals doing innovative work in marine conservation around the world.
dmeck@neaq.org

Physical Geography Animations and Webcam
The Wycombe High School, UK website offers a variety of physical geography animations, including coastal processes, animated rivers, atmosphere, glaciers, and

much more. The animations can help students understand some of the long term changes that take place on and close to the surface of the Earth. There are also links to live geography webcams.
http://www.school-portal.co.uk/GroupHomePage.asp?GroupID=12426

Physorg.com
Physorg.com offers online news and articles related to science, physics, and technology. Categories include Space & Earth science, General Science, and more. Topics one day might include climate change, tsunamis, carbon sequestration, and much more.
http://www.physorg.com/

Phytopia: Discovery of the Marine Ecosystem
This educational CD-ROM, developed by Bigelow Laboratory for Ocean Sciences, University of New England, and NASA's Jet Propulsion Laboratory, is available for the price of shipping. The CD provides a window to the world of the oceans' microscopic life. Phytopia consists of three major modules: "Phyto Files," "Phyto Factors," and "Special Topics." Other features include an image-based glossary and summaries of relevant topics.
http://www.bigelow.org/phytopia/.

PicturePosts: Using Cameras to See Change at Local Parks
The Friends of Menotomy Rocks Park and Friends of Fresh Pond Reservation have created two PicturePosts in each park to help see and measure changes in local parks. They have installed that help visitors take pictures of the same landscape each time. The PicturePost is a secure post anchored in the ground, with a round disk and an octagonal plate attached to the top. Each post has specific information inscribed on it, so with the click of the camera, the location of the set of images is automatically marked.
http://www.picturepost.smugmug.com

Pito Deep Expedition
Teachers and students can explore the geological, geophysical and geochemical study of the upper ocean crust exposed at Pito Deep, west of Easter Island. From January 30 - March 8, 2005, scientists will be documenting the scientific expedition through "Dispatches from Sea" located on the Pit Deep Expedition website.
http://www.nicholas.duke.edu/pitodeep/index.html

Place-Based Education
The second edition of *Place-Based Education—Connecting Classrooms and Communities* is available. The book reviews academic research, practical examples, and step-by-step strategies drawn from classrooms throughout the United States which emphasize the connection of school, community, and environment.
http://www.oriononline.org/pages/ob/nls/index_nls.html

Places We Live
Project Learning Tree has developed new curriculum materials to give students an awareness of the environmental, social, and economic impacts of decisions connected to community growth and change. *Exploring Environmental Issues: Places We Live* gets students exploring their own neighborhoods, learning about their community's development through time, and involved in local community action projects.
http://www.plt.org/cms/pages/31_41_39.html

Plan Your Summer with the Bridge
It is time to start planning your summer experiences, and the Bridge can help. The Bridge contains summer opportunities and year-round courses, workshops, and other programming for educators and students. Each program on the Bridge is complete with a link and brief description, and because we are constantly adding new resources and opportunities, we suggest checking back often. Those with summer programs that are not currently found on the Bridge are encouraged to submit their website for inclusion.
Educator Summer Programs http://www.marine-ed.org/bridge/index_teacher_summer.html
Student Summer Programs http://www.marine-ed.org/bridge/index_summer.html

Planet Earth
The Discovery Channel presents *Planet Earth*, an eleven-part series showcasing global habitats from deep oceans to mountains. The website offers video clips, background information, online animal guides, games, and much more. The Journey to Planet Earth website includes information about the programs, basic ecosystem and country profiles, educational resources including downloadable teacher guides, and more.
http://dsc.discovery.com/guides/planetearth/planetearth.html
http://www.pbs.org/journeytoplanetearth/

Planet Earth
Annenberg Media offers this video instructional series for college and high school classrooms and adult learners. It teaches earth science, geology, oceanography, climatology, and astronomy through footage and insights from noted scientists. *The Blue Planet* will air January 11 and May 17, 2006; the *Climate Puzzle* airs January 18 and May 24, 2006. The online Simulcast can be viewed at http://www.learner.org/channel/broadband/video.html.
http://www.learner.org/channel/series49.html

Planet H2O
Planet H2O, a two-part special from Thirteen/WNET New York, will premier on public television in April to mark Earth Day. The two episodes, The Secret Life of Water and Water World, focus on fresh water systems around the world and their impact on land, air, and living things. In addition, the website will offer a downloadable teachers' guide to accompany the program.
http://www.thirteen.org/edonline/educators.html

Plant Field Guide – Grand Bay NERR
The Mississippi Department of Marine Resources Grand Bay National Estuarine Research Reserve has posted its field guide on-line. *Selected Plants of Grand Bay National Estuarine Research Reserve and Grand Bay National Wildlife Refuge* includes some of the most popular regional plants and wildflowers. The guide provides visitors with color photos and descriptions of several coastal wetland and terrestrial plants found within the reserve, along with highlights of selected coastal habitats.
http://www.dmr.state.ms.us/Coastal-Ecology/GBNERR/field-guide/field-guide.htm

Plant Stalkers
Plant Stalkers is a citizen science program from Duke biologist Julie Reynolds and the Eno River State Park in Durham. Volunteers, many of whom have little or no specific scientific training, help scientists and park rangers monitor the distribution of invasive plants through the use of a GPS unit during routine outdoor activities such as hiking.

After training and certification through the project, volunteers mark locations of invasive species and upload the data through the Internet.
http://www.science-writing.org/citizenscience.html

Plants of the Eastern Caribbean
This online photo database is devoted to the native and naturalized flowering plants of the islands of the Eastern Caribbean. The aim of the website is to serve as an accessible resource for identifying the plants of the archipelago and to provide a forum for sharing information on Caribbean plants and their conservation. The database comprises about two thousand flowering plants, mainly those found in the wild, although a few commonly cultivated plants are included.
http://ecflora.cavehill.uwi.edu/

Plastic in the Ocean
Marine debris has recently been highlighted in newspapers and was featured on Canada's Discovery Channel. TV documentary maker Ian Connacher describes a flood of junk flowing into the sea – some to circulate endlessly in currents, some to be eaten by fish, and then by humans. He produced a feature piece on ocean plastic sampling, highlighting the implications of land-based sources of pollution on the marine environment.
http://www.exn.ca/dailyplanet/view.asp?date=1/15/2004 .

Plates on the Move
Plates on the Move is an interactive website from the American Museum of Natural History. It explains how plate tectonics cause earthquakes, volcanoes, and tsunamis.
http://ology.amnh.org/earth/plates/index.html

Play Decide
New Economics Foundation offers Play Decide, a website with a downloadable kit for a game that examines global warming and climate change, through play participation in setting policies. The website also allows users to upload their results for a worldwide regional comparison. (The game was inspired by Democs (deliberative Meeting of Citizens), a card game that is also downloadable at http://www.neweconomics.org/gen/democs.aspx).
http://www.playdecide.org/

Point2Nature Environmental Education Software Developers
Point2Nature by CD Meyer, Inc. is a multimedia company that specializes in environmental education software for zoos, aquariums, nature centers, and museums. They use graphics, dynamic animations, music, sound effects, panoramic photography, and video to engage students.
www.point2nature.com

Polar Bibliography
A comprehensive polar bibliography has been prepared in the NOAA Central Library Network. *International Polar Year 2007-2008 Resources on Polar Research in the NOAA Central Library Network: A Selected Bibliography* reflects the NOAA Library Network's unique printed and online resources on exploration and research in the polar regions from the 18th century to the present, in all formats, including print, online full-text documents, digital videos and images, online cruise data, and web resources.
http://www.lib.noaa.gov/uhtbin/webcat

Polar Cruise Blog
This blog is a project associated with the Palmer Station site, a member of the Long-Term Ecological Research Network. The cruise, January 6-February 9, 2009, is one of the annual interdisciplinary cruises contributing to the creation of a long-term time series record which began in 1991.
http://pal.lternet.edu/outreach/blogs/cruise/

Polar-palooza
Polar-palooza is an International Polar Year education and outreach project through a multimedia effort to explain the importance of the polar regions and clear up misconceptions some people may have about them. Scientists and Arctic residents tell personal stories of life and research in polar regions. The website includes video footage and Internet resources. The multimedia exhibit and national tour will visit California, New Mexico, Florida, Georgia, and Louisiana in the fall of 2007.
http://www.nasa.gov/mission_pages/IPY/snow/PolarPalooza.html

Polar Regions Workshop Resources
The International Polar Year Online Workshop from COSEE West and the College of Exploration took place online April 16-28, 2007. The website offers archived lectures, PowerPoint shows, and educational materials related to both the Arctic and Antarctic regions. In addition, the Resources section offers an extensive list of websites with educational resources and activities.
http://www.coexploration.org/cosee_west/ipy/

Polar Sciences Special Collection
Teachers' Domain offers their Polar Sciences Special Collection, funded by the National Science Foundation, with 20 new resources about the Arctic and the Antarctic, plus resources from existing collections, a lesson plan, and more.
http://www.teachersdomain.org/exhibits/ipy07-ex/index.html

PolarTREC
PolarTREC (Teachers and Researchers Exploring Collaborating in the Arctic and Antarctic) is a program funded by the National Science Foundation in which K-12 teachers participate in polar research, working closely with scientists as a pathway to improving science education. The website will offer new Learning Resources, a Virtual Base Camp, and more, starting in spring, 2007. Check out the Antarctic Journal (above), and archives of earlier base camp portals and lesson plans.
http://www.polartrec.com/

Pole-to-Pole Web Forum
GLOBE Seasons and Biomes is an inquiry- and project-based initiative that monitors the interannual variability of seasons in different biomes. Students from around the world will be able to join in a webchat and forum on April 10-11, 2008. They will be able to ask scientists questions about current polar and boreal forest research, their own research interests, and topics that will lead to successful school/student research projects.
http://globe.gov/fsl/html/templ.cgi?ipy_video08&lang=en&nav=1

Politics and Socio-Economics of Ecosystem-Based Management of Marine Resources
The journal Marine Ecology Progress Series has published 13 papers under the theme "Politics and socio-economics of ecosystem-based management of marine resources." Although the journal is traditionally available by subscription only, this theme section is available online for free.
http://www.int-res.com/articles/meps_oa/m300p241.pdf.

The Polyquarium
The Macrogalleria is a website from the Department of Polymer Science at the University of Southern Mississippi. The project provides working knowledge of polymers and related concepts to students of all levels, at multiple levels. The program is informative and entertaining to both beginners and more advanced students of polymer science. The Polyquarium mimics aquarium displays.
http://www.psrc.usm.edu/macrog/sea/index.htm

P.O.N.D. – Protecting Our Natural Diversity
South Carolina High School students became interested in habitat encroachment and water pollution at their school. Students researched, designed, and implemented a variety of solutions aimed at increasing wildlife diversity, improving natural habitat, educating the community about environmental issues, and decreasing the amount of pollution entering wetlands. Projects included a riparian buffer zone around storm water retention pond, storm drain education, a nature trail, and bird habitat.
Contact Margaret Spigner at Margaret_Spigner@charleston.k12.sc.us

Population Connection
Population Connection's education program is a national population education program with a strong emphasis on teacher training for educators of grades pre-K through 12. The program offers age-appropriate curricula to complement students' science and social science instruction about human population trends and their impacts on natural resources, environmental quality, and human well-being. In addition to the curriculum, they provide hands-on training to teachers and student teachers.
http://www.populationeducation.org/index.jsp

Portal to Papahanaumokuakea
Join students from Duke University's Nicholas School of the Environment as they examine the challenges associated with managing and conserving marine biodiversity, using aspects of the Papahanaumokuakea Marine National Monument in the Northwestern Hawaiian Islands as the focus of several case studies. Check out their daily blogs and videos, and comment on what they are learning and the work they are doing at this remote marine wilderness.
http://www.nicholas.duke.edu/hawaii/

PortalOceanico.net - The Ocean Portal
This gateway is supported by UNESCO, and offers links to sources of ocean information on South America and the Caribbean. Some first-level topics include Education and Training; Information by Country; and more. Select "English" under the idiom box (left side of screen) to view site in English. Some items are available only in Spanish.
http://www.portaloceanico.net/

Postcards from the Eddy
ECOHAB Pacific Northwest is a 5-year multi-disciplinary project to study the physiology, toxicology, ecology and oceanography of toxic Pseudo-nitzschia species off the Pacific Northwest coast in the Juan de Fuca eddy. The resident Teacher At Sea, Herb Bergamini, posts "postcards" of his experiences on the R/V Atlantis during the 21-day research cruise including photos, daily logs, and interviews with the crew. He also responds to students' questions about oceanography and life at sea.
http://herb.northwestschool.org .

Postcards from the Poles: Antarctica
Scientists and science educators on expeditions Antarctica are describing what it's like to do science in Antarctica and what they are learning about the place. Educators will be sending in virtual postcards to describe the experience this season as Adelie penguin chicks hatch and grow on Ross Island. Other science educators on a research team with the Antarctic Geological Drilling Project will be sending in postcards documenting environmental changes that have affected the continent in the past.
http://www.windows.ucar.edu/tour/link=/people/postcards/antarctic_post.html&

Posters of Deepwater Gulf Species
The Flower Garden Banks National Marine Sanctuary research team offers a poster series depicting the conspicuous biota of the deepwater habitats of the Northwestern Gulf of Mexico, from depths between 50m to 150m. The poster series was developed to support the Secrets of the Gulf Expedition. The series includes separate posters for antipatharians, octocorals, sponges, fishes, and algae/invertebrates. High and low resolution versions of these posters are available.
http://flowergarden.noaa.gov/document_library/sci_documents.html

Posters of Marine Life
NOAA's National Marine Fisheries Service has reprinted its historic series of posters depicting species of fish, shellfish, marine mammals, and sea turtles that are indigenous to the United States. Commissioned over 30 years ago, these posters have become classics and continue to be one of the most requested items by constituents and school teachers alike. The eight posters can be viewed and purchased individually at the Government Printing Office's on-line bookstore.
http://bookstore.gpo.gov/collections/ocean_exploration.html

Potomac Highlands Watershed School
The Potomac Highlands Watershed School is a website where students in the Potomac Highlands and the rest of the Chesapeake Bay region can learn about local watershed issues, and teachers can come for educational support with lesson plans and ties to curriculum standards. The interactive website offers separate sections for elementary, middle, and high school students, along with a teacher site linked to activities, educational programs, references, and more.
http://www.cacaponinstitute.org/e_classroom.htm

The Power of Place: Geography for the 21st Century
The Annenberg Channel presents The *Power of Place: Geography for the 21st Century*, to teach the geographic skills and concepts that are necessary to understand the world. Geography educators and content experts from around the globe shed light on the physical, human, political, historical, economic, and cultural factors that affect people

and natural environments. Maps, animation, and academic commentary bring into focus case studies from 50 sites in 36 countries.
http://www.learner.org/resources/series180.html

Practical Uses of Math and Science
NASA's Practical Uses of Math And Science (PUMAS) website is a collection of brief examples showing how math and science topics taught in K-12 classes can be used in interesting settings, including every day life. The examples are primarily written by scientists, engineers, and other content experts. A peer-review process stresses originality, accuracy, presentation clarity, and connection to national math and science curriculum guidelines.
https://pumas.gsfc.nasa.gov/

PRBO Marine Division
The mission of PRBO's Marine Division is to use science to guide ocean ecosystem protection, conservation, and management. The website features detailed information about our many marine projects. These focus on predators as climate change and habitat quality bio-indicators; population dynamics; life history characteristics seabirds in relation to marine fisheries and pollution; and the creation of marine protected areas and marine reserves to protect ocean ecosystems.
www.PRBO.org/marine

Predicting the Weather
The Internet Scout Project focuses its Topic in Depth of the NSDL Scout Report for the Physical Sciences newsletter for June 10, 2005 on Predicting the Weather. The listed websites describe the basic tools and knowledge used to create weather forecasts; explore how the weather can impact local communities; provide graphics for five forecast models; and more.
http://scout.wisc.edu/Reports/NSDL/PhysSci/2005/ps-050610-topicindepth.php#1

PreK-8 Environmental Education Activity Guide
Project Learning Tree has released its PreK-8 Environmental Education Activity Guide. There were six main goals addressed with the comprehensive revision: improved reading connections; teacher support for differentiated instruction; assessment techniques; technology connections; content through updated issues, statistics, and facts; and the overall design. Two new activities include *The Global Climat*e and *Invasive Species*.
http://www.plt.org/cms/pages/21_21_10.html

Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments
The Climate Impacts Group offers the on-line Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments, designed to agencies prepare for climate change by recommending a detailed, easy-to-understand process for climate change preparedness based on familiar resources and tools. These steps include creating a climate change preparedness team; identifying community vulnerabilities to climate change; and identifying, selecting, and implementing adaptation options.
http://www.cses.washington.edu/cig/fpt/guidebook.shtml

Preserving Ocean Resources
This four page newspaper offers information relating long term ocean health and marine protected areas. Up to 10 copies are available to high school educators who are incorporating MPAs into their curriculum.
Contact christie_anastasia@nps.gov

A Primer on Invasive Species in Coastal and Marine Waters
What are invasive species? How long have invasive species been around? What changes can invasive species cause? How do invasive species get introduced? What agencies are trying to manage the influx of invasive species? These questions and more are addressed in this publication. The primer includes a glossary, international regulations, expert contact information, educational information links, and more.
http://www.flseagrant.org/program_areas/coastal_habitats/habitats_pm.htm

Prince William's Oily Mess
NOAA's National Ocean Service Communications and Education Division offers the newest Discovery Story entitled *Prince William's Oily Mess: A Tale of Recovery*. Aimed at the high school level, it includes educational materials on the Exxon Valdez oil spill that occurred almost 16 years ago in Prince William Sound, Alaska, and the research conducted since the accident. Included are an oil spill primer, hands-on activity using collected data, oil spill trajectory model, student and teacher guides, quiz, and more.
http://oceanservice.noaa.gov/education/stories/oilymess/welcome.html

Priority Conservation Areas: Baja California to the Bering Sea
The Commission for Environmental Cooperation and the Marine Biology Conservation Institute offer Priority Conservation Areas: Baja California to the Bering Sea, a new book and map that identify 28 aquatic environments which marine experts consider essential to safeguarding the biological diversity of the west coast of North America. The book presents key information regarding the biodiversity, ecological significance and threats found in each area.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1756

Problem-Based Learning
Based at the University of Delaware, this set of peer-tested and vetted educational resources asks the question: "How can I get my students to think?" Problem-based learning is a method that asks students to work cooperatively in groups in order to seek solutions to real world problems. The website offers sample problem-based learning problems, which include several group exercises that deal with different scenarios from water problems to a case study problem in molecular evolution.
http://www.udel.edu/pbl/

Proceedings from the First International Marine Protected Areas Congress
Proceedings from the First International Marine Protected Areas Congress, held October 2005 in Australia, are now available. The document totals 665 pages and includes abstracts from all congress presentations, as well as full text of the meeting's plenary addresses. A full range of MPA issues is covered, including planning, management, science, and more. The file, 19 MB in size, is searchable by author, keyword, theme, and other criteria. It also includes a list of delegates with e-mail contact information.
http://www.impacongress.org/proceedings.htm

Professional Development Guidelines for Environmental Education
Developed by the National Project for Excellence in Environmental Education, the recently revised "Guidelines for the Preparation and Professional development of Environmental Educators" is a resource to help you design and implement effective high-quality EE professional development programs.
www.naaee.org/npeee

Project 3D-VIEW
Project 3D-VIEW (Virtual Interactive Environmental Worlds), designed and developed by U.S. Satellite Laboratory, Inc., is a NASA-funded, curriculum-based program for Grades 5 and 6. Students engage in simple-to-use, immersive 3D technologies with 3D imagery and animations, and learn standards-based concepts and practice inquiry in lithosphere, biosphere, hydrosphere, atmosphere, and Earth systems.
http://www.3dview.org

Project Archaeology
Project Archaeology uses archaeological inquiry to foster understanding of past and present cultures; improve social studies and science education; and enhance citizenship education to help preserve our archaeological legacy. The project offers publications, professional development for educators, networking opportunities, and continuing support for participants, teaching scientific inquiry, citizenship, personal ethics and character, and cultural understanding. Project Archaeology operates through a network of state programs.
http://www.projectarchaeology.org/

Project AWARE Teachers Guide
The Project AWARE Foundation conserves underwater environments through education, advocacy and action. The Foundation funds projects that have a direct benefit to the aquatic environment such as public education, grassroots conservation projects, volunteer-supported community activism, and more. The website highlights wreck awareness through Respect Our Wrecks, including on-line public service announcements, a downloadable Aware Kids teacher's guide, grants, and more.
http://www.projectaware.org/

Project-Based Learning Newsletter
Project-Based Learning is a weekly resource for tools and information published by The George Lucas Educational Foundation. Each issue features original stories, as well as links to relevant news features, with a special focus on how K-12 students explore real-world problems, leading to a deeper knowledge of subject matter, greater motivation, and improved research and problem-solving skills. Issues in May explored a watershed project and a fish hatchery project.
http://www.edutopia.org/php/keyword.php?id=037

Project BudBurst 2009
Project BudBurst will officially launch the 2009 national field campaign for students, families and other volunteers on March 2, 2009. The project is designed to engage the public in the collection of important climate change data based on the timing of leafing and flowering of trees and flowers. New website features include field guides to phenophases, updated plant species Identification Guides, real-time mapping with Google Maps, new classroom resources, photo sharing of plant observations, and more.
http://www.windows.ucar.edu/citizen_science/budburst/

Project Budburst
Project BudBurst is a campaign of the National Phenology Network for citizen scientists. It is designed to engage the public in the collection of important climate change data based on the timing of leafing and flowering of trees and flowers. BudBurst participants take careful observations of the phenological events and the observations and records are reported into the BudBurst data base. The website offers an activity guides, teacher guides, data sheets, and more.
http://www.windows.ucar.edu/citizen_science/budburst/

Project Dolphin Campaign
NOAA Fisheries Office of Protected Resources has developed educational materials about the dangers of feeding and otherwise closely interacting with wild dolphins, including brochures, posters, warning signs, and public service announcements.
jill.lewandowski@noaa.gov

Project Evaluation Website Updated
The National Marine Sanctuary's California B-WET Program has completed the second phase of the Education Project Evaluation website. The website includes information on how to plan, design, implement, and report on evaluation of your education project, along an evaluation overview and links to helpful resources
http://sanctuaries.noaa.gov/education/evaluation/welcome.html

Project Oceanica
Project Oceanica continues to add new features to their website, including Fish Watch and Shelf Edge Reefs. Check out the Transects Program, designed to immerse undergraduate and graduate students in oceanographic research by taking them to sea to collect biological and geological samples and later analyze the data in the laboratory. Transects is funded for two years, and a total of four 5-day research cruises and follow-up oceanographic research courses will be offered over the 2 year project.
http://oceanica.cofc.edu/home.htm .

Project PHAEDRA 2006
NOAA's Ocean Explorer website offers archived information about the Partnership for Hellenic/American Exploration in the Deep Regions of the Aegean (PHAEDRA), the second season of a multi-year Greek-American ocean research partnership. An international team of engineers, geologists, geochemists, archaeologists, and historians embarked on the Greek research vessel Aegaeo to explore deep sites within Greek national waters.
http://www.oceanexplorer.noaa.gov/explorations/06greece/welcome.html

Project POWER
The New York Aquarium launched Project POWER, a national training seminar sponsored by the EPA with support from the New York State Department of Environmental Conservation. Participants represented 13 states with regulators from a broad range of agencies. The project stresses the need for a commitment to public education to protect our national wetland heritage and infuse marine science and wetlands conservation not only into a school's curriculum, but also into a community's curriculum. Project POWER is working to create the beginnings of a national network of state agency-environmental center partnerships with the capacity to provide educational workshops to wetland violators as well as to community members who live in environmentally sensitive areas so that violations can be avoided before they occur.

Contact Merryl Kafka at mkafka@wcs.org

Project SeaCAMEL
On November 12-14, 2007, a special coral-reef research and education project will be taking place 20 meters below the sea surface in the underwater laboratory, Aquarius, studying corals and sponges on Conch Reef in the Florida Keys National Marine Sanctuary. The research will be broadcast live from Aquarius via the Internet, along with six classroom modules, each covering a different topic of coral reef sciences to classrooms of all levels all over the world.
http://www.marine-ed.org/bridge/index_seacamel.html

Project SeaCAMEL
Project SeaCAMEL (Classroom Aquarius Marine Education Live) is planned as the first in a series of "sea to shore" education missions planned by the Living Oceans Foundation, November 12-14, 2007. An underwater video crew from project partner Media Arts, Inc. will document the action in and around Aquarius, while project partner Immersion Presents will direct-link the SeaCAMEL mission ashore via satellite and the Internet, and will produce a multimedia science education and outreach program.
http://www.livingoceansfoundation.org

Project Shark Awareness
The Florida Museum of Natural History presents Project Shark Awareness, shark education and outreach programming for educators. This outreach program is created to educate the public about the myths and realities of shark biology, behavior, and conservation. The targeted audience consists primarily of students at middle schools, high schools, youth organizations, and environmental centers. The project has also received funding to hold professional development workshops.
http://www.flmnh.ufl.edu/fish/education/psa/psa.htm .

Project WILD Science and Civics: Sustaining Wildlife Curriculum
Project WILD's high school curriculum is designed to serve as a guide for involving students in environmental action projects aimed at benefiting the local wildlife found in a community. It involves young people in decisions affecting people, wildlife, and their shared habitat in the community. The program consists of four major components: awareness, participatory democracy, habitat exploration and taking action.
http://www.projectwild.org/materials/science_and_civics/science_and_civics.htm

Promise of Place
The Promise of Place website is a project of the Center for Place-based Learning and Community Engagement and is supported by the USDA Forest Service. It offers program ideas, case studies, research, links, and other resources to support place-based education projects. The Planning Tools section of the Resources and Curriculum offers tools and exercises; curriculum and other sections are being populated.
http://www.promiseofplace.org/

Protect Planet Ocean
The Protect Planet Ocean website aims to bring the best information on marine protected areas, including basic facts on each of nearly 5000 MPAs worldwide; the ability to upload information; discussions of the science of no-take marine reserves; multimedia content on MPAs; and more. *Oceans Live* offers live video from an

underwater camera inside Glover's Reef Atoll World Heritage Area. The website also hosts The Official MPA Blog and MPA-related headlines from newspapers worldwide.
http://www.protectplanetocean.org/

Protected Areas Management Effectiveness Information Module
The Protected Areas Management Effectiveness Information Module contains information on protected areas management effectiveness. The module is linked to the World Database on Protected Areas, which allow users to obtain further information about the protected areas assessed. It also provides a space for users to submit information on management effectiveness methodologies and assessments as well as obtain further information on experts, publications, and links to related information.
http://www.unep-wcmc.org/wdpa/mehttp://www.unep-wcmc.org/wdpa/me

Protected Area Tools
This section of the ConserveOnline website contains information, tools, and resources to help practitioners perform a variety of ecological, management, policy, and financial assessments that can contribute to an overall protected area system master plan. Materials include Marine Gap Assessment Quick Guide, Protected area systems monitoring, and more. While you're on the website, browse the library by subject category, including natural heritage programs, public education, and more.
http://conserveonline.org/workspaces/patools

Protected Resources Education
The Office of Protected Resources works in cooperation with NOAA Fisheries Regions and Science Centers to provide educational experiences and materials for students, education professionals, and the public about the conservation and protection of marine species. The website includes links for kids to a variety of projects, activities, and information, including *The Kid's Times* about whales and turtles. There are also downloadable lesson plans and guidelines for responsible wildlife viewing.
http://www.nmfs.noaa.gov/pr/education/

Protecting Water Resources with Smart Growth
The EPA offers Protecting Water Resources with Smart Growth, intended for audiences already familiar with smart growth, seeking more ideas on how to protect their water resources. The document describes how communities and local governments have used smart growth practices to minimize impacts of new development on their water resources. Education sections describe how communities or local governments engage in activities such as water quality education, model town demonstrations, and more.
http://www.epa.gov/smartgrowth/water_resource.htm

Public Lands Day
On September 29, 2007, lend a hand for the 14th annual coast-to-coast effort to clean up public lands to help preserve America's lands. The focus this year will be on countering the tide of invasive species taking over habitats and native species.
http://www.publiclandsday.org/

Publications Catalog – University of Delaware Sea Grant
This online catalog is designed to inform browsers of the wealth of publications and videos available from the University of Delaware Sea Grant College Program. Categories include Children's Activities, Hot Topic Fact Sheets, On-Line Expeditions, Videos, and more. Some are available for free downloading, others may be ordered.

http://www.ocean.udel.edu/seagrant/publications/pubcatalog.html

Public/Private Reef Conservation Campaign in Hawaii
The National Fish and Wildlife Foundation and partners has joined with Tesoro Corporation in developing a coral reef conservation program in Hawai'i that includes a public school curriculum and a community awareness campaign. The program is designed to support coral reef conservation and community projects.
http://www.honoluluadvertiser.com/apps/pbcs.dll/article?AID=/20080622/NEWS11/806220343/1021/LOCALNEWSFRONT

Queen Anne's Revenge
North Carolina Department of Cultural Resources offers *Queen Anne's Revenge: Investigating, Interpreting & Preserving the Remains of Blackbeard's Flagship*. This website includes sections on archaeology, artifacts, conservation, education, and more.
http://www.qaronline.org/

Quick Guide to Conducting Marine Ecological Gap Assessments
Published by The Nature Conservancy, *A Quick Guide to Conducting Marine Ecological Gap Assessments* offers advice on analyzing gaps in conservation coverage for use in planning marine protected area networks. Featuring brief case studies from four nations (Ecuador, Grenada, Jamaica, and Palau) and best practices learned to date, the guide serves as an introduction and overview to ecological gap analyses.
http://conserveonline.org/workspaces/patools/resources/gapassessment/gapdocs/marinegapquickguide

Race Around the World
The 2008-2009 Volvo Ocean Race education website, sponsored by Sail Newport and St. Michael's Country Day School, offers middle school students and teachers the opportunity to virtually race around the world with seven Volvo Ocean Race teams as they circumnavigate the globe. Track these teams while learning geography, marine science, math, history, physical science, and more. The website will be updated regularly, and currently offers activities for students, lesson plans, and more.
http://www.globallearning-sailnewport.org/

Rachel Carson Estuary Live
The Rachel Carson Component of the North Carolina National Estuarine Research Reserve site held their Estuary Live on September 21-22, 2004. The sessions were aligned with the North Carolina Science Standards will covered general estuary information, cephalopods, fouling communities, sustainable seafood, boating, and reptiles.
www.estuarylive.org .

Rachel Carson Online Book Club and Intergenerational Contest
Tthe Friends of the National Conservation Training Center has launched the Rachel Carson Online Book Club. Continuing through November 2007, the book club will focus on the life and work of Rachel Carson including her role as a female leader in science and government. Each month features distinguished guest moderators who will share insights and comments on the text.

The Intergenerational Contest Honoring Rachel Carson is a photo, essay, and poetry contest in honor of Rachel Carson sponsored by the EPA Aging Initiative, Generations

United, and the Rachel Carson Council, Inc. The project must involve a person under age 18 and a person age 50 or older.
http://rcbookclub.blogspot.com/
http://www.epa.gov/aging/resources/thesenseofwonder/index.htm

Raising Your Water IQ
The Texas Water Development Board designed this learning resource to help K-6 students become more water wise. The site includes a series of interactive website modules, a 6th grade curriculum, and a K-3 coloring book with original Texas-centric characters.
http://www.twdb.state.tx.us/kids/

Ramsar Site Database
The Ramsar Sites Database is now online. Wetlands International manages and develops the database. A search facility now makes it possible to find one or more Ramsar sites by selecting on nearly any combination of criteria, including wetland type or land use, designation date, and others.
http://www.wetlands.org/RSDB/default.htm .

Ramsar 'Toolkit', second edition (2004)
The 14-volume Ramsar Convention Handbooks for the Conservation and Wise Use of Wetlands, 2nd edition, is available for downloading. The Convention promotes an integrated package of actions to ensure the conservation and wise use of wetlands. The handbooks incorporate the guidelines, relevant material from other sources, and case studies designed to illustrate key aspects of the guidelines. Most of the full case studies can be found on the website of the Convention (http://ramsar.org/wurc_index.htm).
http://ramsar.org/lib_handbooks_e.htm .

Ramsar Video
The 22-minute Ramsar video, available in English, French, and Spanish, offers an introduction to the problems facing wetlands everywhere and focuses upon international case studies. For easier downloading, "Save Target As" (Microsoft Internet Explorer) or "Save Link Target As" (Netscape) and save the whole film to your hard disk, then launch.
http://www.ramsar.org/wwd2003_index.htm#offer

Rapid Assessment Protocols For Small Vessel Groundings
This paper discusses assessing impacts from small vessel groundings in coral or seagrass habitats. A series of 2-3 page protocols has been developed to provide guidance on collection of key ephemeral data after small vessel groundings, particularly where resources are limited and access is difficult.
Contact jmichel@researchplanning.com

Rare Earthtones - Endangered Species Ringtones
The Center for Biological Diversity offers free endangered species ringtones and phone wallpapers, a collection of high-quality, authentic sounds and images of some of the world's most threatened birds, owls, frogs, toads, and marine mammals. Cell phone users - check this one out!
http://www.rareearthtones.org/ringtones/

Rare: Inspiring Conservation
The RARE Center for Tropical Conservation has pioneered innovative approaches to achieving conservation results through community-based education. Rare supports hundreds of grassroots conservationists around the world each year, providing them with training, technical support, and resources. Its Pride campaign bridges the gap between the scientific realm and the daily lives of local people through social marketing techniques, making conservation messages relevant to the local community.
http://www.rarecenter.org/ .

Rating Islands
The National Geographic Center for Sustainable Destinations, in collaboration with George Washington University, conducted a Destination Scorecard survey. A panel of 522 experts in sustainable tourism and destination stewardship review conditions in 111 selected islands and archipelagos. The scores reflect the experts' opinions and the website offers quoted phrases from their remarks which suggest the thinking behind the scores.
http://www.nationalgeographic.com/traveler/features/islandsrated0711/islands.html

Ravenswood Media
Ravenswood Media produces natural history and social documentaries. They have pioneered a new Internet genre called the "webumentary". The webumentary conforms the documentary format into an online non-linear program by posting streaming digital video on the web. They offer nature, wildlife, environmental, and science video productions. Check out their web offerings on invasives, frogs, and more.
http://www.ravenswoodmedia.com/

Reach the World
Reach the World is a nonprofit educational media developer and a provider of schoolbased training in instructional technologies. Its mission is to link students and teachers in low-income communities with real-world, global expeditions that have the power to expand learning beyond the classroom. Follow the voyage of the Makulu, as the trade winds carry her across the Atlantic Ocean towards Barbados in the Caribbean Sea. Check out the materials in the Floating Classroom.
http://reachtheworld.org/ .

Real-time Data Resources from Ocean Observing Systems
This resource list of over 70 annotated web sites was developed as part of a national focus group study of K-12 educators who currently use real-time data in their classrooms. This list focuses on ocean-related datasets, but also includes weather and watershed resources. A Real-time Data Educators Mailing List is also available for subscribers at https://email.rutgers.edu/mailman/listinfo/rtd_educators.
http://marine.rutgers.edu/outreach/rtd/resources.htm

RealClimate
RealClimate is a commentary site on climate science by working climate scientists for the interested public and journalists. Their aim is to provide a quick response to developing stories and provide the context sometimes missing in mainstream commentary. The discussion on the website is restricted to scientific topics and will not involve political or economic implications of the science.
http://www.realclimate.org/

RealOceans
The Nicholas Institute for Environmental Policy Solutions' Ocean Program offers the website, RealOceans.org, to provide straightforward and concise information on ocean issues that can be used by policy makers, activists, researchers, and educators. The first project is the Ocean Ecosystem Based Management Knowledge Base.
http://realoceans.org/

Red List of Threatened Species
The latest update of the IUCN Red List of Threatened Species, the authoritative source of information on the status of plants and animals, will be released on May 4, 2006. This publication is one of the key tools used to determine the status of the Earth's biodiversity. A major new element since the last update in 2004 is the inclusion of many freshwater and marine species, notably sharks and rays, for the first time.
http://www.iucn.org/themes/ssc/redlists/techdocs.htm

Reef Education Network
The Reef Education Network website from the University of Sydney and Tech Talk Australia offers background information about coral reefs, including origins, design, energy cycles, plants, animals, research, management, a glossary, and more.
http://www.reef.edu.au/default.htm

Reef Encounter On-Line Game
The SpielByWeb website provides a way for people to play various strategy games on the web. One of the offerings is Reef Encounter, whose aim is to grow the largest and strongest corals on the reef and then to feed these to your parrotfish in the brief time available. Points are awarded at the end of the game for the number and type of polyps that your parrotfish has consumed. Extensive rules are provided. A similar board game is also available for purchase at
http://www.zmangames.com/boardgames/reef_encounter.htm.
http://www.spielbyweb.com/

Reef Environmental Education Foundation
The Reef Environmental Education Foundation (REEF) was founded out of growing concern about the health of the marine environment, and the desire to provide the scuba diving community a way to contribute to the understanding and protection of marine populations. REEF has numerous programs and projects. Two of the main programs are the REEF Fish Survey Project and REEF's Field Station Program that includes the organization's latest initiative, the Non-Profit/Academic Field Station Program.
www.reef.org .

Reef Fest
Reef Fest is billed as a whole lot of music festivals throughout Florida and the Caribbean raising support for music education and coral reef conservation. The concept is founded on the principle that everybody loves music, and this offers a chance to find enjoyment in actually doing something people can identify with in the service of the threatened coral reefs that surround, protect, and bring income to their Caribbean country and way of life.
http://www.reeffest.org./

Reef Fish Guide (for the responsible aquarium hobbyist)
The goal of Reef Protection International's Reef Fish Guide program is to increase public awareness about the ethical implications of keeping coral reef fish as pets and provide

those entering the hobby, as well as existing hobbyists, with the knowledge to make informed buying choices that contribute to coral reef conservation. The downloadable, one-page guide ranks popular fish species according to several categories, assigning fish into "Take it Home" (recommended) and "Keep it Wild" (avoid) lists.
http://www.reefprotect.org/fish_guide.htm#

Reef Fish Identification
REEF now offers their popular reef fish identification classroom course into a home study DVD course package for beginning fishwatchers in the Caribbean, Florida, and Bahamas. *Reef Fish Identification – A Beginning Course* teaches the basics of fishwatching, including identification of 50 commonly sighted species found in Florida and the Caribbean. A waterproof fish identification booklet, underwater REEF survey slate, and REEF survey materials are included.
http://www.reef.org/node/3106

REEF Fish Survey Project Tutorial
The Reef Environmental Education Foundation (REEF) offers an online resource in English or Spanish for those who would like to conduct or teach REEF Fish ID and surveys. The REEF Tutorial emphasizes carrying out the survey, including the paperwork.
http://www.reef.org/education/REEF_tutorial_eng
http://www.reef.org/education/REEF_tutorial_esp

A Reef Manager's Guide to Coral Bleaching
The report, *A Reef Manager's Guide to Coral Bleaching*, offers reef managers information that can maximize the resilience of reefs to coral bleaching. The guide provides information on the causes and consequences of coral bleaching along with management strategies to help local and regional reef managers reduce bleaching threats to coral reef ecosystems. The downloadable report includes contributions from over 50 experts in coral bleaching and coral reef management from 30 organizations.
http://www.coris.noaa.gov/activities/reef_managers_guide/welcome.html

Reef Survey Report with Links in Google Earth
The Australian Institute of Marine Science long term monitoring survey updates can now be viewed in Google Earth (Version 4), allowing you to zoom to each surveyed reef and view geo-referenced underwater photos and information from previous surveys. Using links to the reef pages, you can also view enlarged photos and a description of the reef habitat.
http://www.aims.gov.au/pages/research/reef-monitoring/ltm/ltm200708-09.html

REEF Website Redesign
The Reef Environmental Education Foundation (REEF) is a grass-roots organization that seeks to conserve marine ecosystems by educating, enlisting, and enabling divers and other marine enthusiasts to become active ocean stewards and citizen scientists. The redesigned REEF website will enable REEF to more effectively recruit, train, and engage divers and snorkelers in the Volunteer Survey Project and other conservation science programs. The website will also facilitate communication through Member Forums.
http://www.reef.org/

Reefbase
Reefbase, a coral reef resource portal, has been recently updated. The website provides data and information on the location, status, threats, monitoring, and management of coral reef resources in over 100 countries and territories, and offers easy access to data, information, publications, photos, and maps related to coral reefs.
http://www.reefbase.org/main.aspx

ReefBase Pacific
The ReefBase Pacific project supports biodiversity conservation, sustainable fisheries, and reef-dependent communities in the Pacific region. The database contains a wide range of published and grey literature, images, maps, and more. Virtual Marine Resource Education Center offers a searchable database for materials that support reef related education and outreach activities developed by various organizations.
http://www.reefbase.org/pacific/

ReefRanger
Reef Ranger is an educational game that immerses the player in the complex world of coral reef management. The effects on coral reefs of human activities in the mountains all the way to the open ocean are simulated. The game is meant to instill to players an understanding of the complexities of human-environment interactions, the ecological processes in the management of coral reefs and adjacent watersheds, and complexities involved in deriving management strategies.
http://www.ncoremiami.org/reefranger/index.htm

Reefs at Risk in the Caribbean
Reefs at Risk in the Caribbean, in English and Spanish, reflects the culmination of a two-and-a-half-year collaborative effort involving over twenty organizations working in the wider Caribbean region. The project provides a region-wide analysis of human threats to coral reefs and evaluates economic losses likely to result from coral reef degradation. In addition to the summary, the data are downloadable from the website.
http://reefsatrisk.wri.org/

Reefs at Risk in the Caribbean Report
Coral Reefs in the Caribbean span an estimated area of 26 thousand square kilometers, which the authors say dissipates wave and storm energy when hurricanes approach the Caribbean, as well as Florida. The Reefs at Risk in the Caribbean Report, downloadable on this website, reveals that shoreline protection offered by natural Caribbean reefs saves countries between $700 million and $2.2 billion annually. This economic information was calculated through a special threat measurement index.
http://marine.wri.org/pubs_description.cfm?PubID=3944 .

Reefs on the Web
Reefs on the Web is a collection of links to websites on coral reefs and reef-related resources as a result of research conducted for an article on coral reef websites. Still under construction, it currently hosts listings of publications, governmental and non-government sponsored websites, and a section on monitoring and surveys. While the Communication & Education link still remains to be populated, this website offers a quick source of useful information for students and teachers.
http://barbiemail.googlepages.com/home

ReefTemp
ReefTemp is a mapping product that provides information on coral bleaching risk for the Great Barrier Reef region through a Google Earth application. ReefTemp images are updated daily and include the raw SST, positive SST anomaly, the Degree-Heating Days, and a new thermal stress index, the Heating Rate, all calculated at 2km resolution. ReefTemp produces high-resolution now-casts of bleaching risk and provides an improved ability to monitor heat stress in the Great Barrier Reef.
http://www.cmar.csiro.au/remotesensing/gbrmpa/ReefTemp.htm

ReefVid
Dr. Peter Mumby provides a resource of free coral reef video clips for educational use. Currently, there are approximately 550 video clips on the website, designed for use in PowerPoint, covering reef ecology, diseases, coral bleaching, hurricane impacts, human impacts on reefs, corals, fish, sponges, mangroves, seagrass beds, and more. The website includes a search function and instructions for inserting the clips into your presentations. They can be played from the website or downloaded, and include brief descriptions of each clip.
www.reefvid.org

Regional Information Centers on MPA Planning Processes
The National Marine Protected Areas Center launched a series of web-based regional information centers designed to provide comprehensive information on ongoing federal, state, and tribal MPA planning processes. Stakeholders can search the information centers by region of the US or by state. While the information centers are a work in progress and not all regions are completely populated, the Pacific Coast and New England regions are either complete or include a significant amount of information.
http://www3.mpa.gov/mpa_calendar/query/searchbyregion.aspx

The Regional Ocean Conservation Club
The purpose of the Regional Ocean Conservation Club (ROCC) is to develop a student coalition where students are encouraged to take an interest and become involved in local marine and aquatic issues facing the environment. The mission is to have high school students work with local, state and national organizations to protect and restore the health of marine and aquatic resources through education and conservation programs.
http://www.igfa.org/ROCC.asp .

Remote Sensing and Coral Reefs
NOAA's Coral Reef Watch offers *Remote Sensing and Coral Reefs*, a free, downloadable curriculum unit for 4th – 6th grade students on remote sensing and its application to monitoring coral reefs. This set of 7 lesson plans is also appropriate for many middle school classrooms, and many of the lessons can stand alone as individual classroom activities. Topics include Remote Sensing and the Electromagnetic Spectrum, Introduction to Coral Reefs, Coral Reef Conservation, and much more.
http://coralreefwatch.noaa.gov/satellite/education/reef_remote_sensing.html

Remote Sensing Lesson Plans from IMaRS
The Institute for Marine Remote Sensing (IMaRS) provides education outreach through a number of venues. IMaRS has presented teacher workshops, with hands-on tools for the manipulation of satellite data as well as background information necessary to provide the correct information to their students. On-line lesson plans and background

information are available on their website. The lesson plans include both broad marine science concepts as well as specific remote sensing lab work.
http://education.imars.usf.edu/index.html

Repeat Glacier Photography at Kenai Fjords
Kenai Fjords National Park, located on the eastern edge of Alaska's Kenai Peninsula, is home to the largest concentration of tidewater glaciers in the U.S. National Park System. Changes in these glaciers have never been more obvious nor easy to comprehend, thanks to a cooperative project between the National Park Service and the U.S. Geological Survey.
http://www.oceanalaska.org/research/rptglacier-video.htm

Reports from a Warming Planet
American RadioWorks has released this special report on the early signs of climate change. A team of eleven reporters were led by environmental journalist Sandy Tolan. Their assignment was to identify different places around the world where global warming was making changes to both life and landscape. Visitors to the website can listen to the entire radio documentary and read about some of the individual locations profiled in this presentation.
http://americanradioworks.publicradio.org/features/earlysigns/index.html

Research and Monitoring in the National Estuarine Research Reserve System
Special Issue 45 of the *Journal of Coastal Research* is a volume dedicated to research and monitoring in the National Estuarine Research Reserve System (NERRS). It represents the outgrowth of many years of research and monitoring conducted at 26 NERRS sites around the country. The papers comprising this comprehensive publication consist of a wide array of studies conducted by individuals in academia, state and federal government agencies, and independent research institutions.
Contact Dr. Michael J. Kennish at kennish@imcs.rutgers.edu

Resource Guide For Oceanography and Coastal Processes
The *Oceanography and Coastal Processes Resource Guide* has been developed by the Operation Pathfinder participants. These 81 lesson plans, aligned with National Science Education Standards, support the infusion of concepts and appropriate activities concerning oceanography and coastal process into classrooms across the country. The lesson plans cover coastal processes, organisms and habitats, geology, and chemistry. They range from ROV manipulator arms to camouflage to creatures in the coral.
www.coast-nopp.org/toc.html
www.usm.edu/aquarium

Resource Ranger Club
The Environmental Education Coordination Team was formed to coordinate EE efforts in the Pensacola, Florida area. Team members include agency and industry personnel, teachers, and others. They have developed the curriculum-based Resource Ranger Club, an environmental club in elementary and middle schools. This club includes classroom presentations, follow-up activities, field trips, and a series of award-winning video shows.
godwine@wfrpc.dst.fl.us or 850-595-8910 ext 226.

Resources for Environmental Literacy: Science-Environment Modules for Teachers
The Environmental Literacy Council's Resources for Environmental Literacy project brought together scientists, classroom teachers, and curriculum developers who gathered materials from a variety of disciplines and sources to produce professional development materials for middle level and high school teachers in physical science, earth science, life science, biology, and physics. Downloadable modules include:

- Earth Science - earthquakes, volcanoes, and plate tectonics;
- Life Science - species diversity and the impact of mass extinctions;
- Biology - the science, risks, and tradeoffs of genetically modified crops;
- Physical Science - Earth's energy balance and global climate change; and
- Physics - the science of radioactivity and issues surrounding the disposal of radioactive waste.

http://www.enviroliteracy.org/subcategory.php/316.html

Resources for Scientists in Partnership with Education
Resources for Scientists in Partnership with Education (ReSciPE) is a project of the Coorperative Institute for Research in Environmental Sciences (CIRES) with funding from the National Science Foundation. ReSciPE is designed to assist scientists who are engaged with K-12 education. The program offers professional development workshops, development and sharing of resources, and a research study.
http://cires.colorado.edu/education/k12/rescipe/

Respect the Beach
Respect the Beach is a coastal educational program that includes classroom lectures, handouts, video, hands-on projects, and more, designed to teach coastal watershed processes, shoreline ecology and coastal areas stewardship. The program is brought into classrooms by Surfrider members, who represent ocean environmentalism from the surfer's perspective, and who are role models that students can relate to. Programs include Beachology, Watershed Works, and the Snowrider Project.
http://www.surfrider.org/programs/respectthebeach.asp .

Richmond Bridge Harbor Seal Survey
The Richmond Bridge Harbor Seal Survey is a collaborative research project between San Francisco State University and the California Department of Transportation, examining possible effects of seismic-related bridge construction on resident harbor seals in the San Francisco Bay. The website provides an overview of the project; tracking and tagging activities; and basic information about harbor seals. The site also provides Kids' Pages with photo ID matching, and wildlife of San Francisco Bay.
http://userwww.sfsu.edu/%7Ehalmark/seals.htm

Ridge 2000 Deep Sea Explorations
Ridge 2000 is a multidisciplinary science research program focused on integrated geological and biological studies of the mid-ocean ridge system. The premise of Ridge 2000 science is that life in deep-sea ecosystems is linked to the flow of energy and material from Earth's deep mantle, through the volcanic and hydrothermal systems of the oceanic crust, to the deep ocean. The website offers a materials and information; the expeditions page links to current and past research cruises,
http://www.ridge2000.com/index.html .

Riffle Fish
Riffle Fish is an evolving webumentary about the plants and animals that live in the riffles of rivers and streams. The on-line documentary will include new clips about the insects, mollusks, fish, and amphibians that make up the riffle community. The site will also provide interviews about the science of riffle ecology and the conservation efforts to preserve their biodiversity.
http://www.rifflefish.com/

Right Whale Game
The Ocean Conservancy partnered has created a website devoted to right whales. The site offers an interactive right whale game where you can navigate the right whale safely through trash, lobster traps, and ships; right whale information; a coloring page, and more.
http://www.oceanconservancy.org/site/PageServer?pagename=OceanHall

Ring in Oyster Season
The Bridge features a series of Data Analysis Teaching Activities (DATAs) that can be used to supplement curriculum materials. The Bridge DATA, On the Half Shell, explores *Vibrio vulnificus*, a virulent bacterium that occurs naturally in warm coastal waters. Students will examine five years of Centers for Disease Control data to explore the dangers associated with improperly handled seafood.
On the Half Shell http://www.marine-ed.org/bridge/index_archive1204.html

Rip Currents: Break the Grip of the Rip
NOAA's National Weather Service and National Sea Grant Program, in partnership with the United States Lifesaving Association, are working together to raise awareness about the dangers of rip currents. Research is also being conducted in order to develop and improve the ability to predict the occurrence and strength of rip currents. A new website has background information, a downloadable brochure and sign, and links to other information.
http://www.ripcurrents.noaa.gov/index.shtml .

Rivers Alive Clean-Up - Georgia
Register your cleanup event for Georgia's annual volunteer waterways cleanup by July 31, 2007 to receive free T-shirts or patches for your volunteers (first come first serve basis), a radio Public Service Announcement, educational posters, and promotional posters to help you advertise your cleanup event.
http://riversalive.com/ra_index.htm

Rivers to Reef
The Rivers to Reef segment of the Gray's Reef Ocean Science Course is now available. It includes a DVD of a feature length program that describes the Altamaha River Watershed and its direct influence on Gray's Reef. The DVD program features underwater footage of Gray's Reef and of inland areas through which the river flows as well as interviews with key players in studying the various links of the watershed. The package includes a manual of background information and activities.
Contact Cathy Sakas at Cathy.Sakas@noaa.gov

Rivers, Trails and Conservation Assistance Program
The Rivers, Trails and Conservation Assistance program provides staff time and technical assistance for projects that need an extra hand to take the next leap forward to

success. The program works with citizens' groups and non-profits, helping them realize their vision of how to improve their communities. The website offers informational publications, information about applying for assistance, links to online resources for river conservation and trail development, and more.
http://www.nps.gov/rtca

Riverquarium
The Flint Riverquarium will open in Albany, Georgia, to promote conservation through aquatic exhibits and educational experiences that engage diverse audiences by interpreting the unique ecosystems of the Flint River watershed. Exhibits will feature fish and other aquatic animals from the Flint River and downstream, including Apalachicola Bay, Lake Seminole and the Gulf of Mexico. In addition, the Riverquarium hosts a World of Water exhibit featuring river systems from around the world.
www.flintriverquarium.com .

RMS *Titanic* Expedition 2004
Dr. Robert Ballard and scientists from NOAA and other institutions spent 11days, May 27-June 12, 2004, at the site of the sunken remains of the R.M.S. Titanic, mapping the ship and conducting scientific analyses of its rapid deterioration. The team worked aboard the NOAA research vessel Ronald H. Brown and used ROVs to document the current state of Titanic. Educators and scientists developed a series of lesson plans for students in Grades 5 – 12 that are specifically tied to the Return to Titanic Expedition.
http://oceanexplorer.noaa.gov/explorations/04titanic/welcome.html and
www.returntotitanic.com .

Road to Recovery
The Center for Biological Diversity has created a website detailing the conservation efforts that caused the populations of 100 endangered species in every U.S. state and territory to increase. The website includes information about the conservation efforts along with a chart of the species' population over time. Citations allow those interested to research deeper into each species' recovery.
www.esasuccess.org

Rock the Boat
The University of California Sea Grant Extension Program offers a myriad of online resources for boating environmental education. The program has published a variety of materials on how boaters can help to protect water quality and native marine life. The website offers information on clean boating practices, reducing pollution from antifouling paints, and preventing invasive species from riding on boat hulls. Materials include technical reports and fact sheets, video-documentary and radio PSAs, and more.
http://seagrant.ucdavis.edu

Role of Protected Areas in Sustaining Society
The proceedings of the World Congress on National Parks, which took place in Bali, Indonesia, in October 1982, *National Parks, Conservation, and Development - the Role of Protected Areas in Sustaining Society* can be downloaded in pdf format from the IUCN (World Conservation Union) Protected Areas Learning Network website. While on the website, check out other documents using the browse feature.
www.parksnet.org/docs/0/77231_documents_document_file_65.pdf

Roundhouse Marine Studies Lab and Aquarium School Programs
The Roundhouse Aquarium is now booking for 2008-2009 field trips. Classes include Marine Science Education Field Trips for grades K-12, Key to the Sea for K-5 teachers, Tidepool Field Studies and Tidal Wave Outreach, and more. Some grants are available.
http://www.roundhouseaquarium.org/school.html

ROV Competition
Teachers interested in learning about Remotely Operated Vehicle (ROV) technology and its application in ocean studies, and in learning how to build a ROV with students and pull together a student team to participate in a regional ROV competition, can join NOAA's Monitor National Marine Sanctuary and others for the 3rd Annual Mid-Atlantic Regional MATE Remotely Operated Vehicle Competition, April 19, 2008 in Hampton, Virginia.
http://marinetech.org/rov_competition/regional_contests/regional_contest.php?rov_competition_id=48

ROV Competition
The Marine Advanced Technology Education (MATE) Center and the Marine Technology Society's ROV Committee are partnering with Ocean.US and the Ocean Research Interactive Observatory Networks (ORION) Program to organize their 5th annual international student ROV design and building competition. The Neutral Buoyancy Laboratory at the NASA Johnson Space Center will host the event in June 2006. The 2006 ROV competition will focus on ocean observing systems.
http://www.marinetech.org/rov_competition/index.php

RubiStar – Free Generic Rubrics for Teachers
Rubics can be quite time-consuming to develop. The RubiStar website provides tools to help the teacher who wants to use rubrics but does not have the time to develop them from scratch. RubiStar provides generic rubrics that can simply be printed and used for many typical projects and research assignments, or customize your own from their format.
http://rubistar.4teachers.org .

Rx Effects
Rx Effects is the newsletter of the Fire Effects Monitoring Program in the National Park Service. It is an outlet for information on Fire Effects Monitoring, fire research, and other types of wildland fire monitoring. The newsletter is annually produced for the National Park Service but anyone with an interest in fire ecology is encouraged to submit information about their program or research. The newsletter is a mixture of science, entertainment, and the occasional haiku. Rx Effects is issued each year in the spring.
http://www.nps.gov/fire/fire/fir_eco_rxeffects.cfm

Sad Day for Oxford Junior Dictionary
In order to make room for modern words like MP3 player, chatroom, and database, the latest edition of the *Oxford Junior Dictionary* removed many nature-related words as a result of the changing landscape. So BlackBerry now takes the place of blackberry, and it's a cautionary tale for ivy.
http://www.nextnature.net/?p=3110

Sally Ride Science Festivals
Sally Ride Science Festivals bring together hundreds of middle school girls for a festive day of science and socializing, to support girls in grades 5-8 in their interest in science and in possible science-related careers. Dr. Ride provides the keynote speech, and girls can enjoy a hands-on science street fair and attend discovery workshops on a variety of science careers. There are often workshops for parents and teachers.
http://www.sallyridefestivals.com/

San Francisco Ocean Film Festival
San Francisco Ocean Film Festival is celebrating its 5th anniversary, February 2-3, 2008 in San Francisco, California. It is dedicated to using film to enhance the public's appreciation for the ocean's multifaceted importance to our planet. By screening a wide variety of films from all over the world, the audience is able to experience works that are largely unavailable to the general public. Participants will walk away entertained, better educated, and motivated to actively participate in ocean conservation.
http://www.oceanfilmfest.org/

Sanctuaries Fun Pages
The National Marine Sanctuaries For Fun website offers games and downloads for young students. Download the new Ocean Guardian Activity Book, play the Kure Waste Chase game, go on a virtual submersible dive into Monterey Bay, work puzzles, and much more. Students can spend hours here, learning about the ocean all the while.
http://sanctuaries.noaa.gov/education/fun/

Sanctuary Atlas Maps, Images, and Videos
Download atlas maps, high resolution images, and watch compelling videos from the 14 marine protected areas managed by NOAA's National Marine Sanctuaries Program.
http://sanctuaries.noaa.gov/pgallery/

Sanctuary Calendars
The National Marine Sanctuary Foundation is a non-profit organization created to assist the National Marine Sanctuary Program with education and outreach programs designed to preserve, protect and promote meaningful opportunities for public interaction with the nation's marine sanctuaries. T
http://nmsfocean.org/

Sanctuary Integrated Monitoring Network
NOAA and partners have launched SIMoN, the Sanctuary Integrated Monitoring Network, a user-friendly website featuring background information about three West Coast national marine sanctuaries, Monterey Bay, Gulf of the Farallones, and Cordell Bank, along with information about the latest scientific research in these locations. Topics include rocky shores, estuaries, geology, and much more. The website includes a photo library, interactive maps, species database, and more.
http://www.sanctuarysimon.org/index.php

Sanctuary Integrated Monitoring Network
The Monterey Bay National Marine Sanctuary launched the Sanctuary Integrated Monitoring Network (SIMoN). Users can access the website to obtain local water quality monitoring information, generate watershed maps, locate monitoring information, link to data sets from individual stations, and download GIS layers.
http://mbnms-simon.org .

Sanctuary Sam
The NOAA National Marine Sanctuary Program has announced the launch of a new national ocean literacy, education, and public awareness campaign featuring Sanctuary Sam, a California sea lion who will be the program's "spokes-sea lion." Sanctuary Sam will help convey messages to the American public, particularly children, about the marine environment, highlighting the current problems facing the oceans, including pollution, marine debris, and habitat destruction. Learn more by visiting his MySpace page.
http://myspace.com/sanctuarysam

Sanctuary Science Conservation Series
The Marine Sanctuaries Conservation Series provides a forum for publication and discussion of the complex issues the National Marine Sanctuary Program faces. Topics of published reports vary and may include descriptions of educational programs, discussions on resource management issues, and results of scientific research and monitoring projects.
http://sanctuaries.noaa.gov/science/conservation/welcome.html

Sanctuary Watch
Sanctuary Watch is a publication produced by NOAA's Office of National Marine Sanctuaries. It includes news about happenings in the sanctuary program, "Critter Files" that highlight specific species of animals, spotlights on sanctuary partners and staff, and beautiful photos. Subscribe to the online publication and look through past editions on the website.
http://www.sanctuaries.noaa.gov/news/sw/welcome.html

Sanctuary Watch: Education Edition
Ocean education and hands-on field activities from around the country are highlighted in the new education edition of the Sanctuary Watch newsletter produced by NOAA's National Marine Sanctuary Program. You can subscribe to Sanctuary Watch electronically by sending an email to requests@willamette.nos.noaa.gov and putting "subscribe sanctuarywatch" in the subject line.
Sanctuary.Education@noaa.gov .

San Diego Bay: A Story of Exploitation and Restoration
The book, San Diego Bay: A Story of Exploitation and Restoration, features a synthesis of artistry and information in describing a complex urban marine environment - the historic and present uses of San Diego Bay. The book was researched, written, and designed by a class of 64 high school students at High Tech High in San Diego. The stories revolve around progress in the region related to local geography and the utilization of resources. The book includes oral histories and much more.
http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=SG022

San Diego Natural History Museum Field Guides
The San Diego Natural History Museum's Biodiversity Research Center of the Californias works to understand and interpret the biodiversity of Southern California and the peninsula of Baja California. The museum provides links to information about its various departments and offers online access to databases for two collections. On-line checklists and field guides are available for a variety of regional plants and animals.
http://www.sdnhm.org/fieldguide/index.html

Sands Teach
The recent scuttlebutt discussion on using sand in teaching has generated an exchange of great websites that can help you incorporate sand as a teaching tool in your classrooms. Check out some of these resources, and don't forget to check out the links from the Bridge (search on "sand").
http://www.sandcollectors.org/ISCSHomeIndexx.html
http://www.jaster.20m.com/Trading/TradeList.html
http://www.educationworld.com/a_tech/tech/tech080.shtml
http://www.chariho.k12.ri.us/curriculum/MISmart/ocean/sandintr.html

Sandwatch
Sandwatch seeks to modify the lifestyle and habits of children, youth, and adults on a community-wide basis and to develop awareness of the fragile nature of the marine and coastal environment and the need to use it wisely. It is an educational process through which school students and community members learn and work together to critically evaluate the problems and conflicts facing their beach environments and to develop sustainable approaches to address these issues. With a strong field monitoring component, Sandwatch tries to make science 'live' yet remains inter-disciplinary with applications ranging from biology to woodwork and from poetry to mathematics.
http://www.sandwatch.ca/index.htm

Santa Barbara Ocean Film Festival
Santa Barbara's Ocean Film Festival will be held October 22-23, 2008 in Santa Barbara, California.
http://www.ocean.com/index.asp?LocationID=311&CatId=311

Satellite Observations in Science Education
The Satellite Observations in Science Education website from the University of Wisconsin promotes the teaching and learning of the Earth system through quality educational resources that make use of satellite observations. The website includes learning activities, resources useful to building your own learning activities, satellite data, and more.
http://www.ssec.wisc.edu/sose/

Satellites and Bleaching
NOAA Coral Reef Watch offers an online tutorial that takes the student through coral bleaching, satellite technology, and how we use satellite data to monitor for the conditions that cause bleaching. The tutorial uses non-technical language and can be useful for students, teachers, and others wanting to learn more about coral reefs and satellite technology. The lessons are tied to National Science Education standards for use in the classroom.
http://coralreefwatch.noaa.gov/satellite/education/tutorial/welcome.html

Satellites and Orbits: an Introduction
NOAA's Satellite and Information Service takes complex satellite and orbit information and transforms them into easy to understand concepts with lots of animation sure to catch a student's attention, for grades 8-12. Highlights include a short satellite history, a non-mathematical review of basic orbital physics, orbital terminology, and orbit types with a focus on Earth observation and environmental monitoring. Other features include a hands-on demonstration, a student activity, background information and instructions.
www.npoess.noaa.gov

Satellite Resources
NOAA's Satellites and Information Service manages data relating to the Earth and solar environments. The National Environmental Satellite, Data, and Information Service has compiled a website listing resources of interest to students and educators. Materials include posters and slide sets, teacher guides and quizzes, fact sheets and handouts. Links lead to numerous related sites, such as the World OceanAtlas, the Climatic Data Center, and sources of information on sea ice, ice shelves and glaciers.
http://www.nesdis.noaa.gov/outreach_edu.html

Save Our History
This History Channel website provides a downloadable Educator's Manual designed to help educators incorporate local history into the classroom and introduce students to the concept of preservation. The manual includes lesson plans for elementary, middle, and high school teachers linked to state history standards in all 50 states.
http://saveourhistory.com/

Save Our History, Save Our Ships
"Save Our Ships" is the History Channel's effort, in conjunction with National Maritime Historical Society, to stem the tide of deterioration and destruction of historical ships. The website offers a short teacher's manual with lesson plans, as well as a special online exhibit of five ships featured in The History Channel's documentary, *Save Our History: Save Our Ships*. The resource page provides links to websites and books for more information.
http://www.historychannel.com/classroom/saveourships/default_home.html

Saving Springer
The NOAA documentary, Saving Springer, is a story about the work that the NOAA Fisheries Office of Protected Resources, does on a daily basis. It is about a young killer whale and the dedication of NOAA professionals helping return her to her family. It will air on 90 public television stations around the nation over the next several months. The next airings are Mobile, Alabama/Pensacola, Florida, on November 14 and 17, 2004, and Champaign, Illinois on November 14 and 18, 2004.
Check local Public Broadcast Stations.

Saving Sturgeon
Sturgeon are unusual fish that have changed very little since prehistoric times. Learn about this living dinosaur and their fight for survival in the Bridge Data Analysis Teaching Activity (DATA), *Saving Sturgeon*. Students will explore Virginia Institute of Marine Science data that evaluates the interaction of sturgeon with the commonly used gill net. These nets, which can stretch for tens to hundreds of meters, trap fish by entangling them as they try to swim through the net. This DATA can also be used to investigate by-catch and its effect on slow-to-mature species.
http://www.marine-ed.org/bridge/index_archive1107.html

Scaling Up Marine Management: The Role of Marine Protected Areas
This report from the World Bank assesses factors likely to determine marine protected areas' success and identifies opportunities for the bank and its partners to scale up MPA implementation to meet global conservation targets. The report focuses on how best to capture the potential benefits of MPAs for helping the world's poor while addressing the sociocultural and political realities of restricting access to the sea and regulating what

has traditionally been considered common property.
http://siteresources.worldbank.org/INTCMM/Publications/21108865/Final_Printed_Version_MPA_ESW.pdf

Scaling Weather – Northeast Snowfall and Tornadoes
NOAA has devised two enhanced scales for rating severe weather phenomena – northeast US snowfall impact, and an enhanced Fujita scale for tornadoes. NESIS, or the Northeast Snowfall Impact Scale, calculates the impact of a powerful snowstorm soon after it strikes, giving it a rank similar to that given to tornado strength. The enhanced Fujita scale for tornadoes will continue to rate tornadoes from F0 to F5, but the range of wind speed in each category will now be more accurate and more variables will be taken into account, including building type, structure and trees.
http://www.ncdc.noaa.gov/oa/climate/research/snow-nesis/
http://www.spc.noaa.gov/efscale/

SCHOLARS Program from the National Climatic Data Center
The National Climatic Data Center (NCDC) hosted approximately 60 students for the unveiling of their educational CD and educational packets. The NCDC signature program, SCHOLARS (Serving Customers and Helping Others Learn through Applications Involving Remote Sensing), can also be viewed on the website. The students toured the museum, listened to presentations on both geostationary and polar orbiting satellites and experienced the Magic Planet.
www.ncdc.noaa.gov/oa/edu.html

Schoolyard Geology
The U.S. Geological Survey's Schoolyard Geology website offers activities and examples of what to look for to turn your schoolyard into a rich geologic experience. It introduces teachers to the possibilities for teaching geology to students in familiar, easily accessible, and personally relevant settings through a series of complete lesson plans. The website is divided into mapping your schoolyard, rock stories, and GeoSleuth Murder Mystery.
http://education.usgs.gov/schoolyard/

Schoolyard Wildlife Habitats Best Management Practices
The Georgia Wildlife Federation has been helping schools with schoolyard wildlife habitat since 1987. The program provides an outdoor classroom where students can apply what they learn in the classroom to the natural world. Many of similar projects have been difficult for schools to maintain over time. Tthe Georgia Wildlife Federation provides “Planning First to Make Your Outdoor Classroom Last; A Best Management Practices (BMP) Guide for Creating and Sustaining Outdoor Classrooms in Georgia.”
www.gwf.org/bmpindex.htm

Schreyer Institute for Teaching Excellence: Tools for Teaching and Learning
The Schreyer Institute for Teaching Excellence at Pennsylvania State University has created this website to give educators access to a wide range of teaching and learning tools. Sections include Course Design and Planning, Teaching and Assessment Strategies, Tools for Course Evaluation, and more. Users can read and download specific activities geared towards syllabus improvement, writing effective and meaningful tests, and incorporating problem-based activities into the classroom.
http://www.schreyerinstitute.psu.edu/Tools/

Science Animations
Practical demonstrations of various scientific principles may be difficult, if not impossible. North Harris College offers this website, which functions as a clearinghouse for science animations created by a wide range of institutions from the University of Hawaii to Cambridge University. Categories include ecology, plants, animals, with animations of the greenhouse effect, classification schemes, pond life videos, and more.
http://science.nhmccd.edu/biol/animatio.htm

Science Animations
Created by staff at North Harris Community College, this website offers animations in a number of topics, including plants, ecology, geology, and more. Each section contains links to animations from various institutions.
http://science.nhmccd.edu/biol/animatio.htm#ecology

Science Approach
Science Approach is dedicated to translating scientists' research and data into inquiry-based lessons for students. They offer a variety of educational materials including free, downloadable materials; registration is required. Check out the GIS lesson on zebra mussel distribution, sign up to become a reviewer, read about the CoastLines project to facilitate rapid deployment of GIS in schools, and more.
http://www.science-approach.com/

Science Behind the Scenery
This free DVD, *Science Behind the Scenery*, is available to middle school and high school educators from the Point Reyes National Seashore. The DVD explores the Science at Point Reyes National Seashore, Northern Elephant Seals, Coho Salmon and Steelhead Trout, Fire Management, Vegetation Mapping, and much more. English and Spanish subtitle options are included.
http://www.nps.gov/archive/pore/educate.htm

Science Buddies
Science Buddies offers free science fair project ideas, answers, and tools for students and teachers. The project includes science and technology professionals interacting directly and indirectly with the students, making science real and helps lead students to projects that are more challenging and have greater science content than projects they might choose on their own.
http://www.sciencebuddies.com/

Science Bulletin Website
The Science Bulletin website, sponsored by the American Museum of Natural History, highlights breaking news on astrophysics, earth sciences, and biodiversity. The bulletins present current science news stories through interactive videos (5- to 7-minute video stories that follow scientists into the field), photographs, graphics (using 3-D computer models), and interactive data visualizations (using NASA satellite data). Be sure to look through *Jellies Down Deep*.
http://sciencebulletins.amnh.org/ .

Science, Education, and Marine Archeology Program in Portugal (SEMAPP)
The Ocean Technology Foundation offers a submersible diving expedition to explore Portimao Canyon off the coast of Portugal from April 12-19, 2004. They will study the

biodiversity and geology of the canyon and look for 14th-18th century shipwrecks from the Age of Exploration. The web offerings will include "Ask the Explorers," daily logs, and questions related to the expedition that can be turned into lessons for your students.
http://www.oceantechnology.org/semapp.htm .

Science Events At Your Fingertips
The National Science Teachers Association has an online calendar identifying science-related events and activities. This information includes programs, grants, and workshops in the field of science. Visitors can search by category, grade level, or region, and submit their own upcoming event.
http://www.nsta.org/main/calendar/events.php

Science Explorations
Science Explorations is a collaboration between the American Museum of Natural History and Scholastic, created to promote science literacy among students in grades 3-10. Science Explorations offers a series of online investigations featuring the latest scientific discoveries of the museum's experts. Upcoming investigations include invertebrates (in February) and reptiles (in May). The website includes a searchable database of lesson plans and activities, teaching tools, and more.
http://teacher.scholastic.com/activities/explorations/

Science Fair Season
Help your students plan, carry out, and present a great science fair project this spring with help from the Bridge. In our *Guiding Students* section you will find teacher-reviewed resources to help students get a leg up on the competition with annotated links to information on preparing a great project and tips for presenting it to the judges. Presentation information covers oral presentations, reports, and posters, and discusses the most effective way to convey experiments to the public.
Science Fair Resources http://www.marine-ed.org/bridge/index_student_res.html

Science Fairs Central
Discovery Education provides digital resources to schools and homes with the goal of making educators more effective, increasing student achievement, and connecting classrooms and families to a world of learning. They offer the Scotch Science Fair Central website, a resource center for science fairs.
http://school.discoveryeducation.com/sciencefaircentral/

Science of Fire
QUEST is a TV, radio, web, and education series by KQED that explores science, environment, and nature in Northern California. This website with *Into the Inferno, The Science of Fire* offers great fire footage, information about fuel treatments, Smokey the Bear cartoons, and fire ecology. It goes inside the fire season, looking at how the history of forest management could be feeding today's flames. The website also offers links to additional fire resources.
http://www.kqed.org/quest/television/view/609

Science Friday Kid's Connection
Science Friday is a weekly National Public Radio show that discuses the latest research with science and policymakers. Science Friday Kids' Connection takes that material and turns it into science lessons for middle school kids. Each topic includes a summary of the discussion that took place on the show, resources, references, and more.

http://www.kidsnet.org/sfkc/

Science from the Poles
This site from the Exploratorium in San Francisco is designed to celebrate the start of the International Polar Year with webcasts that highlight the work of scientists at both the North and South Poles. Sections include presentations on climate change and another that focuses on the work of scientists who are constructing the largest telescope ever utilized in a polar region. In addition, users can view videos that address different themes, including sense of place, ice diving, penguins, and more.
http://www.exploratorium.edu/poles/index.html

Science Netlinks: Web Resources for Science Teachers
The American Association for the Advancement of Science website offers background information and useful resources for educators, including Science Books and Film; Science Careers; and Science Netlinks. Science NetLinks offers standards-based Internet resources for students including downloadable lesson plans and links to additional background materials and websites.
http://www.aaas.org/port_educators.shtml
http://www.sciencenetlinks.com/

Science of Marine Reserves
The *Science of Marine Reserves* is now available online in an interactive format. The new educational layer in Google Earth, the MPA Layer, shows the locations of over 4000 MPAs around the globe. The case studies are highlighted in the layer through interactive graphics, along with meta-analysis depicting responses inside marine reserves around the world. In addition, the expanded information from the case studies booklet is hosted on Protect Planet Ocean.
http://www.piscoweb.org/outreach/pubs/reserves
http://earth.google.com/outreach/kml_entry.html#tMarine%20Protected%20Areas
http://www.protectplanetocean.org/somr/effectsInside.html

The Science of Marine Reserves
The updated Science of Marine Reserves is offered by the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO). The booklet is now presented in two English versions: a U.S. version and an international version. These resources provide the latest scientific information about reserves in an understandable and accessible format. They are designed to be used by natural resource managers, government officials, scientists, and the interested public.
http://www.piscoweb.org/outreach/pubs/reserves

Science and Photography through the Microscope
Dennis Kunkel Microscopy, Inc. presents the Microscopy and Science Education Web Site. This site provides both a fine image bank for general use and general information about the art and science of this scientific field. The education image library database allows you to browse the contents by category or perform a search. Educators and students may request permission for image use through the website.
http://education.denniskunkel.com/

Science Reference Services
The Library of Congress Science Reference Services website hosts a myriad of useful and interesting information. The Everyday Mysteries offers archived questions and

answers about questions you've thought about but never pursued. The Science Tracer Bullet Series contains research guides that help locate information on science and technology subjects. They offer brief introductions to the topics and lists of resources and strategies for finding more. For help with student science projects, the website offers a long list of useful references, both Internet and hard copy. Additional reference lists are provided for subjects such as The Crisis in Science Education, Selected Internet Resources for Teachers, and much more.
http://www.loc.gov/rr/scitech/

Science and the Sea
Check out this website from the University of Texas Marine Science Institute in Port Aransas. You will find 2-minute radio broadcasts, information about marine debris and man-made structures in the sea, quizzes, and more.
http://scienceandthesea.org/

Science Snacks
The Exploratorium: Museum of Science, Art and Human Perception in San Francisco offers *Science Snacks*, miniature science exhibits that teachers can make using common, inexpensive, easily available materials. The Snacks are divided into easy-to-follow sections that include instructions, advice, and helpful hints. Most of the Snacks can be completed by one person. A section called "etc." offers interesting bits of additional scientific and historic information.
http://www.exploratorium.edu/snacks/index.html

Science as Storytelling
This classroom exercise was peer-reviewed by participants at the *Preparing Teachers to Teach Earth Science* Workshop at Carleton College, and was authored by B.R. Bickmore and D.A. Grandy of Brigham Young University. The exercise can help students gain a more sophisticated conception of the nature of science. The site contains teaching notes and tips, learning goals, and the essay.
http://serc.carleton.edu/teacherprep/resources/activities/storytelling.html

Science Tracks Downloads From Teachers' Domain
Teachers' Domain offers free science track downloads for IPods. Topics available include Life Science, Earth and Space Science, and more. Resources available for download include videos and educator guides with discussion questions, background essays, and additional materials.
http://deimos3.apple.com/WebObjects/Core.woa/Browse/wgbh.org

Scientific Committee on Antarctic Research
The Scientific Committee on Antarctic Research is charged with initiating, developing and coordinating high quality international scientific research in the Antarctic region. This website will be a useful research site for those interested in the International Polar Year. The Publications section of the website includes many downloadable resources, including topical articles addressing sea-level changes and climate transformation and a link to the Antarctic Digital Database for GIS users.
http://www.scar.org/

Scientific Principals
NSTA offers a complimentary, monthly e-newsletter written especially for elementary school principals, dedicated to helping their teachers in science. Scientific Principals offers a science toolbox of new ideas and practical applications.
http://science.nsta.org/scientific_principals/

SciGuides
The National Science Teachers Association offers SciGuides™ as an online "science toolbox". The SciGuides tools allow teachers to quickly locate targeted science content information and teaching resources from NSTA-reviewed science websites. Teachers can also use SciGuides to transform science content into effective classroom resources by locating and incorporating online lesson plans and providing tips for teaching the content and examples of effective student assessments.
http://www.nsta.org/main/SciGuides

SciLinks about Squids
SciLinks are normally available to NSTA members only, but links to a variety of marine animal information have been made available to all for a brief period of time. Browse through the links for animal diversity, mollusks, squid, pond scum, and more. Be sure to look at "Octopus Walking".
http://www.scilinks.org/retrieve_outside.asp?sl=74456611444466$7445773311$9911551066

SciLinks Assignment Tool
SciLinks®, NSTA's Internet referencing system, now features a new Assignment Tool to help teachers create and review student online assignments, and help gauge student progress. SciLinks is accessible using print-linked codes found in many textbooks, NSTA Press books and journals, and independently as a benefit for all NSTA members.
http://science.nsta.org/nstaexpress/nstaexpress_2004_05_10_extra.htm .

SciLinks on Weather and Global Warming
NSTA's SciLinks program links teachers and students to teacher-approved web sites to support science instruction. While SciLinks is primarily offered through the pages of science textbooks and NSTA Press publications, NSTA Express is making three popular topics available for free access, for a short period of time.

- What is Weather? (K–4)
  http://www.scilinks.org/retrieve_outside.asp?sl=63823447142110221066
- Measuring Motion (5–8)
  http://www.scilinks.org/retrieve_outside.asp?sl=63823447145510221066
- Global Warming (9–12)
  http://www.scilinks.org/retrieve_outside.asp?sl=63823447149910221066

S'COOL - Students' Cloud Observations On-Line
Students' Cloud Observations On-Line (S'COOL) is a project which involves school children in real science. The CERES (Clouds and the Earth's Radiant Energy System) is a high priority scientific satellite instrument orbiting the Earth which scientists use to study the ways clouds may affect the Earth's climate. S'COOL Students provide ground truth measurements to assist in the validation of the CERES instrument. They also compare the surface- and space-based observations to learn about clouds and climate.
http://asd-www.larc.nasa.gov/SCOOL/pamphlet.html
http://asd-www.larc.nasa.gov/SCOOL/SCOOL.html

The Scoop on Soil
The National Geospatial Development Center presents educational pages featuring "The Soil Game," hands-on educational materials, posters, lesson plans, and links to other soil-related resources. *The Scoop on Soil* is an interactive game for elementary grades; the website includes a related 4th grade lesson plan.
http://www.ngdc.wvu.edu/~hferguson/educationNGDC/

SCUBA Scouts
The SCUBA Scouts were started in 2001 and provide project leadership for the Coral Reef Evaluation and Monitoring Program in the Tampa Bay, Gulf of Mexico, and Florida Keys. The SCUBA Scouts train in advanced SCUBA and scientific diving to observe underwater phenomena relating to artificial coral reefs and to acquire the scientific data. They receive training and mentorship from Florida Fish and Wildlife Research Institute and other professional research scientists and graduate students conducting research.
http://scubascouts.org/

Scuttlebutt
Ocean science educators can talk informally about marine education ideas, issues, and questions on “Scuttlebutt", the Bridge email discussion list. The listserv is monitored by Bridge staff, who also locate expertise for posted questions as needed. All educators and scientists interested in marine science education are invited to subscribe. Scuttlebutt is a unique list, just for marine educators and researchers interested in marine education.
http://www.vims.edu/bridge/index_scuttle.html

Sea Aggie Preview for Prospective Students - Texas
The Office of Student Relations of the Texas A&M University at Galveston (TAMUG) held its Fall Sea Aggie Preview as an opportunity for prospective university students and parents to visit the campus to learn all about the opportunities at TAMUG to study ocean-oriented academic programs in transportation, science, engineering, business and liberal arts at the by-the-sea campus. Research and public service involve the Gulf of Mexico and Galveston Bay, which border the island campus.
http://www.tamug.edu/admrc/preview/Sea%20Aggie%20Preview/index.htm

Sea Around Us
The Sea Around Us Project provides an integrated analysis of the impacts of fisheries on marine ecosystems, and to devise policies that can mitigate and reverse harmful trends whilst ensuring the social and economic benefits of sustainable fisheries. The website includes Internet GIS maps, background information, and downloadable reports, including *Competition between Marine Mammas and Fisheries: Food for Thought* and *Seamounts: Biodiversity and Fisheries*.
http://www.seaaroundus.org/project.htm
http://www.seaaroundus.org/BooksReportsF.htm

Sea Ducks of Alaska
The Center for Alaskan Coastal Studies has developed a hands-on activity guide for grades 4-6 on the Sea Ducks of Alaska. The guide offers teacher background information and teaching activities that explore sea duck adaptations, their role in food webs, provides an opportunity to research Alaskan species, and looks at conservation issues.

www.akcoastalstudies.org

Sea Education Association K-12 Lesson Plans
The Sea Education Association offers at-sea experiential programs with shore and sea components to develop students' and teachers' ability to apply scientific thinking and method to the marine environment. Lesson plans are posted for teachers to help bring the ocean into the classroom. Topics include marine biology and ecology, geological and physical oceanography, and nautical science, listed by grade level and topic.
http://www.sea.edu/k12LessonPlans/k12pgmtop.htm

Sea Floor Mapping
NOAA's Ocean Service Communications and Education Division, in cooperation with NOAA's Office of Coast Survey, launched this new educational offering, Sea Floor Mapping. Designed for students in grades 3-5, the activity teaches young people about mapping the sea floor and why it is important. The website includes the online activity, movies and pictures, background information, and more.
http://oceanservice.noaa.gov/education_new/seafloor-mapping

Sea Grant Reporter
The University of Delaware, College of Marine Studies' annual Sea Grant Reporter provides an update about its research and educational activities as a Sea Grant institution, encouraging Delawareans to become informed, become involved and stay connected through the various programs of the college. In addition, public input is sought on coastal issues through a survey; the publication also lists volunteer opportunities.
www.ocean.udel.edu/publications/Newsletter/reporter/2005/

Sea Ice
NASA's Earth Observatory features an article on sea ice in the Arctic and Antarctic, including background information, monitoring, references, and more.
http://earthobservatory.nasa.gov/Features/SeaIce/

Sea Monsters: A Prehistoric Adventure Movie
National Geographic and the National Science Foundation offer *Sea Monsters: A Prehistoric Adventure Movie*. This website provides photos and video clips from the movie about creatures that roamed the seas 82 million years ago. Discover sea monsters of the past and present using the interactive timeline. Excavate fossils on a "virtual dig." The website links to lesson plans and more.
http://www.nationalgeographic.com/seamonsters/

Sea Partners Campaign
The U.S. Coast Guard Sea Partners Campaign is an environmental education and outreach program. Its aim is to develop community awareness of maritime pollution issues and to improve compliance with marine environmental protection laws and regulations. For more information about local Sea Partners efforts, contact your nearest Coast Guard Marine Safety Office or Captain of the Port. The directory is available for downloading from the first website.
http://www.uscg.mil/units.html
http://www.uscg.mil/hq/g-m/nmc/seapart.htm

Sea Search
Sea Search is a monitoring program for community groups volunteering in Victoria, Australia's Marine National Parks and Sanctuaries. Volunteers can explore and learn about the diversity of marine plants and animals found in Victoria's marine protected areas while adding to the scientific knowledge of the parks. Community and school groups work with park rangers and a project officer to collect seasonal data in their local MPA and at nearby control sites. The website includes an overview document for community-based monitoring, individual guides for intertidal, subtidal, and seagrass monitoring, data entry sheets, and field fact sheets. *MPA News #81* (at http://www.mpanews.org) includes a discussion about the program, challenges faced, and lessons learned.
http://www.seasearch.org.au/index.htm

Sea Stories
The Sea Stories Project, an international initiative of the Blue Ocean Institute, accepts first-person writing and art about the sea, coast, and sea-life from ocean-lovers of all levels and backgrounds. Memoirs, essays, poetry, and imaginative nonfiction are all welcome, as are photographs, drawings, or other visual arts. The inaugural issue of Sea Stories is now online, devoted to nurturing appreciation and concern for the world's oceans through writing, art, and conversation.
http://www.seastories.org/
http://www.seastories.org/current.html

Sea to Shining Sea – Partners in Conservation Webcast from Texas and Alaska
The *Sea to Shining Sea – Partners in Conservation* webcast, November 14, 2003, covers global topics and issues from Alaska to Texas. It is divided into three major topical areas: A Sense of Place: Understanding the Habitat; Wildlife: Adaptations and Concerns; and Human Impact and Involvement. Topics, guiding questions, curriculum standards, Internet resources and activity ideas are included online.
http://www.tpwd.state.tx.us/expltx/eft/seacenter/guide.phtml

Sea Talk
As a public service in conjunction with more than 35 area radio stations, Delaware Sea Grant produces SeaTalk, a bimonthly series of 30- and 60-second radio announcements on subjects ranging from sharks to sand dunes to current marine science research. The series has been in production at the University of Delaware for more than 30 years. You can download audio clips, read the scripts, and subscribe to podcasts.
http://www.ocean.udel.edu/seagrant/seatalk/

Sea Turtle eFieldTrip
The U.S. Fish and Wildlife Service has sponsored *Sea Turtles: Endangered Ocean Navigators,* an eFieldTrip on Sea Turtles. Have your students visit Pea Island National Wildlife Refuge and learn about these amazing animals. Each program has four major components: a virtual visit, a trip journal worksheet, ask the experts, and a live webchat. Archives of the questions are posted on the website.
www.eFieldTrips.org

Sea Turtle Migration-Tracking and Coastal Habitat Education Program
A program of Caribbean Conservation Corporation, this Sea Turtle educator's guide provides information about sea turtle natural history, coastal habitat ecology, high technology research, and conservation efforts to protect sea turtles and their habitats.

The guide can be used as a reference to teach sea turtle biology and coastal ecology and offers marine background material and lesson plans. The guide is downloadable for free in English and Spanish (registration is required).
http://www.cccturtle.org/satellitetracking.php?page=educatorsguide

Sea Turtle Migration-Tracking Education Program
The Sea Turtle Migration-Tracking Education Program is an educational service of the Sea Turtle Survival League, part of the non-profit Caribbean Conservation Corporation. Through this website, you can view maps showing the migratory movements of endangered sea turtles being tracked by satellite. In addition, the site offers a downloadable Educator's Guide, background information about sea turtles; tips on how to make the best use the program; and classroom activities.
http://www.cccturtle.org

Sea Turtles Resources
Check out these sea turtle web resources
http://www.sefsc.noaa.gov/seaturtlepublications.jsp .
http://www.nmfs.noaa.gov/prot_res/PR3/Turtles/symposia.html .
http://www.floridamarine.org/features/view_article.asp?id=2156 .
www.widecast.org .
http://www.ex.ac.uk/~pcthornt/EuroTurtle/homep.htm .
www.seaturtles.org .
www.seaturtle.org/mtn .
www.floridaleatherbacks.com .

Sea Turtles: An Ecological Guide
This book features more than 350 color photos and original graphics to illustrate basic concepts of taxonomy, ecology, and physiology, as well as human impacts and conservation. A unique reference for naturalists, divers, eco-tour operators, resource managers and policy-makers, the book is also designed to be used as a text. The authors are currently working on a Teacher's Resource Guide, which will be available at no charge to anyone who orders 10 or more copies of the book for classroom use.
Dr. Karen Eckert at keckert@widecast.org

Sea Turtles Teacher's Activity Manual
The authors of the textbook, “Sea Turtles: An Ecological Guide” which features more than 350 color photos and original graphics to illustrate basic concepts of sea turtle taxonomy, ecology, and physiology, as well as human impacts and conservation, have revised and reprinted the accompanying Teacher's Activity Manual. The Activity Manual brings these concepts alive with field, lab, and classroom activities that are easy to implement and adaptable to any age.
Contact Karen Eckert at keckert@widecast.org

Seabean Website
The purpose of this web site is to educate people about sea-beans - their identification, source, travels, variety, beauty, and the plants that they produce. This website contains images and information about sea-beans (drift seeds) commonly found on the beaches of the Northwest Atlantic Ocean.
http://www.seabean.com/

Seabird Aware Brochure
As animals of the open ocean, seabirds are important allies in the effort to conserve ocean environments. To encourage kayakers, pilots, fisherman, and others to respect the sensitive nature of seabirds, PRBO Conservation Science has developed a brochure that identifies the problem of disturbance to seabirds and simple solutions that can reduce human impact. This brochure and website will help to prevent disturbance to seabirds during the sensitive breeding period.
www.prbo.org/seabirdaware .

Seafloor Characterization Cruise
Join NOAA for the latest National Centers for Coastal Ocean Science (NCCOS) research cruise to explore conservation areas in Puerto Rico. Visitors can watch video clips and access a wealth of supporting information and images for cruises from 2004 through the recent 2008 seafloor characterization cruise. The website includes background information, video, data, and scientist profiles. Some materials are also available in Spanish.
http://ccma.nos.noaa.gov/products/biogeography/usvi_nps/details.html#

Seafood Watch Pocket Guides
The Seafood Watch program has launched a new pocket guide for the Southeast region and updated the West Coast pocket guide. The Southeast guide includes several new species such as tilefish, conch, mackerel, and mullet. Seafood Watch has also added or updated species reports to their website. To learn more about these new recommendations please visit the All-Fish List on their website. Seafood Watch recommendations are updated twice each year. Check out the latest information and download your pocket guide.
http://www.montereybayaquarium.org/cr/seafoodwatch.asp
http://www.seafoodwatch.org/cr/cr_seafoodwatch/ .

Seafood Watch Quiz
The Monterey Bay Aquarium offers a quick quiz on their Seafood Watch website. The on-line quiz is an entertaining way to teach about sustainable seafood. Note the great Sherman's Lagoon characters by Jim Toomey. While on the website, check out the regional seafood guides, newsletter, and more.
http://www.montereybayaquarium.org/cr/cr_seafoodwatch/sfw_quiz.asp

SEA-GEOFISH
The southeast geographic fishery-independent survey and historical (SEA-GEOFISH) database is a web-based mapping application presenting data from a long-term fishery survey conducted by the South Carolina Department of Natural Resources. The geographic database includes data collected during more than 30 years of research cruises, sampling fishes and fish habitat off the Atlantic coast of the southeastern U.S. The maps include distribution of fish species; data on abundance, diversity and more.
http://ekman.csc.noaa.gov/seageofish/seageofish.htm

Seahorse Poster
Project Seahorse has created a free educational poster on seahorses and marine conservation. *Take Action for Seahorses and the Seas* is based on a map of the world and highlights four critical marine conservation issues: over-fishing, nonselective fishing, habitat damage, and poor land-use. Each conservation topic is linked with two seahorse

species that exemplify the issue. The poster is targeted to 10-14 year olds, but should appeal to a broad audience interested in marine conservation.
Contact Heather Koldewey at heather.koldewey@zsl.org

Seal Watch and Prudence Island Tour – Rhode Island
Explore Prudence Island, see seals at one of the best haul-out spots in Narragansett Bay, and learn about cutting edge ecological research in the bay. Narragansett Bay National Estuarine Research Reserve offers these outreach opportunities in April for groups of six to ten participants; registration is required.
http://www.nbnerr.org/seals.htm

Search for the *Bonhomme Richard*
The Ocean Technology Foundation and Naval Historical Center are searching for one of the most famous ships of the Revolutionary War, the *Bonhomme Richard*, which was commanded by John Paul Jones. A survey expedition in the North Sea last summer revealed several shipwreck sites of interest, and another expedition is planned for this summer. This presentation highlighted the unique combination of history and modern technology that is being used to find this artifact of American maritime history.
http://www.oceantechnology.org/BHR.htm

The Search for Bonhomme Richard
The Ocean Technology Foundation offers this website in support of its June expedition to search for the *Bonhomme Richard*. The website offers lesson plans focusing on ocean technologies, careers in marine technology, and surveying a shipwreck site, appropriate for middle and high school levels and correlated with the NSES and Ocean Literacy Principles. There will be additional lessons created to continue the series. In addition, the website offers information about the expedition and the history of the battle.
http://www.oceantechnology.org/BHR.htm

The Search for Trouvadore
This website from NOAA's Ocean Explorer offers insight into the July 2006 research and exploration cruise to seek the final resting place of Trouvadore, a Spanish slaver that wrecked offshore of East Caicos island 165 years earlier, bringing the direct ancestors of some of today's modern inhabitants to the islands. The website includes background information about slave trade and the ship's history.
http://oceanexplorer.noaa.gov/explorations/06trouvadore/welcome.html

Seas the Day
To complement, reinforce, and expand upon The Ocean Project's focus of helping their partners customize conservation for their visitors and members, this website features different conservation themes each month, with an emphasis on personal awareness and action. The new Seas the Day tools and products include the Seas the Day 2006 desktop calendar, with a new look and conservation content for each themed month.
http://www.theoceanproject.org/seas_the_day/

Seas the Day Conservation Calendar
The Seas the Day conservation education and action calendar is available from The Ocean Project. It helps one strengthen their connection with our ocean through inspiring underwater imagery and monthly tips on simple ways to take action. The calendar is available at wholesale rates for Ocean Project Partners and their staff.
http://seastheday.theoceanproject.org/seastheday/order/index.htm

Seas the Day Initiative
The Ocean Project, together with SeaWeb, launched *Seas the Day* to promote awareness and elevate importance of the ocean, and also to encourage people to take action to makes a difference for the health of our ocean planet. The initiative will include development of mission-driven products. The first product is a monthly calendar. www.TheOceanProject.org .

Seas the Day Water Conservation
Seas the Day focuses on a different conservation theme each month, providing inspiration and information for taking conservation personally; August's theme is *water conservation*. The website offers useful background materials and links along with specific actions we can do to promote sustainability of our ocean resources. Check out the colorful Seas the Day Desktop Calendar as a promotional item for your organization. http://seastheday.theoceanproject.org//2006/august.htm

Seascapes: Getting to Know the Sea Around Us
Quebec-Labrador Foundation's Marine Program offers this guide describing the process for developing a comprehensive compendium of information about coastal marine areas in the Gulf of Maine. Included is a description of each of the basic physical, biological, and socio-economic components that together create a unique identity for any nearshore area in this region.
http://www.qlf.org/publications/seascapes.html

Seashells: the Plainness and Beauty of Their Mathematical Descriptions
Jorge Picado of the Universidade de Coimbra recently looked into the question of how seashells grow, and offers this very math-focused article. The author illustrates that many aspects of the growth of plants and animals may be described by simple mathematical laws.
http://mathdl.maa.org/mathDL/23/?pa=content&sa=viewDocument&nodeId=3294

Seashore Survivors eField Trip
The Alaska SeaLife Center launched *Seashore Survivors*, a virtual tour of Alaskan intertidal invertebrates. The tour focuses on the adaptations that intertidal animals need to brave the surf, tides, and predators. In addition to the virtual tour, students can submit their questions for scientists to answer, and teachers can download a trip journal for their students to complete as they follow the tour.
http://www.efieldtrips.org/Invertebrates/index.htm .

SeaTrek
SeaTrek brings multimedia science programming right into the classroom using videoconferencing and Internet technology. These programs feature scientists working in the field with interviews showing how their interests led them to their careers. Each program is supported by a free, downloadable, companion curriculum, aligned with National and Sunshine State Science Education Standards, hosted on the Mote website.
http://www.seatrek.org/

Seaweek
The Marine Education Society of Australasia runs a national themed Seaweek each year. The website hosts many downloadable materials and other resources. Check out the resources on the decline of sawfish, bycatch, sharks, ocean cultures, and much

more. There are lesson plans, puzzles and games, information sheets, and useful links for more information.
http://www.mesa.edu.au/seaweek.asp

SeaWinds Scatterometer
One of NASA's Earth-observing instruments, the SeaWinds scatterometer, Midori 2, transmits radar data to measure wind speed and direction over Earth's oceans. It provides high resolution and broad geographic coverage of ocean wind speed and direction, sea ice extent and properties of Earth's land surfaces.
http://winds.jpl.nasa.gov

SeaWorld Educational Resources
The SeaWorld website has books, teacher's guides, and videos both for sale through our catalog and free online. The down-loadable teacher guides include Shark, Splash of Math, Whales, and many more. The kids' Fun Zone includes song books, stories and activities. There is also a toll-free number or "Ask Shamu" email that students and teachers can contact with questions about animals.
http://www.seaworld.org/education-programs/index.htm

SECORE Website
Focusing on sexual reproduction of reefbuilding corals around the world, SECORE (SExual COral REproduction) provides tools for live stock management in public aquaria. They promote cooperation between top scientists in coral reproduction biology and related fields.
http://www.secore.org/

The Secret Lives of Wild Animals
Scientists are developing innovative tracking and information-management technologies to unobtrusively follow the movements of wild animals. Multidisciplinary teams of biologists, computer scientists, and engineers are observing and tracking animals in their natural environment to learn exactly how animals spend their minutes, days and years. The website hosts video downloads of some of the research undertaken to track dragonflies, deals, deer, and others, along with additional information.
http://www.nsf.gov/news/special_reports/animals/index.jsp

Secrets of the Gulf Expedition
Dr. Robert Ballard and a team of scientists will be exploring the Gulf of Mexico in and around the Flower Garden Banks National Marine Sanctuary as part of the Secrets of the Gulf expedition. From March 4-9, 2007, researchers on board the submarine support vessel and at various consoles around the country will be following live video feeds from the Argus ROV, and these will be available on the Oceans Live website.
http://www.oceanslive.org/
http://flowergarden.noaa.gov
http://sanctuaries.noaa.gov/missions/
http://immersionpresents.org
http://flowergarden.noaa.gov/document_library/sci_documents.html

See the New Bridge
The Bridge, with over 1000 teacher-reviewed websites and new, easy-to-use navigation, features an updated look. Ocean science educators will find dynamic resource pages, a more powerful search engine, and mouse-over navigation menu.

http://www.marine-ed.org/bridge

Semester of Service Strategy Guide
Youth Service America's (YSA) Semester of Service Strategy Guide provides instructions on planning and implementing semester-long service-learning projects. The guide is designed to complement the many other resources available from YSA, including the Service-Learning Curriculum Guide, Project Planning Toolkit, Classroom Poster, and more.
http://www.semesterofservice.org/

SE-PORT Ocean Awareness Days from SouthEast COSEE
The South East Portal to Ocean Research for Teachers (SE-PORT) is an initiative from the SouthEast Center for Ocean Sciences Education Excellence (SouthEast COSEE). The targeted region includes Georgia, North Carolina and South Carolina. SE-PORTs are partnerships between SouthEast COSEE, an informal education institution (e.g. aquarium, science center), and the teachers who participate in the SouthEast COSEE Ocean Sciences Education Leadership Institutes.
http://www.scseagrant.org/se-cosee/partners.htm .

Service-Learning: Education Beyond the Classroom
The EPA offers *Service-Learning: Education Beyond the Classroom*, describing seven environmental conservation projects that schools and community groups have conducted with elementary school-aged youth. The document includes additional projects for middle and high school youth, as well as a list of partnering national organizations.
http://epicenter.nationalserviceresources.org/index.taf?_function=abstract&Layout_0_uid1=33334

Seven Essential Principles for Ocean Literacy
Dolphin Quest supports ocean literacy and offers *Seven Essential Principles for Ocean Literacy: An Activity Guide for Educators*. This activity guide is the first in a three volume series that will help teachers and informal educators for grades K-12th embrace the Ocean Literacy Principles and put them into practice in their curriculum. This initial volume includes an introduction to the importance of the principles in curriculum, and each chapter includes the fundamental concepts of that principle and a summary of how to put them into use in classrooms, including highlights from the National Science Education Standards scope and sequence matrix. This guide has 28 activity-based lessons, one for each grade group for each of the seven principles. Each lesson has fundamental concepts, National Education Standards, Hawaii Content Performance Standards and Bermuda Science Standards identified for the principle. Future volumes will be produced in 2007 and 2008.
http://dolphinquest.org/learningquest/school/school_programs.php?ID=177471150

Shamu TV
Shamu TV is an environmental education series from the SeaWorld and Busch Gardens Worlds of Discovery. Each 30-minute episode features stories about animals and the efforts of people working together to save them. Information includes biology, ecology, and more. The website includes downloadable teacher's guides, classroom activities, podcasts, and more.
http://www.shamutv.com/education-resources/shamu-tv/index.htm

The Shape of Life
Public Broadcasting System (PBS) hosts the Shape of Life website, which features activities, explorations, and experiments for K-12 formal and informal educators, students, and families. The website includes a downloadable activity guide, critter cards, and background material. Activities include "Can snails smell?" and how to make a jellyfish or brittle star.
http://www.pbs.org/kcet/shapeoflife/resources/index.html

Shark Conservation Blog
Shark Week on the on Discovery Channel has changed over the years, and this year they teamed up with the Ocean Conservancy to get the word out on the plight of sharks. The online blog topics include a look at the weird and wonderful Greenland shark, a campaign by Sherman's Lagoon cartoonist and shark advocate Jim Toomey, and a review of vital rules that can help save some of the hardest hit shark species in the U.S. from overfishing. Check out the related links to a virtual shark dive and more.
http://discovery.blogs.com/shark_conservation/

Shark Tagging Through Project Oceanica
Charleston Bump research conducted in 2003 includes tagging and tracking of oceanic sharks using satellite tags. Tagging results will be transmitted by satellites and posted on the Project Oceanic website. Students e-mailed questions to the shipboard and laboratory researchers and the results are posted on the web. Student activities and other information are also posted.
http://oceanica.cofc.edu/SharkTagging/Home.htm

Shark Week – North Carolina
The North Carolina Aquariums will celebrate Shark Week, July 26-August 1, 2009, at all three facilities: Roanoke Island, Pine Knoll Shores, and Fort Fisher. Activities throughout the week will reveal the mysterious and misunderstood world of sharks. Contact each site for information about Shark Week activities at their facility.
http://www.ncaquariums.com/

Sharkwater
The film *Sharkwater*, to be released in U.S. theaters this September, takes the viewer into shark waters of the world, exposing not only the direct exploitation of sharks, but also the corruption that surrounds this issue. Filmmaker and biologist Rob Stewart is eager to reach out to the public and speak to groups about the plight of sharks and his filming adventures. He will be making a cross-country promotion/publicity tour and is interested in scheduling outreach opportunities. Check out the website for educational materials, and contact Mike Schram for tour information.
Contact Mike Schram at mike@sharkwater.com
http://www.sharkwater.com/index.html

Sharkwater at the International Fishing Hall of Fame
The documentary *Sharkwater* will be shown daily courtesy of the International Game Fish Association starting October 21, 2007, beginning with a special kick-off event. From October 2007 through March, 2008, an interactive and educational exhibition based around shark conservation will be featured in the museum's changing gallery; a shark adaptations lab will be available for students in kindergarten through high school; and a monthly lecture series will feature local and national shark experts.
http://www.igfa.org/sharkwater.asp

Sharks 3D IMAX Film
Sharks 3D is a new IMAX film that was shot on location in Mexico, Colombia, Egypt, South Africa, Mozambique, USA, and French Polynesia. The website has a trailer and a list of theatres showing the film. There are also downloadable educator and companion guides with background material and activities.
http://www.sharks3D.com

Shedd Aquarium Activity Guides
The Shedd Aquarium offers several Activity Guides as downloadable files. The topics include Coral Reefs, Fishes, Oceans, and more.
http://www.sheddaquarium.org/teacher_resources.html

Shedd Educational Adventures
The online, searchable, Shedd Educational Adventures (SEA) contains aquatic science resources for K-12 teachers and students. SEA brings the Philippines to life with fact sheets and multimedia interactives based on the Wild Reef exhibit at the Shedd Aquarium. Materials include lesson plans, interactives, and explorer guides – fact sheets about plants, animals, people, and places. Many materials are also available in Spanish. Check out the education link (top of the page) and follow it for teachers.
http://www.sheddaquarium.org/sea/

Shifting Baselines
The Ocean Conservancy is partnering with other organizations, scientists, and filmmakers to produce Public Service Announcements, slide shows, and other multimedia resources to communicate some of the issues involved in ocean resources declines and the shifting baseline phenomena. All materials may be downloaded from the website. Both English and Spanish versions are available.
http://www.shiftingbaselines.org/index_site.html#

Ships and Ports and the Marine Environment
The Australian Marine Environment Protection Association offers new educational materials for middle school students, *Ships and the Marine Environment* and *Ports and the Marine Environment*. These two education packages are student focused, highly adaptable within current pedagogy, and consist of student research information and activities and teacher notes.
http://www.ausmepa.org.au/other.asp?pageId=13

Shipwreck Trail Photo-Mosaic Mission
The National Marine Sanctuaries posts mission logs from the recent Shipwreck Tail Photo-Mosaic Mission in the Florida Keys National Marine Sanctuary. See how NOAA archaeologists document shipwrecks dating back to 1733. The project is creating photo-mosaics of five shipwrecks that will provide valuable archaeological data, serve as a baseline to gauge the affects of severe weather and human impacts on these historic treasures over time, and provide outreach on the maritime heritage of the Keys.
http://sanctuaries.noaa.gov/missions/2006fknms/

Shipwrecked
In *Shipwrecked!*, students learn about the causes and results of many different shipwrecks along the west coast of the United States and how these accidents have shaped the maritime activities of today. By plotting shipwrecks on charts, students will

be better able to visual the high traffic, and often most dangerous, areas of the coastal U.S.
http://www2.vims.edu/bridge/DATA.cfm?Bridge_Location=archive1200.html
http://www.marine-ed.org/bridge

Shorebird Management Listserve
A monitored shorebird management listserve, a cooperative partnership of the U.S. and Canadian Shorebird Conservation Plans and maintained by the U.S. Fish and Wildlife Service, provides users with: a forum to discuss approaches to managing shorebird habitats and discuss regional-scale projects; information on shorebird management resources; answers to specific questions; and technical advice on monitoring shorebirds.
Brad_Andres@fws.gov

Shorebirds of the Pacific Flyway eField Trip
The U.S. Fish and Wildlife Service offers schools nationwide the opportunity to participate in an eFieldTrip titled, "Shorebirds of the Pacific Flyway: Who Are These Olympic Flyers?" The trip is designed to help students learn about what a shorebird is and how to identify shorebirds of the Pacific Flyway.
http://www.efieldtrips.org/Shorebirds/index.htm .

Shorebird Sister Schools Program
The Shorebird Sister Schools Program is an Internet based environmental education program that connects students, educators, biologists, and birding enthusiasts along migratory flyways. The program includes three key components: K-12 curriculum, email network, and web site. A webcast on April 7, 2003 explored shorebirds, their migration, and the Shorebird Sister Schools Program.
http://sssp.fws.gov

Shoreline Trash: Studies at Padre Island National Seashore
For advanced students interested in pursuing more exploration of the problem of marine debris, the National Park Service published a comprehensive study: *Shoreline Trash*: *Studies at Padre Island National Seashore, 1989-1998.*
phyllis.dermer@noaa.gov

Shortcuts Comics
Shortcuts comic pages come out in many newspapers across the country each weekend. Each comic features well-researched information delivered in a kid-friendly style. Older issues are available as posters for sale and include topics of interest such as fish, clouds, and more; some include a short teacher guide. The November 7, 2005 issue was about Humpback Whales and was created with assistance from the Hawaiian Island Humpback Whales National Marine Sanctuary. More to come of interest.
http://www.comics.com/shortcuts/

Skyeye Weather Teacher's Corner
Skyeye Weather is a weather consulting, education, and career development firm. Their Teacher's Corner website has helpful weather information links plus information on weather-related topics for teachers and students. It also includes science experiments and weather education background information. For elementary students, Puffy-Q answers basic weather questions.
http://www.skyeyeweather.com/learn.html .

Simple Steps
The Natural Resources Defense Council offers *SimpleSteps.org, Green Living by NRDC*, designed to help people who are looking for easy, environmentally friendly actions they can take every day to protect their health, their home, and the planet. Visitors can read topic suggestions that may take a minute, morning, or month to implement. They can also post their experiences and additional tips through a blog that acts as an archive of topics and comments.
http://www.simplesteps.org/

Six Degrees to the Ocean
An Ocean Conservancy website takes the "six degrees of separation" concept and marries it with the ocean. The theory is that any headline appearing in the news can somehow relate back to the ocean within six steps of connection. The activity illustrates just what a small world we live in and how integral the ocean is to our world.
http://www.oceanconservancy.org/site/News2?page=NewsArticle&id=10981

SLO Take Back Program
The San Luis Obispo County Integrated Waste Management Authority announces the implementation of the *SLO Take Back Program* for household batteries, fluorescent tubes, and compact fluorescent light bulbs. Nearly every retailer throughout San Luis Obispo County who sells household batteries or fluorescent tubes and compact fluorescent bulbs will now take those items back from the public for free. Consumers who want to shop green can now safely and easily recycle these products.
http://www.iwma.com/directory-aj/fluorescent%20tubes%20and%20bulbs.html

Sloan Career Cornerstone Center
For students wanting a wider view of science careers, the Sloan Career Cornerstone Center can help students explore the fields of science, technology, engineering, mathematics, and computing. This site provides many resources, including an interview database of professionals working in these areas. Some of the career profiles include hydrogeologist, micropaleontologist, weather service administrator, environmental engineers and more.
http://www.careercornerstone.org/forstudents.htm

Smart Consumers Education Module
World Wildlife Fund's latest education module in the Windows on the Wild series, for grades 6-9, is *Smart Consumers: An Educator's Guide to Exploring Consumer Issues and the Environment*. This 300-page toolkit includes an educator's guide with background information, hands-on activities, an annotated list of resources, a Community Action Guide, and more. For more information, check out
http://www.worldwildlife.org/windows/education_guides.cfm#3

Smithsonian Education
Smithsonian Education offers more than 1,200 education resources aligned with standards of learning in every state. Lesson plans emphasize inquiry-based learning using primary sources and museum collections. Check out *Ocean Planet: Interdisciplinary Marine Science Activities*, *Contrasts in Blue: Life on the Caribbean Coral Reef and the Rocky Coast of Maine*, and *Decoding the Past: The Work of Archaeologists*. Students can find games, educational materials, and more through the Students pages, including an on-line satellite photo interpretation activity.
http://www.smithsonianeducation.org/

Smithsonian Folklife Festival
The Smithsonian Folklife Festival, Washington, DC, June 23-27, and June 30-July 4, 2004. One of the festival themes this year is *Water Ways: The Past, Present, and Future of Maritime Communities in the Mid-Atlantic*, celebrating the coastal region stretching from Long Island, New York, through New Jersey, Delaware, Maryland, and Virginia to the Outer Banks of North Carolina. Maritime workers and artisans from 15 communities in these states will come together to demonstrate their skills and share their stories.
http://www.folklife.si.edu/CFCH/festival2004/Festival2004.htm .

Smithsonian Lesson Plans
Smithsonian lesson plans emphasize inquiry-based learning using primary sources and museum collections. Each plan is print-friendly and provides you with all the materials you need—photographs, reproductions, handouts, activities, suggested strategies, standards information, and additional online resources. The searchable database allows you to browse lesson plans by subject area or search by grade levels and keywords. Check out Ocean Planet: Marine Science Activities.
http://www.smithsonianeducation.org/educators/lesson_plans/lesson_plans.html .

Smithsonian Photography Initiative
The Smithsonian Photography Initiative is dedicated to promoting the use of Smithsonian photographic resources (roughly 13 million images located in approximately seven hundred collections). This website offers an online repository of images, a gateway to exhibitions, and more. The images are copyright protected, but fair use of copyrighted material includes the use of protected materials for non-commercial educational purposes, such as teaching and scholarship.
http://www.photography.si.edu/

Society for the Conservation and Study of Caribbean Birds
The Society for the Conservation and Study of Caribbean Birds hosts this new website with information about projects, a downloadable newsletter, links to topics of regional interest, and the Bird of the Month.
www.scscb.org

Society for Historical Archaeology
This website highlights the study of the material remains of past societies that also left behind some other form of historical evidence. The education pages include downloadable lessons along with others that can be ordered for a nominal charge, including *History Beneath the Sea: Nautical Archaeology in the Classroom*. Additional website features include helpful information on careers in archaeology and a guide to programs in historical and underwater archaeology, and more.
http://www.sha.org/

Socioeconomic Website
The Office of National Marine Sanctuaries offers this new website focusing on socioeconomics. The focus on socioeconomic in the sanctuary system aims to provide the best possible social science to give all stakeholders a voice in the management of sanctuary resources and foster a more cooperative management process. The website offers background on socioeconomics, links to information for the Channel Islands, the Florida Keys, and economic valuation in national marine sanctuaries.
http://sanctuaries.noaa.gov/science/socioeconomic

SocMon Global Report
SocMon is an initiative aimed at helping coastal managers better understand and incorporate the socioeconomic context into coastal management programs. The new SocMon Global Report highlights dependence on coral reefs by local communities in developing countries, provides information on perceived threats to coastal resources, and points to the inability of coastal managers to effectively implement decades-old recommendations as a significant barrier to coral reef protection.
http://www.reefbase.org/socmon/

Solar Eclipse Webcast
NASA's Sun-Earth Day team is partnering with the San Francisco Exploratorium to produce a live total solar eclipse webcast and broadcast from China, on August 1, 2008. The website hosts webcasts from previous eclipses going back to 1998 in Aruba, a world map of future eclipses, and links to more information.
http://www.exploratorium.edu/eclipse/

Somewhere Between Yesterday and Just This Side of Tomorrow
This children's coloring/activity book is a story written from the wildlife perspective, with the focus on awareness of polluting our watershed and the damage of Eurasian water milfoil in waterways. It is geared for K-6 with watershed, watercycle, pollution, and identification activities. Vocabulary, word search, and more are included with the story. The book is self-published; you may ask for a sample or order directly from the author. Contact Sherry Cavanaugh at ewmbook@hotmail.com

Song of the Oceans
Gary Bowman offers the CD, *Song of the Oceans*, a compilation of original songs celebrating the ocean world and the variety of creatures that live there. The project also addresses modern day conservation challenges. Visitors can listen to *The Tidepool Stomp, Plastic Island, Where Whales Sing*, and others, read the lyrics, and more.
http://www.songoftheoceans.com/music.html

Song of the Salish Sea
From Earthwise Media, "Song of the Salish Sea: a Natural History of Northwest Waters" includes a printable teachers' guide and tidal pool curriculum for ages 11-14. The Song of the Salish Sea was produced in partnership with the People For Puget Sound. Additional educational videos from Earthwise Media include *Rainbows in the Sea: a guide to Earth's Coral Reefs*, *Life on the Edge: a guide to Pacific Coastal Habitats*, *World Between the Tides: a guide to Pacific Rocky Shores,* and more.
http://www.earthwisevideos.com/Earthwise-Media-Products.htm

Sooty Shearwater Tracking
The www.seaturtle.org website posts the results of satellite tracking of the pelagic seabird, the sooty shearwater. The tracks illustrate the trans-Pacific migration of ten (so far) sooty shearwaters from California to the southern hemisphere. The data is updated every even-numbered day as these birds with satellite tags make their way across the Pacific.
http://www.seaturtle.org/tracking/?project_id=46

Sound Science
Sound Science is a "state of the science" document encapsulating what is known about the greater Puget Sound ecosystem and, given present trajectories and trends, what may occur in the future. Reflecting the collaborative expertise and perspectives of over 30 authors, nearly 100 reviewers, and hundreds of workshop participants, the document emphasizes the linkages and dynamic interplay between human and natural ecosystems.
http://www.nwfsc.noaa.gov/research/shared/sound_science/index.cfm

Sounds of the Southern Ocean
This expedition to Antarctica with researchers from Oregon State University's Hatfield Marine Science Center will be the first attempt of deep-water ROV survey of hydrothermal vents and ecosystems in Antarctica. The deployment of deep-water autonomous hydrophones will record sounds generated by moving ice sheets, undersea earthquakes and volcanoes, even vocalizations from large baleen whales.

NOAA's Pacific Marine Environmental Laboratory's VENTS Program website offers a variety of materials complementary to the expedition. The Acoustic Monitoring Project of the VENTS program section offers on-line multimedia about sound. Other sections provide graphics and information about seafloor geology, bioacoustics, physical modeling, and much more.
Expedition's website: http://hmscblog.blogspot.com/
Vents Program: http://www.pmel.noaa.gov/vents/index.html

Southeast Phytoplankton Monitoring Network
The Southeast Phytoplankton Monitoring Network (SEPMN) is a NOAA-funded harmful algal bloom (HAB) monitoring program based in Charleston, SC. This program is designed to get students and the community involved in science research to help understand HABs and their effects on humans and the environment. Volunteers include elementary, middle, and high school students, colleges and universities, civic groups and environmental organizations, and state and federal research institutions.
http://www.chbr.noaa.gov/CoastalResearch/SEPMN/index.htm

SouthEast Portals to Ocean Research for Teachers
SouthEast Center for Ocean Sciences Education Excellence (SouthEast COSEE), reaches out to the education community with ocean science information in the southeastern region of NC, SC and GA. 12 *SE PORTs* (SouthEast Portals to Ocean Research for Teachers) have been formed in partnerships between SouthEast COSEE, an informal education institution (such as a museum or aquarium), and teachers.
http://www.scseagrant.org/se-cosee

Southwick Associates Reports
Southwick Associates specializes in economic and business statistics related to fish and wildlife. They help natural resource agencies and the outdoor industries understand the retail sales, economic impacts, and other benefits businesses and people receive from wildlife and fisheries. The website offers many downloadable reports and newsletters, including the 2006 Economic Impacts of Hunting and Fishing.
http://www.southwickassociates.com/

Spanish Galleon Trail
The Florida Bureau of Archaeological Research, Underwater Archaeology Program offers their latest website addition, the *1733 Spanish Galleon Trail*, which interprets the sites of thirteen 1733 Spanish shipwrecks along the Florida Keys as destinations for heritage, recreational, and ecological tourism. Descriptions presented here of each shipwreck include its environment, water depth, site plan, photos, and more.
http://dhr.dos.state.fl.us/archaeology/underwater/galleontrail/

Special Days
Sylvan Dell Publishing offers a running calendar of some fun-to-celebrate events on their website. In addition to World Wetlands Day, there is a Cephalopod Awareness Day and even a Festival of Sleep Day. Daily themes include links to appropriate books, ideas, and free activities.
http://www.sylvandellpublishing.com/SpecialDays.htm

Special Days for EE: 2009 Planner
EE in Georgia offers this 2009 planner, identifying special days set aside for Environmental Education.
http://www.eeingeorgia.org/net/content/go.aspx?s=16215.0.68.4863

Special Days for Environmental Education 2005 Planner
Each year there are special days set aside for environmental education. We all know Earth Day is in April, but when is America Recycles Day, Arbor Day, National Wildlife Week, and American Wetlands Month? This web page from EE in Georgia highlights special environmental days.
http://eeingeorgia.org/net/content/item.aspx?s=16215

Special Days
Check out these events to get your students involved in the world around us. The websites have resources, calendars of events, and more.

- ***Earth Science Week***, October 12-18, 2008, whose theme *No Child Left Inside* encourages young people to learn about the geosciences by getting them away from the television, off the computer, and out of doors. Check out the contests. http://www.earthsciweek.org/
- ***International Coastal Cleanup***, September 20, 2008, offers aquatic and community cleanups of all types organized at your nearby stream, river, lake, beach, reef, or other freshwater or coastal habitat. http://www.oceanconservancy.org/site/PageServer?pagename=press_icc
- ***National Estuaries Day***, September 27, 2008, is an annual celebration of the vibrant coastal areas where rivers meet the sea. http://www.estuaries.gov/estuaries101/GetInvolved/Default.aspx?ID=153
- ***Take a Child Outside Week***, September 24-30, 2008, is an international internet-facilitated program that encourages all citizens, particularly children, to participate in outdoor activities. http://www.takeachildoutside.org/
- ***World Water Monitoring Day***, September 18, 2008, is an international education and outreach program that builds public awareness and involvement in protecting water resources around the world by engaging citizens to conduct basic monitoring of their local water bodies. http://www.worldwatermonitoringday.org/

Special Days in June

- **June: National Oceans Month**
- June: American Rivers Month
- June 2-10: National River Cleanup Week http://www.nationalrivercleanup.org/
- June 5: World Environment Day http://www.unep.org/wed/2007/english/About_WED_2007/index.asp
- 8: World Oceans Day http://www.theoceanproject.org/wod/

Special Days in March and April 2005

- March 1: Great American Cleanup from Keep America Beautiful http://www.kab.org/programs.asp?id=291&rid=68
- March 22: World Water Day http://www.worldwaterday.org/
- March 23: World Meteorological Day http://www.wmo.int/wmd/
- April 10-16: National Environmental Education Week http://www.eeweek.org
- April 11-16: Excellence in Science, Technology, Engineering, and Mathematics Education week http://www.esteme.org/
- April 15-17: National Youth Service Day http://www.ysa.org/nysd/
- April 22: Earth Day http://www.earthday.net/

Special May Days, 2007

- May – American Wetlands month - http://www.epa.gov/owow/wetlands/awm/
- May 11 – Endangered Species Day – http://www.stopextinction.org/endangeredspeciesday
- May 12 – International Migratory Bird Day - http://www.birdday.org/
- May 22 – International Day for Biological Diversity - http://www.biodiv.org/programmes/outreach/awareness/biodiv-day-2007.shtml

Species - Electronic Newsletter from IUCN

The World Conservation Union (IUCN) Species Survival Commission electronically publishes two newsletters each year. While *Species* does not focus on marine species and habitat, they are included.
http://www.iucn.org/themes/ssc/species/spec-int.htm

Stabilization Wedges Game

The Carbon Mitigation Initiative is a joint project of Princeton University, BP, and Ford Motor Company to find solutions to the greenhouse gas problem. To emphasize the need for early action, they have created the concept of stabilization wedges – 25 billion ton "wedges" that need to be cut out of predicted future carbon emissions in the next 50 years to avoid a doubling of atmospheric carbon dioxide over pre-industrial levels. This idea is the basis for a new game that can be played by students, teachers, scientists, and others. The website includes background information, descriptions of currently available mitigation tools that have the capacity to reduce future emissions, and materials and instructions for carrying out the game.
http://www.princeton.edu/~cmi/resources/stabwedge.htm

Star Thrower Educational Multimedia

This website from Dr. Bill Bushing includes still images of marine life, archived newspaper columns about marine life with full color images, links to a number of scientific publications on kelp forest ecology research, and more. The images of marine

life on the site may be used by teachers and students in non-commercial educational materials, reports and on web sites if they include a copyright notice.
http://www.starthrower.org/home.htm

State of Coral Reef Ecosystems
The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005 establishes a quantitative baseline of the conditions of U.S. shallow coral-reef ecosystems. Each chapter provides the geographic extent of reef ecosystems; current monitoring and management activities; information on water quality, benthic habitats, associated biological communities, and key threats to ecosystem health; and recommendations for future research and management actions.
http://ccma.nos.noaa.gov/ecosystems/coralreef/coral_report_2005

State of Deep Coral Ecosystems
The State of Deep Coral Ecosystems of the United States, a peer-reviewed report prepared by NOAA's Coral Reef Conservation Program, documents the biology, distribution, and types of deep-sea corals on the continental shelves and slopes of the U.S. including its U.S. Caribbean and Pacific territories. The report may be downloaded from the website; it is also available in print or on a CD.
http://www.nmfs.noaa.gov/habitat/dce.html

State of the Nation's Ecosystems: Annual Update 2003
The first annual update of the 2002 report *The State of the Nation's Ecosystems: Measuring the Lands, Waters, and Living Resources of the United States* has been released by The Heinz Center. The report was published in 2002,with a 20-page chapter on Coasts and Oceans, as well as chapters on five other types of ecosystems. The 2003 update provides access to data on ecosystem conditions that have become available since the full report was published.
http://www.heinzctr.org/ecosystems/report.html .

State of the Salmon
The State of the Salmon is an international consortium that is dedicated to improving understanding of salmon status and trends across the North Pacific and building a knowledge network that can inform salmon conservation and management decisions in the future. The materials on the site include monitoring, data and maps, a glossary, and more. The Data & Maps area features interactive maps that document existing salmon populations and their movements.
http://www.stateofthesalmon.org

State Policies and Programs Related to Marine Managed Areas: Issues and Recommendations for a National System
CSO and the National MPA Center conducted research and interviews related to state level marine managed areas (MMAs) and the potential for future federal/state coordination within a national MPA system. This report characterizes existing MMA policies and programs at the state level; presents the potential implications of the proposed national system of MPAs for coastal states; and proposes recommendations toward national MPA system for consideration by both state and federal officials.
http://www2.mpa.gov/mpa/mpaservices/virtual_library/publications.lasso .

State Resources List
The Environmental Literacy Council is developing state-by-state resource lists of local environmental education centers, parks, museums and natural resource agencies. The site can offer teachers a single place to start planning a field trip, contact experts, and more. The pages are still in development, and your suggestions are welcomed. Send them information about training opportunities, environmental education centers, and good sources of information for your local community.
http://www.enviroliteracy.org/category.php?id=15

State Wetland Program Evaluation: Phase I
The Environmental Law Institute has released *State Wetland Program Evaluation: Phase I*, as the first part of a multi-phased study of state wetland programs across a cross-section of states. This study seeks to analyze seven core areas of state wetland programs, including regulatory programs, water quality standards, monitoring and assessment programs, restoration projects and initiatives, public/private partnerships, education and outreach, and coordination with state and federal agencies.
http://www.elistore.org/reports_detail.asp?ID=11079

Steal This Picture
StealThisPicture.com is an open source photo archive by Michael L. Baird. You can use any picture for personal or non-commercial purpose, with attribution. Pictures include mostly birds, along with some marine mammals and more. While not yet extensive, check it out; you may find just the picture you're looking for.
http://www.stealthispicture.com/

Stetson Bank Monitoring Activity
The Stetson Bank Monitoring Activity from the Flower Garden Banks National Marine Sanctuary is designed to give students a sense of the real-life science being used to monitor habitats in the sanctuary. By comparing photos from year to year they can evaluate the changes taking place on the reef. The website hosts the downloadable activity and photos.
http://flowergarden.noaa.gov/image_library/stetsonimages.html

Stop Disasters Game
A pilot online game from the U.N.'s International Strategy for Disaster Reduction aims to teach children how to protect cities and villages against natural hazards through disaster risk planning and management. The game includes five natural hazard scenarios (flooding, tsunami, wildfire, hurricane, and earthquake) with different levels of difficulty that require critical decision-making and strategic planning. Players assess risk, build and house the local population, and assign roles.
http://www.stopdisastersgame.org

Stop Faking It! Air, Water, and the Weather
Air, Water, & Weather shares the same goal as the other five titles in his award-winning NSTA Press *Stop Faking It!* series. Its content, style, and tone are designed to help every educator who is intimidated by science but tired of relying on avoidance strategies when teaching—including science teachers, homeschoolers, and parents who want to help with homework. The book includes explanations, drawings, and activities that use easy-to-find materials.
http://store.nsta.org/showItem.asp?product=PB169X6

Strange Days on Planet Earth
Strange Days on Planet Earth is a four-part series from PBS. The segments include Invaders, The One Degree Factor, Predators, and Troubled Waters. Materials available from the website include downloadable classroom activities geared for each segment and a glossary; check out the *For Educators* link.
http://www.pbs.org/strangedays/

STRAW Project
A Project of The Bay Institute and partners, The Students and Teachers Restoring A Watershed (STRAW) Project coordinates and sustains a network of teachers, students, restoration specialists, and other community members as they plan and implement watershed studies and restoration projects in Marin and Sonoma counties. STRAW provides teachers and students with the scientific, educational, and technical resources to prepare them for hands-on watershed studies, including restoration projects.
http://www.bay.org/watershed_education.htm

Stream to Sea
The Canadian Fisheries and Oceans' Stream to Sea program envisions students and educators in the Pacific region that are well-informed on aquatic ecosystems, motivated by a stewardship ethic, and contribute to the health and sustainability of their community. The website offers free lesson plans (including *Salmonids in the Classroom*) along with associated background material and student handouts for primary, intermediate, and secondary grades. Other activities and resources are also listed.
http://www-heb.pac.dfo-mpo.gc.ca/community/education/eduintro_e.htm

Student Biological Monitoring Programs
This document, published in 2004, identified and described environmental monitoring programs that involve K-12 students to monitor plant and animal species in the United States. The list is currently being updated and will be posted on the website when complete.
Contact Lynna Kaucheck at lynnakaucheck@yahoo.com
http://www.extension.iastate.edu/naturemapping/Teacher%20Materials/Monitoring_Programs.pdf

Student Experiments at Sea
Join the Student Experiments At Sea (SEAS) through a virtual cruise to the hydrothermal vents of the East Pacific Rise from April 23 - May 14, 2005. SEAS is a program for middle and high school students interested in learning science by participating alongside deep-sea scientists. Follow along with the cruise through the daily log and learn about science at sea. The website includes a teacher resource guide and much more.
http://www.ridge2000.org/SEAS/

Student Monitoring Project Catalogue
Lynna Kaucheck has compiled a listing of biological monitoring projects that allow students as volunteer monitors. Contact her for a copy of the pdf file.
Contact Lynna Kaucheck at lynnakaucheck@yahoo.com

Submarine Ring of Fire
NOAA's Ocean Explorer has launched The Submarine Ring of Fire 2006 expedition website. An international team of scientists will explore the submarine volcanoes lying

along the Mariana Arc from April 18–May 13, 2006. Located in some of the deepest parts of the Pacific Ring of Fire, explorers aboard the *R/V Melville* will focus on interdisciplinary investigations of hydrothermal and volcanic processes on the submarine volcanoes along the Mariana Arc.
http://oceanexplorer.noaa.gov/explorations/06fire/welcome.html

Submerged Cultural Resource Management on the Last Frontier
Nearly one-half of the United States ocean coastline falls within the boundaries of the state of Alaska. Home for thousands of years to indigenous maritime Aleut, Eskimo, and coastal Indian cultures, Alaska and its people, past and present, have inextricable links with the sea. Discover Alaska's submerged heritage with a report from a scientific expedition to collect information on several historic shipwrecks in Southeast Alaska. The website includes background materials, photos, and a video clip.
http://oceanexplorer.noaa.gov/explorations/06alaska/welcome.html

Successful Partnering Helps Stranded Dolphin
Coastal America facilitated a successful joining of two of their partners for the return a stranded rough-tooth dolphin to the wild. The Texas State Aquarium, a Coastal Ecosystem Learning Center (CELC), spent the past year rehabilitating Noah at its SeaLab facility. Through the Texas CELC partnership with Coastal America, an Air Force AC-130j Hercules crew from Keesler AFB, Mississippi flew Noah safely through a thunderstorm to the pod in Panama City, Florida on July 15, 2005.
Contact Marguerite Duffy at Marguerite.Duffy@usda.gov
www.coastalamerica.gov/

SUNY-ESF Educational Resources
The State University of New York's College of Environmental Science and Forestry offers educational units for middle and high school teachers and students free to educators. Materials include Onondaga Lake Educational Unit, Environmental Analysis of Watersheds, and more.
http://www.esf.edu/outreach/k12/res.htm

Survey and Questionnaire Tutorial
The StatPac group offers a tutorial which teaches how to conduct a survey and design a questionnaire. Learn the latest survey research techniques, what works and what doesn't. The tutorial addresses how to maximize survey response rates and design a questionnaire that gets at the true opinions of your sample.
http://www.statpac.com/surveys/

Survey Results on Public Attitudes about Natural Resources
Responsive Management is a public opinion and attitude survey research firm specializing in natural resource and outdoor recreation issues. The website posts a wide variety of survey results, including studies on how the general population values natural resources and outdoor recreation and their opinions on and attitudes toward an array of natural resource-related issues. Select "Natural Resources & Outdoor Recreation Research" from the left side of the webpage.
http://www.responsivemanagement.com/

Sustainability Education Resources from Facing the Future
Facing the Future: People and the Planet is a non-profit organization providing teachers, students, and the public with global issues education and action opportunities to shape

our future. Their programs include curriculum development, teacher workshop, service learning opportunities and more.
http://www.facingthefuture.org/About/index.htm

Sustainability Lesson Plans
The Center for a Sustainable Future website includes lessons on land use patterns, ozone and particulates, fossil fuels and global warming, usable water, along with other topics related to designing sustainable communities.
http://csf.concord.org/esf/index.php?module=curriculum&type=unit&func=view&order=theme

Sustainability in New Zealand
Learn about the *Kaitiakitanga* (safeguarding the future) educational and environmental restoration programs; *Tipu Ake*, self-help resources for leadership development, organizational transformation, and sustainability; and Enviroschools in New Zealand.
http://www.kaitiakitanga.net/
http://www.tipuake.org.nz/
http://www.enviroschools.org.nz/

Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks
Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks is a report of the Marine Aquaculture Task Force, published in January, 2007. The Marine Aquaculture Task Force consisted of scientists, legal scholars, aquaculturists, and policy experts, whose mission was to examine the status and trends in marine aquaculture and to recommend standards and practices for U.S. marine aquaculture to protect the health of marine ecosystems.
http://www.pewtrusts.org/pdf/Sustainable_Marine_Aquaculture_final_1_07.pdf

Sustainable Sites Initiative
The Sustainable Sites Initiative is an interdisciplinary effort to create voluntary guidelines and performance benchmarks for sustainable land design, construction, and maintenance practices. Similar to the LEED certification process for buildings, the initiative attempts to create a system to guide and develop sustainable landscapes in concert with sustainable and green buildings. A draft of the Sustainable Sites Initiative Guidelines and Performance Benchmarks is downloadable from the website.
http://www.sustainablesites.org/

Sustainable Sushi Guide
Monterey Bay Aquarium's Seafood Watch program has launched a new guide to sustainable sushi. Check it out online or order a copy.
http://www.montereybayaquarium.org/cr/cr_seafoodwatch/sfw_sushi.aspx

Sustainable Tourism
The Rainforest Alliance provides information about sustainable tourism on their website, including the second edition of the *Guide to Best Practices for Sustainable Tourism* and the *Directory of Best Practices, Certification and Codes of Conduct for Sustainable Tourism.* The guide was developed to help community businesses and small and medium-sized entrepreneurs adopt specific actions to use sustainable tourism practices in their operations. Additional links and information are also provided.
http://www.rainforest-alliance.org/programs/tourism/certification/index.html

SustainLane
SustainLane is a website designed for state and local government officials to exchange best practices in sustainability and network among peers. Categories include climate change policy, water/wastewater, parks/open space/habitat, and more. The website offers a secure directory of government officials.
http://www.sustainlane.us/home.jsp

Sylvan Dell Books
Sylvan Dell Publishing creates picture books that excite children's imaginations, are artistically spectacular, and have educational value. Every book contains an educational section, with the website offering extensive book previews and teaching activities. *Ocean Seasons* look sat the differences between undersea seasons. Explore a world of blue crabs, terrapin turtles, river otters, dolphins, oysters and periwinkle snails through *A Day in the Salt Marsh*. Additional books cover turtles, the rain forest, octopus, and more.
http://www.sylvandellpublishing.com/

Tagging of Pacific Predators
Tagging of Pacific Predators is a project that is putting satellite tags on thousands of the Pacific Ocean's top predators. The website features animated maps of migrating species. Additional features include videos; ask-a-researcher; stories about the research, the animals, and the scientists; and more. The site will offer education modules for each species.
http://www.topp.org

Take a Cloud Walk
Take a Cloud Walk, a Take a Walk book by Jane Kirkland, is available as a free pdf download. In this full-color, 30-page book, readers learn the basic names and shapes of clouds, why they move, why they are white, how they affect climate change, the difference between weather and climate, and weather terms and conditions such as hail, lightning, and fog. Before downloading, browse the rest of the No Student Left Indoors website for other materials.
http://www.nostudentleftindoors.com/

Take Pride in America
The Take Pride in America partnership is dedicated to installing a sense of volunteerism and good stewardship in all public land users, promoting volunteerism and other civic-minded programs through a wide variety of organizations and initiatives. The website includes a volunteer opportunity search engine, upcoming events, information kits, award opportunities, and more.
http://www.takepride.gov/index.cfm

Taking Action on Climate Change
This Government of Canada website has student and teacher resources to learn about the science, impacts, and adaptation to climate change and how you can take action by reducing greenhouse gas emissions. Through maps, graphs, and clear text, users can learn the basics of climate change and the greenhouse gases. The site also includes links to other resources.
http://www.climatechange.gc.ca/english/default.asp

Talking Biodiversity: Getting the Message Across
The Royal Society for the Protection of Birds (RSPB) has recently released a report entitled *Talking Biodiversity: Getting the Message Across*. This publication is part of an RSPB project which has explored different approaches and ideas that could help biodiversity specialists strengthen their communications strategies. Five articles highlight a range of issues, including the historical factors that continue to affect the rights of indigenous peoples, the roles of scientists and journalists, and more.
stella.rumbles@rspb.org.uk

Tapping America's Potential
Leading business groups have launched a website to promote a math and science education initiative which seeks to make improvements to math and science education a national priority and a key component of U.S. competitiveness. The website provides state-specific information on STEM education, links to key reports, results of public opinion research on competitiveness and innovation, and more.
http://www.tap2015.org

Targeting Outcomes of Programs
Targeting Outcomes of Programs focuses on outcomes in planning, implementing, and evaluating programs. It is based on Bennett's hierarchy, which integrates program evaluation within the program development process. The model uses this framework to target specific outcomes in program development and then to assess the degree to which the outcome targets are reached. This website offers extensive information to help your program planning. It is available in English, Spanish, Russian, and Chinese.
http://citnews.unl.edu/TOP/english/contentsf.html

Teach the Earth
Teach the Earth, from the Science Education Resource Center at Carleton College, offers hundreds of teaching activities, visualizations, and other resources for teaching earth science. Categories include biosphere, climate change, energy/material cycles, hydrosphere and cryosphere, ocean systems, and more. Special sections are provided on using data and teaching quantitative skills.
http://serc.carleton.edu/index.html

Teacher Day at NAAEE
Teacher Day is October 18, 2008 at the NAAEE Annual Conference, with teacher-focused breakouts designed specifically for their needs. Teachers are offered resources and the chance to meet with providers, make new contacts, and find information and materials to help students learn about the environment in exciting new ways. There will be dozens of other sessions on how to make teaching more effective using the environment as an integrating context for learning.
http://www.naaee.org/conference

Teacher At Sea Program
Join NOAA's *Teacher at Sea Program*, August 26-September 26, 2003, as they crossed the equator while servicing the TAO/TRITON buoy array in the equatorial Pacific Ocean. This array is critical to our understanding of El Niño and for monitoring the dynamics of our oceans. There are webcasts, videos, and opportunities for teachers on future voyages.
http://www.tas.noaa.gov

Teacher at Sea and in the Air Books
NOAA's Teacher at Sea program gives teachers the opportunity to participate in oceanic and atmospheric research with scientists aboard NOAA ships. A book called *Teacher at Sea*, written by an 8th grade teacher and designed for middle school students, is now available, focusing on research conducted during the 2004 Teacher at Sea cruises. The book includes science and math activities as well as terminology. A second book called *Teacher in the Air* is also available. Free single copies of the books are available. Contact noaa-outreach@noaa.gov

Teacher-at-Sea Children's Books
The first book in the Teacher-at-Sea series focuses on oceanographic and atmospheric research, while the second addresses hurricane research. The final book will address fisheries research. The hard-cover books are written at the middle school science level and include science and math activities, glossaries of terms, and full-color images. Daily logs from the 2007 field season voyage are posted on the website, along with questions for both geospatial and environmental science students.
http://teacheratsea.noaa.gov/

Teacher Loan Forgiveness - The Taxpayer-Teacher Protection Act
Teachers who teach math, science, or special education and who have taught for five years in a Title I school may be eligible for new loan forgiveness limits.
http://www.ed.gov/teachers/how/tools/initiative/updates/2005/0124.html

Teacher Tax Deduction for Classroom Expenses
The recent tax legislation signed into law by President Bush includes an extension of the tax deduction for teachers for the first $250 "out-of-pocket" expenses spent on instructional materials and classroom supplies. Remember to keep receipts for classroom materials purchased so that you can take the deduction come tax time.
http://www.nea.org/lac/edtax/index.html

Teacher to Teacher Initiative
The U.S. Department of Education's Teacher-to-Teacher Initiative is helping teachers strengthen their skills by increasing their opportunities to engage in frequent professional development. It provides convenient access to free professional development activities and keeps teachers informed of new policies and best practices vital to their craft. The initiative offers online digital workshops, an e-learning website, and teacher-to-teacher workshops.
http://www.ed.gov/teachers/how/tools/initiative/index.html

TeacherTube
Hoping to fill a need for a more educationally focused, safe venue for teachers, schools, and home learners, TeacherTube provides an online community for sharing instructional videos. It can provide anytime, anywhere professional development with teachers teaching teachers. In addition, teachers can post videos designed for students to view in order to learn a concept or skill. Check out the Mystery of Earth's Tides, Ocean Life images, and more.
http://www.teachertube.com/

Teacher Under the Sea
The Aquarius Reef Base Undersea Laboratory will be conducting a special science mission from November 11-20, 2009. The *Teacher Under the Sea Mission* will feature a

classroom science teacher embedded in the mission's undersea crew. The broadcasts events, lesson plans, blogs, and archived media will be available on the website so that teachers may access them at times convenient for their classes. Live webcams are available during all missions.
http://www.uncw.edu/aquarius

Teachers Ask the Secretary
The U.S. Department of Education recently launched *Teachers Ask the Secretary*, a new feature of its website (http://www.ed.gov). According to U.S. Education Secretary Margaret Spellings, "This easy-to-use page will help teachers learn answers on a wide range of subjects: teacher quality, professional development, state academic standards, and more. We will share best practices and success stories under the No Child Left Behind Act. And we will listen to your concerns."
http://www.ed.gov/teachersask

Teachers' Corner
The Teachers' Corner website, hosted by the Great Lakes Commission through the Great Lakes Information Network, is a web-based clearinghouse for Great Lakes and fisheries K-12 education resources. All educational materials included on the site have been professionally reviewed, and many provide free lessons correlated to Michigan Science Benchmarks. Other features include a chart to compare materials side-by-side, links to relevant resources and organizations, and a discussion forum.
http://teach.glin.net/teachers

Teachers' Domain Available through netTrekker
Teachers' Domain, from WGBH Educational Foundation offers collections and courses to help teachers enhance their students' learning experiences and their own teaching skills. The collections include classroom-ready multimedia resources for use in lessons or independent study; the professional development courses utilize many of the same resources along with videos of exemplary classroom practice. Thinkronize, developer of the netTrekker suite of safe educational search products, and Teachers' Domain have partnered to provide netTrekker subscribers with access to Teachers' Domain multimedia content for teachers and students.
http://www.teachersdomain.org/
http://www.nettrekker.com/

Teachers' Domain Resources
Teachers' Domain introduces Open Education Resources. Download, share, or re-mix video segments, interactive activities, and lesson plans. The materials let you shape and adapt content to meet your teaching needs. Resources include biogeochemical cycles, natural resources, ecosystems, ocean characteristics, climate, and much more.
http://www.teachersdomain.org/

Teachers Network
The Teachers Network is an alliance of education professionals dedicated to disseminating best-practices throughout the world of public school education. Visitors can find lesson plans, essays by current teachers on their own experiences, and also search a list of grants available to those working in a number of disciplines, including social studies, language arts, and the sciences. The lesson plans are searchable by subject, grade level, and through key word searches.
http://www.teachnet.org/

Teaching Boxes
Teaching boxes are instructional units created by collaboration between teachers, scientists, and designers. Each box helps to bridge the gap between educational resources and how to implement them in the classroom. The Teaching Boxes contain materials that model scientific inquiry, allowing teachers to build classroom experiences around data collection and analysis from multiple lines of evidence. Titles include *Essentials of Weather, Feeding Frenzy: Seasonal Upwelling*, and more.
http://www.teachingboxes.org/

Teaching Boxes from the Digital Library for Earth System Education
Two Teaching Boxes are available for downloading: *Evidence for Plate Tectonics*, and *Essentials of Weather*, with interrelated learning concepts, digital resources, and cohesive narration that helps bridge the gap between individual resources and understanding. Additional Teaching Boxes on ocean and earthquake-related topics are currently under development.
http://preview.dlese.org/jsp/teachingboxes/

Teaching Geologic Map Interpretation with Google Earth
The Structural Geology Resources Collection at Carleton College presents an online tutorial, Teaching Geologic Map Interpretation with Google Earth. Resources in this collection include the non-traditional approach for using Google Earth to teach strike, dip, and geologic map interpretation, along with assignments and activities, a geologic map interpretation activity for structural geology using Google Earth, and more.
http://serc.carleton.edu/NAGTWorkshops/structure/teaching_geo_map_interp.html

Teaching the Poetry of Rivers
The Colorado Foundation for Water Education offers online lesson plans for teachers that address the interdisciplinary study of watersheds, and assist students with submissions to the River of Words Poetry Contest. These self-paced lesson plans integrate culture, history, poetry, and watershed science.
http://cfwe.org/row.asp .

Teaching with Historic Places
Teaching with Historic Places offers a series of classroom-ready lesson plan which use historic sites to explore American history, downloadable from the website. Each lesson includes maps, readings, and photographs, all of which are accompanied by questions. At the end, activities pull together the ideas students have just covered and require them to initiate their own research. There are twelve lessons included under maritime history.
http://www.cr.nps.gov/nr/twhp/descrip.htm

Teachers' Domain Multimedia Digital Library
WGBH, through funding from NSF, provides a digital library of multimedia for teaching and studying life sciences, including ecology and ecosystems, evolution, adaptation, genetics, and more. It includes broadcast clips and video modules from programs such as NOVA, A Science Odyssey, and ZOOM; interview segments; out-take footage; and interactive web-based activities, along with contextual information for teachers.
http://www.teachersdomain.org

Teachers' Grab Bag
As the school year starts, don't forget that the National Science Teachers Association's Teachers' Grab Bag is available with free access on the Internet. You can find free and almost free items such as videos, publications, CD-ROMs, lab kits and more.
http://www.nsta.org/resourcesgrabbag

Teaching Green: The Middle Years and The Elementary Years
Teaching Green: The Middle Years, Hands-on Learning in Grades 6-8 and the separate *Teaching Green: The Elementary Years, Hands-on Learning in Grades K-5* contain best teaching strategies and activities contributed to *Green Teacher* magazine during the past decade, updated and revised for these anthologies. They are designed to serve as a complete "green" teaching resource for those working with school-aged youth, inside or outside of schools.
www.greenteacher.com

Teaching Issues and Experiments in Ecology
Teaching Issues and Experiments in Ecology is a peer-reviewed, web-based collection of ecological educational materials by the Ecological Society of America. The website is divided into three sections: Experiments, Issues, and Teaching. All of the materials include background information on the topic addressed, instructions for students, and notes to faculty. Materials cover mimicry, population ecology, foraging and flocking behavior, and more.
http://tiee.ecoed.net/index.html

Teaching Psychology for Sustainability: A Manual of Resources
This site includes an overview with a list of general resources that identify connections between psychology and environmental issues; instructor resources, including lecture and discussion topics, class activities, multimedia resources, and suggested readings for students; a bibliography with links to publisher sites for authored books and tables of contents for edited volumes; and a compendium of syllabi from instructors who currently teach psychology for sustainability.
http://www.teachgreenpsych.com

Team OCEAN – On-Water Ocean Conservation Education Action Network
The Team OCEAN Program promotes public education, including informative brochures as well as one-on-one interpretation; stewardship, by instilling a sense of personal understanding, ownership, and responsibility for the Sanctuary among the general public; and sanctuary presence on the water, emphasizing the importance of the proper use of our resources, now and for future generations.
http://www.fknms.nos.noaa.gov/edu/ocean.html .

TED Talks
TED (Technology, Entertainment, Design) started out as a conference bringing together people from those three fields. The annual conference now brings together thinkers and doers who are challenged to give the talk of their lives (in 18 minutes). The website offers the best talks and performances, with categories including Technology, Global issues, Science, and more. Check out the offerings from TED Prize winner Sylvia Earle, Richard Pyle, and more. Select "Show talks related to…" for a quick offerings.
http://www.ted.com/

Teens for Planet Earth and Leadership Institute
Teens for Planet Earth was created by the Wildlife Conservation Society at the Bronx Zoo to help teens who are fascinated by wildlife, nature, and the environment put their passion into practice. The website includes links to background information, service learning information, and more. Adult leaders are invited to participate in a Leadership Institute training, to explore effective programs providing young people with the skills and support in community conservation-based service-learning projects.
http://teens4planetearth.com/

Teens for Planet Earth
This program, developed by the Wildlife Conservation Society, supports teens and teen leaders/educators as they carry out environmental service-learning projects. The website provides a resource library, news articles, and a Take Action section. There's also a special section for Girls for Planet Earth.
http://www.teensforplanetearth.org/

TerraCycle
Earn money by recycling. Terracycle buys plastic wraps, candy wrappers, and different plastic containers from groups, schools, and fundraisers, to reuse for their business. They make everything they sell out of trash.
http://www.terracycle.net/

TerraLook
Landsat and other satellite sensors have been collecting images of Earth from space for more than 30 years. For the most part, use of this data has been limited to the scientific and land management communities. TerraLook was developed to broaden the population of satellite image users by providing both ASTER and Landsat data as free, georeferenced, simulated natural-color JPEG images for users that lack prior experience with remote sensing or Geographic Information System (GIS) technology. TerraLook consists of two parts: collections of images, and free optional software. Interested teachers should contact Gary Geller at Gary.N.Geller@jpl.nasa.gov
http://terralook.cr.usgs.gov/index.php
http://asterweb.jpl.nasa.gov/terralook.asp

Texas Coastal Connection
The Texas Coastal Management Program offers the Texas Coastal Connection website, providing the public with easy access to a wide array of online resources on coastal marine issues. The website highlights hot topics along the Texas coast; assists users in finding answers to questions on coastal issues; and serves as a source for information on the state's rich coastal resources. Check out the extensive links section.
http://www.TexasCoastalConnection.com

Texas Education Agency Best Practices Clearinghouse
The Texas Education Agency has established an online clearinghouse of information related to best practices of high-performing and highly efficient campuses, school districts, and charter schools in instruction, dropout prevention, business/management practices, and public school finance and resource allocation. The goal of the clearinghouse is to provide information about best practices that is specific, actionable, and accessible to schools and interested members of the public.
http://www.tea.state.tx.us/bestprac/

Thank You Ocean
A public awareness and information outreach effort is being launched by the California Resources Agency and NOAA. Empowering Californians to protect the Pacific is the focus of the campaign. The campaign is designed to spur citizen involvement and activity to help protect the ocean's health and resources. The website includes a downloadable public service announcement, links to information and activities about the ocean, ways to make a difference, and more.
http://www.thankyouocean.org/

Thank You Ocean Report Podcasts
The California *Thank You Ocean* public awareness campaign has launched a new podcast feature. The podcasts discuss how the public can protect the ocean and highlight issues important in ocean and coastal management. The first podcast focuses on the Thank You Ocean campaign itself, followed by podcasts on marine debris, marine protected areas, and more. A new podcast will be posted approximately every 2 weeks.
http://www.thankyouocean.org/podcast/

The Early Years
Science and Children and the National Science Teachers Association have established a blog devoted to early childhood science. You can find teaching advice, management tips, favorite resources, and activity ideas specifically for teachers of grades pre-K–2. The blog accompanies Science and Children's column *The Early Years*. To view the first column with teacher's picks about marine and environmental science resources, visit http://www.nsta.org/main/news/stories/science_and_children.php?category_ID=86&news_story_ID=50933.
http://science.nsta.org/earlyyearsblog

Thinkfinity Literacy Network
The Verizon Foundation's Thinkfinity Literacy Network links to free, online educational resources for literacy instruction and lifelong learning for adults along with family literacy programs. The content aims to strengthen literacy development, creativity, and critical thinking skills. The website of literacy resources is meant for teachers, volunteers, adult learners, tutors, parents, and students. A simple search on the "marine" brought a response with more than 900 listings.
http://literacynetwork.verizon.org/tln/

This Land Is Your Land Curriculum
This free, activity-based youth curriculum was developed by Michigan State University Extension. Though developed for grades 3-5, the lessons are easily adaptable to any grade level. *This Land Is Your Land* is a set of land use curriculum materials designed to help students develop into involved citizens who understand the importance and practice of wise land use. It is designed so young people can contribute solutions to current land use issues and participate in making sound decisions now and in the future.
http://web4.msue.msu.edu/msuewc/kent/yourland/

This Week at Hilton Pond – Seagulls
While the focus for this research center is the South Carolina Piedmont, the latest posting on seagulls underscores the fact that you cannot separate "marine" from the greater environment.
http://www.hiltonpond.org/ThisWeek040115.html .

Thunder Bay Sinkholes Expedition
NOAA Ocean Exploration and Research Program launched information about the Thunder Bay Sinkholes 2008 Expedition, September 2–12, 2008. Scientist explored shallow and deep coastal sinkholes to more fully understand chemical and physical properties that contribute to the unique ecology found in these recently-discovered ecosystems in Earth's largest group of freshwater lakes - the Laurentian Great Lakes of the United States and Canada. Check out the web logs, video, and much more.
http://oceanexplorer.noaa.gov/explorations/08thunderbay/welcome.html

Tidepool Math
From the Minerals Management Service (MMS) and the Multi-Agency Rocky Intertidal Network (MARINe) comes Tidepool Math, curricula for K-8 and high school. Students use a plot of a mussel bed to better understand sampling, estimating, and the scientific method. The website has downloadable curricula, photographs to use for the sampling exercises, and flash cards of typical tidepool organisms, or order the CD. Check out the MMS Kids' Pages for other information on Ocean Energy, Sand, and more.
http://www.mms.gov/mmskids/ .

Tides and Currents Web Data Portal
The Center for Operational Oceanographic Products and Services (CO-OPS) offers an Integrated Ocean Observing System (IOOS) oriented web portal to provide access to the National Data Buoy Center's and CO-OPS' observational oceanographic data. Users will find improved methods for observational data retrieval, useful IOOS links, and related information. Navigation is clearly marked with links to products, programs, education, and more.
http://tidesandcurrents.noaa.gov/opendap.html

Tijuana Estuary High School Teacher's Guide
The Tijuana Estuary High School Teachers' Guide is a field-based, inter-disciplinary high school curriculum designed to educate students about the valuable Tijuana River Estuary natural and cultural resources. Chapters include ecology, geology, history, language arts, and more. It has been developed to align to California State Content Standards.
http://www.tijuanaestuary.com/education.asp

Timeless Totems: The Carved History of the Alaskan Coast eField Trip
Why did people carve totem poles? How were the totem poles made? What do the designs on the totem poles mean? Take your students on an electronic field trip to Sitka National Historical Park in Alaska to find the answers to these questions. Premiering March 27, 2006, the eFieldTrip has three major components, a virtual visit, a trip journal, and *Ask the Experts*, which also was available February 6-8, 2007.
www.eFieldTrips.org

To Fight or Not to Fight?
In this conflict resolution activity from Facing the Future, students examine a variety of international and intra-national conflicts through a role-playing activity. They learn to identify the roots of conflict, how to separate positions from interests in a conflict, and experience mediating a conflict. Free registration is required.
http://www.facingthefuture.org/Members/documents/35.To.Fight.Or.Not.pdf

TogetherGreen
TogetherGreen is a National Audubon Society program with support from Toyota, to build conservation leadership, engage people in conservation action, and achieve lasting conservation results. The program offers grants, featured projects, volunteer opportunities, and more.
http://www.togethergreen.org/

Tools of Change
Community-based social marketing can be effective for promoting behavior change for social, personal, and environmental benefits. The approach emphasizes the reduction of barriers to taking the desired actions, direct contact among community members, the use of proven tools of change, and continuous program improvement. This website offers specific tools, case studies, and a planning guide for helping people take actions and adopt habits that promote health and/or are more environmentally-friendly.
http://www.toolsofchange.com/

Tools for Monitoring Coastal Habitats
This second volume of the two-volume restoration monitoring manual titled *Science-Based Restoration Monitoring of Coastal Habitats* is now available online, courtesy of scientists from NOAA's National Centers for Coastal Ocean Science. Volume Two provides tools and information for the development and implementation of restoration monitoring plans for 13 types of coastal habitats. The information provided is designed more for practitioners who may not have extensive experience in coastal ecology.
http://coastalscience.noaa.gov/ecosystems/estuaries/restoration_monitoring.html

Tortugas Ecological Reserve Cruise
Scientists from NOAA's National Centers for Coastal Ocean Science conducted their eighth research cruise at the Tortugas Ecological Reserve to determine the ecological and economic consequences of establishing marine protected areas. Scientists aboard the NOAA Ship *Nancy Foster* conducted diver and remote sonar surveys of benthic habitat and fishes from July 25-August 5, 2008. Online mission logs, crewmember information, and background information are posted on this website.
http://www.ccfhr.noaa.gov/ecosystems/sanctuaries/tortugas2008/welcome.html

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http://www.ccfhr.noaa.gov/ecosystems/sanctuaries/tortugas2008/welcome.html

Tox Town
Tox Town helps students and teachers learn about environmental health concerns and toxic chemicals, by way of an interactive imaginary town, and includes a port scene with algal blooms, beach impacts, and more. The website links include text versions and some Spanish-language resources.
http://toxtown.nlm.nih.gov/

Touch the Invisible Sky
Touch the Invisible Sky is a 60-page book with color images of nebulae, stars, galaxies and some of the telescopes that captured the original pictures. Each image is embossed with lines, bumps, and other textures. These raised patterns translate colors, shapes, and other intricate details of the cosmic objects, allowing visually impaired people to experience them. Braille and large-print descriptions accompany each of the book's 28 photographs.
http://hubblesite.org/newscenter/archive/releases/2008/05/full/

Track Sea Turtles On-Line
SEATURTLE.ORG provides sea turtle researchers with a tool for collecting, managing and sharing sea turtle satellite tracking data in near real-time. There is a list of tracking projects, links to background information about each program and the turtles they are tracking, and maps that are updated daily. A section for teachers is under development.
http://www.seaturtle.org/tracking/

Tracking Cranes Classroom Program
As a global family of birds, cranes offer an opportunity for teachers to combine the study of cranes with learning about diverse cultures and countries. Tracking Cranes and the International Crane Foundation offer this education project to link classrooms in the United States with students in eastern China and Russia in learning about cranes, their habitats, and their conservation. The website includes information about the birds along with links to educational activities and additional materials.
http://www.trackingcranes.org/en/indexen.htm

Tracking the Invasive Veined Rapa Whelk
The Bridge features a series of Data Analysis Teaching Activities (DATA) that can be used to supplement curriculum materials. The DATA *River Watch: Tracking the Invasive Veined Rapa Whelk* explores the introduction of a predatory marine snail that hails from Asian waters near Japan and Korea. In this activity, students analyze biotic and abiotic data to determine the risk of a successful rapa whelk invasion for four hypothetical estuaries.
http://www.marine-ed.org/bridge/index_archive0506.html

Tracking Narwhals in Greenland
Tracking Narwhals in Greenland is available on NOAA's Ocean Explorer website. From August 2006 to March 2007, scientists from the University of Washington and the Greenland Institute of Natural Resources will instrument 8-10 narwhals with satellite-linked time-depth-temperature recorders to track whale movements, diving behavior, and ocean temperature structure in Baffin Bay.
http://www.oceanexplorer.noaa.gov/explorations/06arctic/welcome.html

The Transect Line
The Transect Line is an on-line or print newsletter from the Reef Check global network. Reef Check is an international program that works with communities, governments and businesses to scientifically monitor, restore, and maintain coral reef health. The newsletter features articles about Reef Check team activities, news, events, and more.
http://www.reefcheck.org/news/newsletter.asp

Trash Bash - Texas
The 2007 River, Lakes, Bays 'N Bayous Trash Bash will take place March 31, 2007 in various locations in the Houston, Texas area.
http://www.trashbash.org/

Travel Matters
The Travel Matters website helps students, teachers, and others learn about how their travel habits and vehicular choices affect climate change. TravelMatters offers interactive emissions calculators, on-line emissions maps, and education content that emphasizes the close relationship between more efficient transit systems and lower greenhouse gas emissions. The website includes questions, activities guides, an interactive quiz, resource lists, and more.
http://www.travelmatters.org .

Traveling Wetland Education Trunks for Texas
Twenty-five *Wetland Education Trunks* have been distributed to educators and education centers across Texas and are available for loan to teachers. The trunks contain lesson plans, books, posters, videos, Texas Amphibian Watch materials and field equipment to guide students in their investigations of wetland habitats. The trunks emphasize learning in the classroom and in the field.
http://www.tpwd.state.tx.us/edu/

Tread Lightly! Charity Auction
Tread Lightly! will hold its 2nd Annual Tread Lightly! Charity Auction on eBay, June 1-11, 2009, with more than 175 products donated from companies across the country. All money raised will go to address recreation issues on public recreation sites and off-road trails through education, communication, and restoration/stewardship.
http://www.treadlightly.org/page.php/auction

Tread Lightly Geocaching Recommendations
Tread Lightly!'s strategic educational message, along with its training and restoration initiatives, are designed to instill an ethic of responsibility in outdoor enthusiasts and the industries that serve them. The program is long-term in scope with a goal to balance the needs of the people who enjoy outdoor recreation with the needs of the environment. The program offers recommendations for both users and managers involved in a variety of different recreational activities, including geocaching.
http://www.treadlightly.org/edu.mv?edu=Recreation%20Tips

Tread Lightly Government Resources
The nonprofit organization Tread Lightly! is a nonprofit whose mission is "To empower generations to enjoy the outdoors responsibly through education and restoration." They have developed a new web section specifically for employees of land and water management agencies. It was created to be a clear-cut, effective resource to provide aid to agencies who deal with recreation issues on their land or water.
www.treadlightly.org/govresource.mv .

Tread Lightly! Play Nice Campaign
Tread Lightly! has just completed a revamp of it's *Play Nice* Public Service Announcement Campaign, created to encourage and inspire recreationists to minimize their impact and be responsible in the outdoors. Available PSAs include fishing, personal watercraft use, and more.

http://www.treadlightly.org/edu.mv?edu=Public%20Service%20Announcements .

Tread Lightly! Slogan
In an effort to make their message stronger and clearer, Tread Lightly! has revamped their old slogan from *Leaving a Good Impression* to *Tread Lightly! On Land and Water*. The new tagline not only communicates our message effectively, but also helps reach out better to the water recreation community. In addition, the mission statement has been updated to: To proactively protect recreation access and opportunities in the outdoors through ethics education and stewardship initiatives.
http://www.treadlightly.org/

Treasures of NOAA's Ark: Shipwrecks!
NOAA Heritage Week 2008 highlighted the agency's role in shipwreck exploration, resource protection, safe navigation, marine forecasting, and safety at sea during a special public exhibition. The website offers a companion guide to the exhibition, featuring links to a wide variety of NOAA resources about shipwrecks, navigation, marine forecasting, educational materials, and more.
http://www.preserveamerica.noaa.gov/heritageweek.html

Treasures in the Sea
Treasures in the Sea: Our Bahamian Marine Resources is a new resource book that provides educators with scientific information and hands-on activities. Designed especially for educators in The Bahamas, the book complements curriculum guidelines for grades three to six, though many of the activities may be adapted for younger or older students in formal and nonformal settings. The website includes the downloadable publication, links to resources related to the activities, and more.
http://treasures.amnh.org/index.html

Tree of Life: The Incredible Biodiversity of Life on Earth
This beautifully illustrated and child-friendly introduction to biodiversity, *Tree of Life,* shows how living things are classified into five kingdoms — and how each has much to tell us about all aspects of life on our planet. The book focuses on the idea that if every known species on Earth were a leaf on a tree, that tree would have 1,750,000 leaves. Since humans count for just one leaf on the tree, we have a lot to learn about the millions of other forms of life with which we share the world.
http://www.kidscanpress.com/kidscanpress/KidsCanPress_3/us_version/KCP/f_home.htm

Tribal Directory Assessment Tool
The Tribal Directory Assessment Tool, developed by the Office of Environment and Energy's Environmental Planning Division to assist users with Section 106 compliance and tribal consultation, was designed to help users quickly identify tribes and provide users with appropriate tribal contact information. Two key aspects of the tool are its ability to link tribes' areas of interest down to the county level, and perform a variety of queries related to tribes.
http://www.hud.gov/offices/cpd/environment/tribal/index.cfm

TROLL Top Picks
Each month the Bridge features a new TROLL Top Web Pick. Selected by our Teacher Reviewers of On-Line Learning (TROLLs) as exemplary, these sites are featured on the Bridge front page, complete with a quote from the TROLL. While every site on the

Bridge has undergone the rigorous TROLL evaluation process ensuring that visitors are accessing only the top ocean sciences resources on the web, the monthly Top Picks are considered to be the top 10% of educational websites.
http://www.marine-ed.org/bridge

TROLL Top Picks Collection
The Bridge would like to introduce the TROLL (Teacher Reviewer of On-Line Learning) Top Picks Collection. Appended each month, the collection features each TROLL Top Pick dating back to April of 2005, complete with link, TROLL quote, and the month and year it was selected as Top Pick. Take a look at the collection today and if you have a great ocean science website you think could be selected as the next TROLL Top Pick, please nominate it to the Bridge.
TROLL Top Pick Collection: http://www.marine-ed.org/bridge/index_toppicks.html
Bridge TROLL Review Criteria: http://www.marine-ed.org/bridge/indexrevinstr.html
Site Nomination Form: http://www.marine-ed.org/bridge/index_nomination.html

Tsunami Curriculum
These websites are a small sampling of those that host background and curriculum about tsunamis.

- Asia Society K-12 Teacher's Resource Site: http://www.askasia.org/tsunami/
- Gross Point Public School System: http://www.gpschools.org/ci/tsunami.htm
- National Science Teachers Association: http://science.nsta.org/nstaexpress/nstaexpress_2004_01_10_tsunami.htm
- NOAA Intergovernmental Oceanographic Commission: http://www.prh.noaa.gov/itic/library/pubs/curriculum/tsunami_curriculum.html
- U.S. Geological Survey, Coastal and Marine Geology Program: http://temp.water.usgs.gov/tsunami/
- U.N. Atlas of the Oceans – Impact of Tsunamis on Ecosystems: http://www.oceansatlas.org/id/71687

TsunamiReady
Tsunami-ready is a program sponsored by the NOAA and the National Weather Service. It sets minimum guidelines for a community to be awarded tsunami-ready recognition. The requirements include establishing an emergency operations center; having the capability to provide tsunami warnings using sirens and local media; developing a tsunami hazard plan and community awareness program; and the ability to receive tsunami warnings from the weather service. For an example of a TsunamiReady community workshop, check out the South Slough National Estuarine Research Reserve website. http://egov.oregon.gov/DSL/SSNERR/resourcelibrary.shtml
http://www.tsunamiready.noaa.gov/

Turning the Tide: The Eradication of Invasive Species
The Hawaiian Ecosystems at Risk Project (HEAR) provides technology, methods, and information to decision-makers, resource managers, and the general public to help support effective science-based management of harmful non-native species in Hawaii and the Pacific. These articles from the Proceedings of the 2001 International Conference on Eradication of Island Invasives, Auckland, New Zealand, along with other pertinent articles, have been posted on the website under "Online full-text articles".
http://www.hear.org/index.html .

Turtle Talks Activity Book
Turtle Talks is a youth conservation eco-literacy project. A team member authored a downloadable children's activity book on sea turtles.
http://www.oceana.org/fileadmin/oceana/uploads/reports/TurtleTalks_en.pdf

uBio
The Universal Biological Indexer and Organizer (uBio) is a comprehensive database of known scientific and common names of living (and once-living) organisms. The Taxonomic Name Server catalogs names and classifications to enable tools that can help users find information on living things using any of the names that may be related to an organism.
http://www.ubio.org/

UN Atlas of the Oceans Newsletter
The UN Atlas of the Oceans newsletter provides a round-up of the latest activity on the website, including most recently added topics, content, and special happenings such as new partnerships or awards. Recent additions include information about arctic ecosystems. To subscribe, click on "join now" under the search function.
http://www.oceansatlas.org/ .

UN Report on Mangroves and Coral Reefs
The United Nations Environment Programme (UNEP) recently released its report on corals and mangroves, *In the Front Line: Shoreline Protection and other Ecosystem Services from Mangroves and Coral Reefs*. The report was produced by UNEP's World Conservation Monitoring Centre in collaboration with the International Coral Reef Action Network and the World Conservation Union. Among the report highlights are environmental and estimated economic value of coral reefs.
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=466&ArticleID=5112&l=en

Understanding and Responding to Climate Change
This downloadable National Academy of Sciences booklet presents recommendations from the National Academies' many expert reports on climate change, in an easy-to-read format. The 2008 edition of *Understanding and Responding to Climate Change* includes an expanded section on impacts and updated figures and graphics.
http://dels.nas.edu/dels/rpt_briefs/climate_change_2008_final.pdf

Understanding Science
The Understanding Science website aims to communicate what science is and how it works. The site, intended for both the general public and K-16 teachers, draws visitors into real-life examples and looks at the social side of science, science and society.
http://undsci.berkeley.edu/

Understanding Sustainability
Understanding Sustainability is a flexible, self-contained 1-2 week curriculum unit aligned with national science standards for middle school educators to teach sustainability issues from Facing the Future. This curriculum features hands-on activities that explore sustainability issues, such as energy, consumption, water scarcity, along with potential solutions. Free versions may be available for Washington and Alaska.

http://www.facingthefuture.org/Home/CurriculumDetails/tabid/131/Default.aspx?ItemID=NATUS

Underwater Videos Available On-Line
The Perry Institute for Marine Science / Caribbean Marine Research Center posts three educational videos to provide a glimpse at our underwater environments, including MPAs, coral reefs, and Nassau Grouper.
http://www.cmrc.org/pubs.htm

Unearthing Tse-whit-zen
The Seattle Times published a special report, May 22-25, 2005, about the Tse-whit-zen archaeological site uncovered by the Washington Department of Transportation on the Port Angeles waterfront in August 2003. Working side by side, archaeologists and tribal members have uncovered burials, the remains of many structures, and signs of human activity dating back at least 2,700 years. The website includes background information, a narrated slideshow, and a study guide.
http://seattletimes.nwsource.com/news/local/klallam/index.html

UNEP Publications on Water & Waste Management and Tourism & Biodiversity
A Manual for Water and Waste Management: What the Tourism Industry Can Do to Improve Its Performance looks at solid waste and water management and provides guidelines and examples of how tourism operations can achieve positive results. *Tourism and Biodiversity: Mapping Tourism's Global Footprint*, illustrates the overlap between tourism development and biodiversity hotspots.
http://www.uneptie.org/pc/tourism/library/mapping_tourism.htm
http://www.uneptie.org/pc/tourism/library/waste_manual.htm

UNEP Portal
The United Nations Environmental Programme Network provides a global portal to authoritative environmental information based on themes and regions. Some thematic portals include climate change, freshwater, and a geo-data portal with many marine data sets. Information includes announcements and news, initiatives, and resources.
http://www.unep.net/

UNEP Year Book 2008
The UNEP Year Book 2008 highlights the increasing complexity and interconnections of climate change, ecosystem integrity, human well-being, and economic development. It examines the emergence and influence of economic mechanisms and market-driven approaches for addressing environmental degradation, and it describes recent research findings and policy decisions that affect our awareness of and response to changes in our global climate and environment. It is available in English, Spanish, and French.
http://www.unep.org/publications/search/pub_details_s.asp?ID=3980
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United Nations Atlas of the Oceans
The Atlas is an information system designed for use by policy makers, scientists, and students who need access to underlying data bases and approaches to sustainability. The information includes history, biology, climatology, food security, fishing, and more.
http://www.oceansatlas.org/

Universcale
Created by Nikon, this website provides insight into the subject of scale and comparing and understanding things which cannot be physically compared.
http://www.nikon.co.jp/main/eng/feelnikon/discovery/universcale/index.htmv

University of Wisconsin-Madison Zoology Museum Collection
From the University of Wisconsin-Madison digital collections, the Zoology Museum Collection includes digitized versions of heavily illustrated biological journals, a few dated as early as 1859 with the majority from the first half of the 20th century. In addition to searching, journals can be displayed in a gallery view, allowing users to jump quickly to pages of interest. The Galápagos Collection includes skeletons, slides, pictures, books, and research papers collected and produced by UW-Madison scientists and researchers during ten expeditions to the Galápagos since 1969.
http://digicoll.library.wisc.edu/Zoology/

The Unnatural History of the Sea.
Callum Roberts' book, *The Unnatural History of the Sea*, relates a history of ocean life in words and pictures. Using accounts of sea adventures from explorers, fishermen, pirates, merchants, and travelers, he explores hundreds of years of exploration and exploitation of the sea. Check out previews of the book on the website and through Internet search engines.
http://www.historyofthesea.org/

Upcoming BRIDGE Changes
Throughout the fall, the Bridge's website technology will be improved to make the site more useful for ocean science teachers. The Bridge will be database-driven; use a more productive search engine; have enhanced navigation featuring a rollover menu include an updated color scheme, and highlight sections spotlighting a bridge data lesson plan, teacher top pick of the month, and breaking ocean science education news. Visit the website to see the changes over the coming months.
http://www.marine-ed.org/bridge

Upwelling Zones
Upwelling Zones is a resource to help learners understand the importance of marine upwelling systems, including ties to fisheries, El Nino, and La Nina events. Users can interactively track and analyze temperature, wind, salinity and chlorophyll data. Other features include a user guide, movies, links to published research, and summaries of relevant background topics. Worksheets and accompanying rubrics are designed to help educators assess student understanding of various topics.
http://www.bigelow.org/upwelling

U.S. Antarctic Program
This website from the National Science Foundation offers information about the world's coldest, windiest, driest, and harshest continent - its ecosystems and its effects on global processes such as climate. Read breaking news from a newspaper written in McMurdo Station, Antarctica. See articles about a killer crater found under the ice, the melting of polar ice sheets, video clips, maps, images, and much more.
http://www.usap.gov/scienceAndEducation.cfm

U.S. Geological Survey Educational Resources
The U.S. Geological Survey (USGS) provides scientific information intended to help educate the public about natural resources, natural hazards, geospatial data, and issues that affect our quality of life. The website includes links to selected online resources, including lessons, data, maps, and more, to support teaching, learning, education, and research. The educational resources are broken up by grade level for easier selection by teachers, with materials for teaching about GIS, links to publications, links to popular USGS websites about volcanoes, water resources, coastal storms, and much more.
http://education.usgs.gov/index.html

U.S. Global Change Research Information Office
The US Global Change Research Information Office provides access to data and information on climate change research, adaptation/mitigation strategies and technologies, and global change-related educational resources on behalf of the various US Federal Agencies that are involved in the US Global Change Research Program. The website offers downloadable documents, *Ask Dr. Global Change* with links to useful information, and more.
http://www.gcrio.org/

U.S. Ocean Policy Report Card
The Joint Ocean Commission Initiative released its third annual U.S. Ocean Policy Report Card, which assesses the nation's progress in 2007 toward implementing the recommendations of the U.S. Commission on Ocean Policy and the Pew Oceans Commission, as well as the actions described in the Administration's U.S. Ocean Action Plan. The objective of the Report Card is to inform policy makers and the public of the challenges facing our ocean while identifying the many opportunities ripe for action.
http://www.jointoceancommission.org/

USGS CoreCast
The United States Geological Survey has launched a podcast series, *It's natural science from the inside out*. The podcasts range in length from two to fifteen minutes and cover a wide range of topics, including geologic maps, polar bear research, hazards, and more. The transcription of each episode is also available on the website.
http://www.usgs.gov/corecast/

USGS Data Delivery and Mapping Over the Web
The National Water-Quality Assessment Program offers a downloadable fact sheet, *Data Delivery and Mapping Over the Web – National Water-Quality Assessment Data Warehouse*. The warehouse integrates data on water quality, ecology, and hydrology across the nation, providing consistent, online collections of water-quality data and associated information. Included are chemical concentrations in water, sediment, and aquatic-organism tissues; biological community data for algae, fish, and invertebrates; daily streamflow and temperature information for selected sampling sites; and more.
http://pubs.usgs.gov/fs/2006/3101/

USGS Learning Web
As the Nation's largest water, earth, biological science, and civilian mapping agency, the U.S. Geological Survey (USGS) provides some of this science information as educational material. The product line includes a variety of teaching packets, booklets, posters, fact sheets, and CD-ROMs. There are also materials for students, including

trivia games, clip art, homework help, and much more. Lesson plan and activity topics currently include mud fossils, global change, geological age, and more.
http://interactive2.usgs.gov/learningweb/textonly/index.htm

Use Sea Turtles in Your Next Lesson
Sea turtles can be used to demonstrate concepts in many facets of the ocean sciences. For an activity in ecology, explore the Bridge DATA: See Turtles Nest, See Turtles Hatch, which evaluates nesting and hatching data from a community organization in Kenya. Or, if you would like to incorporate bycatch in your next unit, see Off the Hook!, where students use National Marine Fisheries Service data to examine the use of J-hooks versus circle hooks. For physical and biological oceanography, see our Scientist Spotlight on Kate Mansfield, a sea turtle biologist, which contains a sea turtle tracking activity. The Bridge also has sea turtle links to teacher-reviewed external resources for even more information.
See Turtles Nest, See Turtles Hatch http://www.marine-ed.org/bridge/index_archive0700.html
Off the Hook! http://www.marine-ed.org/bridge/index_archive0404.html
Scientist Spotlight: Kate Mansfield http://www.marine-ed.org/bridge/index_mansfield.html

USS *Arizona* Preservation Project – Daily Project Updates
Archeologists from the Submerged Resources Center of the U.S. National Park Service conducted a three-week investigation of the wreck of USS ARIZONA. Using nondestructive techniques, the team conducted tests to determine the structural integrity of the ship, record in detail its current state for comparison with earlier surveys, and collect environmental data in the interior of the ship using remotely-operated vehicles. Daily updates on the team's activities will be posted to the project website.
http://www.pastfoundation.org/Arizona/,
http://www.nps.gov/submerged .

USS Monitor Center
The USS Monitor Center illuminates the individual human stories of those who designed and built the *Monitor* and the *CSS Virginia* and sailed them into battle on March 8 and 9, 1862. The Center will also highlight NOAA archaeologists, scientists and U.S. Navy divers who worked on the project. The website offers information about the history, life aboard the ship, and museum preservation efforts. Bibliography, links, and educational resource pages provide jumping off points for learning more about the USS Monitor, the CSS Virginia, the Civil War and the men and women who lived through it.
http://www.monitorcenter.org/

Vadlo Search Engine
The Vadlo search engine caters to all branches of life sciences. This beta offering allows users to search within five categories: Protocols, Online Tools, Seminars, Databases, and Software. Seminars are essentially PowerPoint files for presentations, lectures, and talks. Databases will take you to databases, resources, compilations, and more.
http://www.vadlo.com/

Vailulu'u: Eel City and the Moat of Death
NOAA's Ocean Explorer has posted information from recent expeditions to the waters around American Samoa. Vailulu'u is an underwater volcano that lies approximately 20

miles east of Ta'u Island in American Samoa. The crevices of the volcano are occupied by thriving aggregations of cutthroat (synaphobranchid) eels which had never before been studied in their natural habitat. Find a summary of this expedition, a slideshow of marine life around Vailulu'u, and video of swarming underwater eels on the website.
http://oceanexplorer.noaa.gov/explorations/05vailuluu/welcome.html

Valoración Socioeconómica de los Humedales en América Latina y el Caribe
Wetlands International wishes to join the celebration of World's Wetlands Day by launching its recently published booklet, *The Socio-economics of Wetlands Valuation in Latin America and the Caribbean,* in Spanish. This publication explains in a simple way the fundamentals of the socioeconomic valuation of wetlands and its role in the decision making processes, highlighted by five case studies from Peru, Venezuela, Cuba, Brazil, Argentina, and Guatemala. This publication can be downloaded for free.
http://www.wetlands.org/publications.aspx

Valuing the Environment in Small Islands - An Environmental Economics Toolkit
The purpose of this toolkit from the Joint Nature Conservation Committee is to demonstrate how to estimate the economic value of the benefits that the environment provides to people in small islands, and incorporate these values into decisions. It has been designed primarily for government officials and NGOs, but is also useful for others wanting to estimate the value of ecosystems and ecosystem services.
http://www.jncc.gov.uk/page-4065

VentureDeepOcean
VentureDeepOcean shares mid-ocean ridge and hydrothermal vent exploration with audiences around the world. Designed as an information portal, the site features current scientific research and cruises, deep-sea news, background information, images, and more. Ridge 2000 is an interdisciplinary program focused on integrated studies of Earth's oceanic spreading centers. The program provides national coordination for studies of deep-sea hydrothermal vents and rifting of volcanic crust.
http://www.venturedeepocean.org/

Virginia Seaside Heritage Program
The Virginia Seaside Heritage Program is a public-private partnership, initiated and funded by the Virginia Coastal Program to address management of the aquatic resources of the barrier islands, bays, and salt marshes along Virginia's Eastern Shore. The program will build on the momentum of recent restoration successes, like those witnessed in the Virginia Oyster Heritage Program.
http://www.deq.virginia.gov/coastal/vshp/homepage.html

Virtual Courseware
As part of a collaborative project between faculty members at the California State University-Los Angeles and the National Science Foundation, the Virtual Courseware website brings together a number of thematic instructional resources for science educators. Activities teach about earthquakes (in English and Spanish), rivers, global warming, and more. The website offers a mix of activities, assessment exercises, and instructor materials.
http://www.sciencecourseware.org/eecindex.php

Virtual Cruise to Fagatele Bay
These pictures and videos detail a research cruise and Pisces V submersible dives to the coral reefs of Taema Bank and Fagatele Bay and Canyon, Tutuila, American Samoa, on the Hawai'i Undersea Research Lab Cruise in July, 2005.
http://dusk2.geo.orst.edu/djl/samoa/hurl/

Virtual Field Trips Database
The University of Texas Library hosts links to a collection of virtual field trips and guides throughout the United States and Canada. The sites contain local geological or earth science information and include links to downloadable versions of published paper texts. One selection takes you to the Carolina Coastal Science website, an inquiry-based science resource that explores science in coastal Carolina. Visit barrier islands, the Channel Islands, Hawaii, and more through the database.
http://www.lib.utexas.edu/geo/onlineguides.html

Virtual Museum of Nautical Archaeology
Texas A&M University's Institute of Nautical Archaeology brings you the Virtual Museum of Nautical Archaeology. It includes images, history, and site reports from three decades of projects around the world, along with links to other sites.
http://ina.tamu.edu/vm.htm

Virtual Presentation Assistant
The Virtual Presentation Assistant is an online tutorial dedicated to the art and skill of public speaking, and the website is maintained by the staff of the communication studies department at the University of Kansas. The site covers such topics as selecting an appropriate theme for a speech, how to research said speech, supporting your primary points, and links to other sites that deal with the subject at hand.
http://www2.ku.edu/~coms/virtual_assistant/vpa/vpa.htm

Virtual Take Our Daughters and Sons to Work Day
The OceanAGE Virtual Take Our Daughters and Sons to Work Day, April 28, 2005, offers students the opportunity to discuss and celebrate oceanography career options. Students will be able to interact with inspiring mentors throughout the day in live webchats and online forums. The complete profiles, video interviews of the scientists, and live event instructions will be available on the website.
http://oceanexplorer.noaa.gov/edu/oceanage/welcome.html

Virtual Tour of NOAA's Ark
Treasures of NOAA's Ark: Journey Through Time can be visited via a virtual tour to learn more about NOAA's 200 years of science, service and stewardship.
http://www.preserveamerica.noaa.gov/hw07_photo1.html

Virtual Volcano
The Discovery Channel offers this virtual volcano website with interactive features. Visitors build their own volcano and watch it erupt, or read brief overviews of different features.
http://dsc.discovery.com/convergence/pompeii/interactive/interactive.html

Virtual Voyage to the Marianas
The research vessel Oscar Sette will be on an expedition in the Marianas Archipelago from September 1 until October 1, 2005, to study marine organisms and habitats. Log

on daily to join a virtual exploration of the underwater world of the Northern Islands, as well as the more familiar southern neighbors. The website will feature photos, reports from the field, interviews with scientists and crew, and feature articles. Sign your class up as a "Classroom at Sea" and receive a free package of educational materials.
http://www.crm.gov.mp/maramp/

Virtual Whale Watch
Bring a whale to school. Landlocked pre-K-6 students in Mid-Atlantic states can participate in a simulated whale watch and activities to stimulate their interest in marine science and endangered species. The website features a Kid's Page with whale sounds, "Ask a Scientist," resources, and information appropriate for pre-K-6.
http://members.aol.com/passintime .

Vision Fire Lessons Learned
A research publication on the 1995 Vision Fire has recently been completed. The fire burned more than 12,000 acres of federal, state, and private land in California, most within Point Reyes National Seashore. The downloadable publication documents lessons learned from the fire, including flora, fauna, and geomorphic response.
http://www.nps.gov/pore/fire_visionfire.htm

Visions of Undersea Alaska: 2005 Engagement Calendar
Alaska's pristine seas teem with life beyond imagination. With more than 50 colorful underwater photos, this calendar from Sea Grant provides an up-close look at Alaska's amazing sea life, ranging from tiny space-alien-like plankton to invertebrates, fish, marine mammals, and seaweeds. Photos were taken by scientists, scuba divers, and professional photographers in Southeast Alaska, the Aleutians, and other Alaska locations. Captions provide fascinating facts about each subject.
http://www.uaf.edu/seagrant/Pubs_Videos/pubs/SG-ED-45.html

Visit the Bridge at NMEA
As the NMEA annual conference draws near, July 23-27, 2007 in Portland, Maine, the Bridge educators are preparing some great new resources and activities to present. One presentation to look out for is "Lobster: The Price of Deliciousness," which will walk educators through a brand new Bridge DATA (Data Analysis Teaching Activity) that explores Maine lobster catch data and evaluates fluctuations in price and landings. For those looking for a more physical oceanography-based session, look for "Ocean Observing Systems: What are they and how can I use 'em?" This session will give participants an overview of ocean observing and several strategies for integration into existing curricula.
http://www.marine-ed.org/bridge

Visual Dictionary
The Visual Dictionary website offers annotated images that identify each part of a given item, such as a turtle or starfish. Visitors can search the site by using the embedded search engine, by list of topics, or by picture thumbnail. There is also a link to Wikipedia for more information on the topic, and a catalog of images. An image-share feature allows the use of an image on a webpage, and classroom use is allowed, subject to conditions.
http://www.infovisual.info/

Visualizing Dock Growth
Permitting of residential docks and piers is a contentious issue in many coastal areas. The NOAA Coastal Services Center's new website, Visualizing Dock Growth, will help coastal communities better understand, visualize, and manage the cumulative impacts of dock and pier growth in waterways. The website features 3-D visualizations of various scenarios at a real-life study area, outreach materials, and more.
http://www.csc.noaa.gov/dock_growth/index.html

Vocalizations of Georgia's Frogs CD
Presenting the unique calls of all 31 species of Georgia's frogs, the Calls of the Wild CD is produced by the Georgia Department of Natural Resources, Wildlife Resources Division to introduce the wonderful and often bizarre calls of Georgia's frogs and toads. The CD has separate recordings of every native species. Narration is provided for each of the individual species' recordings, along with a 15-page booklet.
http://eeingeorgia.org/page.asp?itemid=13156

Volunteer Liability
The National Sea Grant Law Center at the University of Mississippi offers a downloadable Volunteer Liability pamphlet. This publication reviews volunteer liability laws nationally and state by state, and can help those that are planning and organizing efforts involving volunteers. The document offers an overview of the federal and state volunteer liability laws, as well as additional issues and doctrines that may apply to volunteer and volunteer organizers.
http://www.olemiss.edu/orgs/SGLC/National/Volunteer.pdf

Volunteer and Service Programs Resource Center
The Corporation for National and Community Service Resource Center offers the Resource Center website as an online "one-stop shop" for tools to strengthen volunteer and service programs. Quickly and easily find more than 2,500 free downloadable tools, e-courses, and other useful resources and materials on hundreds of topics of interest to nonprofit and volunteer leaders.
http://www.nationalserviceresources.org/

Voyage of the Lonely Turtle
PBS/Nature aired the program, Voyage of the Lonely Turtle, based on one Loggerhead turtle's 9000 mile trip across the Pacific. The website offers information about turtle anatomy, navigation, a link to an interactive game, lesson plans, and more.
http://www.pbs.org/wnet/nature/turtles/index.html

Waikiki Aquarium - August Programs
The Waikiki Aquarium, founded in 1904, is the third oldest public aquarium in the United States. A part of the University of Hawaii since 1919, the Aquarium is located next to a living reef on the Waikiki shoreline. Some of the outreach and education programs for August include a shark overnight, in which participants build their own sharks and race them across a tank; an afternoon investigating hermit crabs and their housemates through storytelling, art and up-close encounters;; and much more.
http://waquarium.otted.hawaii.edu/

Walden Media Educator Guides
Walden Media brings books to life on the movie screen and offers downloadable lesson plans you can use with your students. The lesson plans are interdisciplinary, written by

educators for educators, and comply with national standards in content areas and in character education as well. Check out Ghosts of the Abyss (exploration of the Titanic), the White Giraffe (wildlife, nature, and character motivation), and Nim's Island (ways to protect the ocean and how sanctuaries preserve these underwater treasures).
http://www.walden.com/walden/walden/guide_matrix.php

Walt Disney's Sacred Planet
Walt Disney's new film, Sacred Planet has been released in IMAX theaters. Some of the film locations include old growth forests of British Columbia, underwater Borneo, New Zealand beaches. The images include the landscape, the people, and the animals indigenous to the land. There is also a downloadable Educator's Guide.
www.sacredplanet.com .

Wandering Wetland Travelling Trunk
The Wandering Wetland Travelling Trunk from Environmental Concern in St. Michaels, Maryland, contains artifacts and activities designed to introduce elementary students to wetland ecology. Filled with skulls, rubber track molds, numerous curricular resources, and more, the trunk provides teachers with materials for experiential learning and structured lessons about the environment. Included in each trunk is a free copy of the national curriculum guide WOW! The Wonders of Wetlands.
http://www.wetland.org/education_travelingtrunk.htm

Washing Away
Washing Away: Losing Louisiana will air nationally on TV on September 7, 2006 at 9:00 p.m. EST. This story of Louisiana's disappearing coastline and how this unfolding crisis affects all of America is told through the eyes of people affected by hurricanes Katrina and Rita. You can see a trailer of *Washing Away* and download lesson plans on the website.
http://www.lpb.org/programs/washingaway/

Watchable Wildlife Program
The *Watchable Wildlife Program* is a cooperative, nationwide effort made up of state and federal agencies to support the public's interest in viewing wildlife and conserving wildlife habitat. NOAA Fisheries' Office of Protected Resources and the National Ocean Service's National Marine Sanctuary Program ensure that marine species and habitats are included in the program, and develop appropriate marine viewing guidelines.
jill.lewandowski@noaa.gov

Water Education Posters
This U.S. Geological Survey series offers six educational posters, on Wetlands, Water Use, Wastewater, Navigation, Ground Water, and Water Quality. Each poster is available in two versions, one for elementary students and one for middle-school students.
http://water.usgs.gov/outreach/OutReach.html

Water and Energy Use in California
Water and Energy Use in California is a new middle school curriculum produced by the California Department of Water Resources and is available for a free download. There is a student book and teacher guide, along with additional information and links.
http://www.owue.water.ca.gov/

Water Facts and Fun
The California Department of Water Resources offers water education materials at no charge. The materials are limited in quantity, so please review a sample copy before ordering classroom sets. Non-California residents may receive one free copy of each of the materials, sent to United States addresses only.
http://www.publicaffairs.water.ca.gov/education/catalog.cfm

Water for Life: UN Proclaims International Water Decade 2005-2015
At its 58th session, the United Nations General Assembly adopted a draft resolution proclaiming the period from 2005 to 2015 as the International Decade for Action, "Water for Life", starting on World Water Day, 22 Mar 2005. The goal of the Decade is "a greater focus on water-related issues, with emphasis on women as managers of water to help to achieve internationally agreed water-related goals".
http://www.unesco.org/water/ .

Water Information Center
The National Academies announces the launch of its Water Information Center, a portal with peer-reviewed reports on water-related issues, independent and objective consensus among experts from academia, industry, and others. The website's major topics: water supply and sanitation; water and soil remediation; hydrologic hazards; water quality in the natural environment; river basin systems management; environmental assessment, management, and restoration; and water science and research
http://water.nationalacademies.org

Water Issue Resources from Annenberg Media
With wildfires raging throughout California and drought affecting large areas of the southeast, check out these programs from Annenberg Media.

- *Water Resources*, Unit 8 of The Habitable Planet - The first case study in the program deals with dwindling water resources in the Southwest. Unit 5, Human Population Dynamics, explores the issue of population growth in areas where basic resources, such as water, are in short supply; http://learner.org/redirect/november/hab12.html
- *Water is for Fighting Over*, Program 7 of Human Geography: People, Places, and Change, deals with the fight over scarce water resources along the California-Nevada border; http://learner.org/redirect/november/hum13.html
- *Global Forces/Local Impact*, the eighth workshop of Teaching Geography - one of the case studies examines the conflict over water rights in Oregon; http://learner.org/redirect/november/tgeo14.html

Water Neutrality
This concept paper on "Water Neutrality" was produced by a small group from NGO, academic, and business backgrounds. It was conceived through a common interest in investigating whether neutrality can be (or become) a meaningful tool that helps water stakeholders in their efforts to achieve and promote good stewardship of this critical resource.
http://www.ramsar.org/forum/forum_wwf_water_neutrality2007.pdf

Water on the Web
Water on the Web helps high school and college students understand and solve real-world environmental problems using advanced technology. It is a package which contains two sets of curricula, data from lakes and rivers nationwide, online primers,

data interpretation and Geographic Information System tools, and additional supporting materials.
http://waterontheweb.org/

Water Quality Curriculum
This curriculum guide for grades 6-8 contains five activities that incorporate data from NOAA's National Estuarine Research Reserve System. Students learn how to access and interpret water quality data, and how to look for patterns and changes over time. The goal is for students to experience different kinds of data and data accessing tools, so that, by the end of the module, they can continue to explore data sets driven by their own inquiry.
http://apps.dataintheclassroom.org/water-quality/

Water Resources of the Caribbean Countries & Territories
The CD *Water Resources of the Caribbean Countries & Territories* is now ready for distribution (for a nominal cost). The CD has information for 35 countries, islands and/or territories, including maps; size, population, climate, economy; water availability, supply, and demand; vulnerability of coastal aquifers; coastal zone issues; and legal setup and institutions.
jasminko.karanjac@uwimona.edu.jm .

Water Safety
The U.S. Army Corps of Engineers is the leading provider of outdoor recreation on all federally-managed public lands in the United States. With a recreation base that is primarily built around water, the Corps has a dedicated focus on water safety. The pages of the National Water Safety Program website let you view current water safety materials available through the Corps program, download *Safe Passage* program information, and more. The Water Safety Fun Book can be downloaded at http://www.lacoast.gov/education/kids/coloringbooks/watersafety/.
The National Water Safety Program homepage is at http://watersafety.usace.army.mil/.

Water Science for Schools
The U.S. Geological Survey's *Water Science for Schools* website offers a broad range of information about water. Topics include basic background information, a breakdown of water use in the U.S., a glossary of terms, and much more. The website includes activities, graphics, data tables and more.
http://ga.water.usgs.gov/edu/sitemap.html

Water Science for Schools
This site from the U.S. Geological Survey explores many aspects of water. This website includes pictures, data, maps, and an interactive center where you can test your water knowledge. A glossary and related links are also included.
http://ga.water.usgs.gov/edu/

Water Wonders
The Wisconsin Department of Natural Resources offers *Water Wonders,* environmental education for young kids (K-3) and their teachers. Topics include the water cycle, groundwater and water facts, and conservation tips. There are also word searches and quizzes.
http://www.dnr.state.wi.us/org/caer/ce/eek/earth/groundwater/index.htm

Water's Journey Everglades
This website offers a wealth of information about the history and contemporary situation in and around the Everglades. It helps users understand the complicated ecological history and operation of the Everglades, including the role that humans play in its transformation. The website includes interactive maps, management information, history, lesson plans and other educational resources, and links to other materials and further background information.
http://theevergladesstory.org/

Waterbird Population Estimates
This publication sets the global standard in presenting estimates of the numbers and trends of waterbird populations throughout the world. This fourth edition provides a comprehensive update on information last provided in 2002 and summarizes population data on 878 waterbird species. The data are downloadable in spreadsheet format.
http://www.wetlands.org/event.aspx?id=318e62d4-b171-4f99-b77f-fda289041f6a

WaterFest – California
The San Luis Obispo County is holding WaterFest 2007, May 5, 2007 in San Luis Obispo, California. There will be games, hands-on educational activities, a water challenge contest, and more.
http://www.special-places.org/ecm/News_and_Events/WaterFest/Home.html

WaterLife
The NOAA Games website offers *WaterLife: Where Rivers Meet the Sea*, an interactive online game about estuaries. Set in California's Elkhorn Slough National Estuarine Research Reserve, the game explains what an estuary is and describes diverse ecosystems in estuaries and the influence of tides on the ecosystems. The game also addresses restoration efforts, marine debris, and emphasizes personal responsibility in caring for the environment. Check out the accompanying Field Guide.
http://games.noaa.gov

WaterNews
WaterNews is a weekly on-line publication of the U.S. Environmental Protection Agency's Office of Water that announces publications, policies, and activities.
http://www.epa.gov/water/waternews/ .

Watershed Action: Educate the Public
The Center for Global Environmental Education website offers information for teachers, grades 6-12, to plan educational activities for students to protect and clean up watersheds. Projects include trash cleanup, stenciling storm drains, testing soil nutrients, composting, planting to prevent erosion, and water quality monitoring. Instructions are provided, and links to related information are provided for teachers and students.
http://cgee.hamline.edu/watershed/action/projects/public_ed.htm

Watershed Handbook
EPA's Office of Water has published *Draft Handbook for Developing Watershed Plans to Restore and Protect Our Waters*, a guide to watershed management as a tool in developing and implementing watershed plans. The handbook is aimed toward communities, watershed groups, and local, state, tribal, and federal environmental agencies. The handbook is designed to take the user through each step of the watershed planning process, including monitoring, outreach, BMPs, and more.

Comments should be addressed to watershedhandbook@epa.gov by June 30, 2006.
http://www.epa.gov/owow/nps/watershed_handbook/

Watershed Patch Project
The EPA's Watershed Patch Project teaches students what watersheds are and motivates them to get involved in local watershed protection activities. The booklet includes step-by-step instructions for community-based watershed protection activities, including stream walks, monitoring projects, and stream cleanups. The project, with certificate awards, is modeled after a similar project with the Girl Scouts of the USA.
http://www.epa.gov/adopt/patch/certificates/

Watershed Wonders
The Algalita Marine Research Foundation website offers educational materials available for downloading along with other initiatives. *Watershed Wonders* is an educational video series exploring issues in marine conservation, watershed management, and plastic debris. The series includes standard-based activities and information about water and watersheds for middle and high school classrooms.
http://www.algalita.org/education.html

Watersheds: Connecting Weather to the Environment - Online
National Environmental Education and Training Foundation, in partnership with the Cooperative Program for Operational Meteorology, Education and Training, has released the first in a series of free online courses relating weather to the environment. *Watersheds: Connecting Weather to the Environment* is a primer on how weather events relate to the health of a watershed, and how the public can take simple actions to protect watershed health. The website includes downloadable resources, images, and more.
http://www.meted.ucar.edu/broadcastmet/watershed

WaterWatch
The United States Geological Survey offers WaterWatch, with a map of real-time streamflow on the homepage. The data is organized into seven percentile classes that draw on historical data to illustrate how the current streamflow activity compares to activity in the past. Using a series of drop-down menus on the top allows users to look for current flood and drought watches and also access historical maps and graphs that offer some perspective on monthly streamflow.
http://water.usgs.gov/waterwatch/

WaterWorks!
WaterWorks! is a public education and outreach program implemented through the Middle Tennessee State University Center for Environmental Education and designed to promote clean water in Tennessee. The program offers a series of public service announcements promoting water quality through responsible individual action. Brochures, a Stream Saver awards program, and more. To obtain the materials or for more information, please check out the website or contact them at (615) 898-2660.
http://www.tennesseewaterworks.com/

Watery Ring of Life: Saving our Estuaries, a PBS Broadcast
The Teaching Learning Network has produced a documentary featuring four National Estuary Programs: Maryland Coastal Bays, Narragansett Bay, Mobile Bay, and Puget Sound. The documentary presents information about estuaries, including their social and

economic importance, and highlights steps the four estuaries are taking to protect and restore their valuable resources.
drvolk@erols.com

Wave that Shook the World
This website from PBS is based on the NOVA TV program which originally aired on March 29, 2005 and tells the story of the 2004 tsunami, featuring video footage and scientific analysis of the onrushing waves that spread for 3,000 miles around the Indian Ocean basin. The website offers interactive features, questions and answers, a downloadable teacher's guide, and more.
www.pbs.org/wgbh/nova/tsunami/

Wavebreaking News
NOAA's National Ocean Service (NOS) presents the fall edition of Wavebreaking News, a multimedia presentation of developments in NOS science and technology. Available in Quicktime or Windows Media for different connection speeds, this brief news report features the Hunt for the Alligator, Navigation Safety, and Dolphin Health Exams. Links to information and contacts allow in-depth research into these topics. And while you're on the website, check out the links to the NOS data explorer, publications, and other topics. http://oceanservice.noaa.gov/news/wbnews/welcome.html .

Waves, Wetlands, and Watershed, and Coastal Bluffs
The California Coastal Commission presents *Waves, Wetlands, and Watersheds,* an activity guide that addresses issues such as endangered species, coastal geology, and water use. A four-page primer on *Coastal bluff erosion* further investigates coastal processes. A Marine, Coastal & Watershed Resource Directory contains information on organizations working on issues related to the coast, including educational resources.
www.coastforyou.com, click on "For Educators."

Wayfinders: A Pacific Odyssey
This website is the companion for a PBS film that features a community of Pacific Islanders as they build sailing canoes & follow the stars on a 2,000-mile voyage across the ocean. The site includes a wayfinder game, an essay on navigating "blind," an interview with a wayfinding expert, links to related websites, and more.
http://www.pbs.org/wayfinders/

WCPA Best Practice Guidelines
The IUCN WCPA offers a variety of guidelines for protected area managers, available for download from their website. These include *Guidelines for applying Protected Area Management Categories, Sacred Natural Sites - Guidelines for Protected Area Managers; Evaluating Effectiveness - A Framework for Assessing Management Effectiveness of Protected Areas 2nd Edition, Sustainable Financing of Protected Areas,* and more.
http://www.iucn.org/about/union/commissions/wcpa/wcpa_resources/wcpa_bpg/index.cfm

Weather and Climate Data at the National Climatic Data Center (NCDC)
The National Climatic Data Center operates the World Data Center-A for Meteorology, in Asheville, North Carolina, and the World Data Center for Paleoclimatology, in Boulder, Colorado. NCDC provides access to all of the on-line data at no cost to users with .k12.xx.us or .edu domains. Free products include, but are not limited to monthly

weather data summaries for a range of sites, historical weather maps, hourly precipitation data for a range of sites, and more.
http://ols.ncdc.noaa.gov/phase3/freeaccess.html .
http://www.ncdc.noaa.gov/oa/ncdc.html .

Weather, Climate, and Energy
Hurricane season in the Atlantic is June 1-November 30, 2006. Scientists are predicting another difficult season. Annenberg Media offers online programs that can help your students better understand the forces that influence our weather
Weather - http://learner.org/redirect/june/weather32.html
Planet Earth Program 3, The Climate Puzzle -
http://learner.org/redirect/june/planet33.html
Science in Focus: Energy, Workshop 6, Energy and Systems -
http://learner.org/redirect/june/energy34.html

Weather Puzzle
These weather picture "Slyder" puzzles on The Space Place website are fun to try. Users can pick easy, medium, or hard levels of difficulty to challenge logical- and spatial-reasoning muscles and to reveal dramatic ground-and space-based images of Earth and space weather phenomena.
http://spaceplace.nasa.gov/en/kids/goes/slyder

WeatherFest
WeatherFest, January 29, 2006 in Atlanta, Georgia, is an interactive science and weather fair designed to promote the field of meteorology, oceanography, and related sciences to Atlanta and surrounding area families, students and teachers. WeatherFest will feature more than 50 science exhibits including hands-on experiments, educational information, career guides, and more. WeatherFest is part of the American Meteorological Society's 86th Annual Meeting.
http://www.ametsoc.org/meet/annual/weatherfest.html

Web Resources for Environmental Educators
The Web Resources for Environmental Educators from the U.S. Fish and Wildlife Service is a link from the National Conservation Training Center's Conservation Library home page. It has links to a variety of sites that are helpful for educators, including general environmental education links, education standards and terms, resources, and electronic field trips.
http://training.fws.gov/library/

Webbing the Islands
The aim of this website from the University of Tasmania is to provide to people with a passion for islands, especially teachers, students, and community workers, a range of exciting and interesting island studies, activities, and resources, and to offer this space online to share work on islands with others around the world. Each year, the website will focus on one theme related to islands; this year that theme is Sense of Place. The website includes downloadable learning units.
http://www.webbingtheislands.com/index.html

Webcast.Berkeley
Berkeley offers a number of webcasts and podcasts of select courses and campus events on this website. Visitors can learn about each event in the information section,

and for some, users have the option to download the audio portion of the event. The course section provides webcasts, and users can also download podcasts. The selection of courses includes lectures on wildlife ecology, natural resources and population, animal behavior, and more.
http://webcast.berkeley.edu/

Webcams in Marine Protected Areas
MPA NEWS, Vol. 8, No. 5 from November 2006 published *Bringing MPAs Online: The Use of Webcams for Education, Monitoring, and Other Purposes*, offering a discussion of the use of webcams in marine protected areas for education, monitoring, and other purposes. In offers min-case studies of some of the ongoing projects, successes, and problems associated with this technology.
http://depts.washington.edu/mpanews/issues.html#Nov%202006

WebRangers Website
The National Park Service hosts an interactive WebRangers website for kids age 6 and up. They can earn achievement certificates by completing different activities and earning passwords. Along the way they learn about the Park Service, as well as different National Parks, cultural artifacts, wildlife, and more. The activity list includes Protect the Harbor, Turtle Hurdles, Water Quality, and more. This site is strictly for fun.
http://nps.gov/webrangers/

Weird & Wonderful Wildlife Poster
The U.S. Fish & Wildlife Service offer this new endangered species poster, Weird & Wonderful Wildlife, aimed at kids and the young at heart, highlighting 14 species with odd-sounding names. The artist imagined what they might look like based on their names, and one side of the poster is a collage of fanciful illustrations; the other side features photos of the plants and animals, accompanied by a few fun facts. The poster is available for free.
http://www.fws.gov/endangered/kidsposter.html

WeirdFins
WeirdFins is a NOAA Fisheries Service website and weekly podcast about strange or bizarre creatures that inhabit the sea. Each podcast is only two minutes long and is packed with interesting information. The website also invites visitors that have heard of or seen a weird sea creature that they would like to see featured, to contact WeirdFins. The website includes a text of the podcast in addition to the audio. Note: some of the links may not work properly at the moment, but this website is worth looking at.
http://www.nmfs.noaa.gov/rss/podcasts/weirdfins/

West Indian Whistling Duck and Wetlands Conservation Project
The West Indian Whistling Duck and Wetlands Conservation Project works to reverse the decline of this endemic endangered duck, and to prevent the further loss and degradation of wetlands in the West Indies. Through the educational materials and workshops, local working groups have been working to raise awareness of and appreciation for the value of local wetlands and their responsible use, while pointing out the consequences of species and wetland loss.
http://whistlingduck.org/

Western Hemisphere Migratory Species Initiative Pathway
The Western Hemisphere Migratory Species Initiative Pathway website offers a myriad of information and useful links for those interested in studying migratory species. The website links to projects, resources and date, stories from the field, lessons learned, funding sources, and more. It is available through the Rainforest Alliance and is offered in English and Spanish.
http://www.eco-index.org/migratory/

Western Regional Climate Center
One of six regional climate centers in the United States, the Western Regional Climate Center is administered by the NOAA, and is overseen by the National Climatic Data Center. Covering the area from Colorado to the boundary of the continental U.S., and including Hawaii and Alaska, this website hosts historical climate information and current atmospheric observations and frequently updated forecasts. In addition to the scientific information, the site also has a number of educational pages.
http://www.wrcc.dri.edu/

Western Waters Digital Library
The vast reserves of water within the Western United States have been the cause of both great excitement and concern. This digital library brings together a wide range of documents, including legal transcripts, water project records, video collections, and personal papers documenting the Columbia, Colorado, Platte, and Rio Grande river basins.
http://harvester.lib.utah.edu/wwdl/

WET in the City
WET in the City engages K-12 youth in hands-on activities that find creative ways to explore the science of water, its cultural context, and the complex issues surrounding its management and stewardship. The program is delivered at the local level, city by city, and targets urban educators with relevant, localized water education through a network of city partners. Sample activities can be downloaded from the website.
http://www.wetcity.org/index.htm

WET in the City and Team WET Schools
WET (Water Education for Teachers) in the City, an urban environmental education program of the Council for Environmental Education, engages K-12 youth in hands-on activities that creatively explore the science of water, its cultural context, and complex issues surrounding its management and stewardship. Team WET Schools is a companion program to WET in the City, bringing urban water issues to the forefront of environmental education in school buildings.
http://www.wetcity.org/

Wetland 101 CD
The educators of Environmental Concern, Inc. have created an educational resource CD for primary school teachers to use as a supplement for their water related curriculum, helping teach students about the wonderful world of wetlands. The Wetland 101 PowerPoint presents the basics of wetland ecology, functions, and values in a kid-friendly format. The accompanying notes pages provide recommended extensions on each topic.
https://sslserver.com/wetland.org/shop/main_publications.shtml?id=pub88

Wetland User's Guide
An Introduction and User's Guide to Wetland Restoration, Creation and Enhancement, produced by EPA and NOAA, introduces non-technical readers to the basics of wetland projects, including planning, implementing and monitoring, and provides other references. To request a free copy, key EPA843B03001 into the search engine.
http://www.epa.gov/ncepihom/index.htm

Wetlands Documents
A variety of publications are available for downloading at the Wetlands International website, including *The Socio-Economics of Wetlands* and T*he 7th Directory of Wetlands of International Importance*.
http://www.wetlands.org/pubs&/nwdnloads.htm

Wetlands International
Wetlands International, a non-governmental organization, promotes the conservation and wise use of wetlands on the global, regional, and national levels. The website offers a brief introduction to wetlands, publications, a newsletter, and information about projects around the world.
http://www.wetlands.org/

Wetlands on Wheels – Eastern Shore
Environmental Concern Inc. offers its new Mobile Classroom, available to cruise to a schoolyard, library, or event near you. The classroom includes 25 learning stations, offering hands on activities which teach students the importance of wetlands in a unique learning environment. The classroom travels to Eastern Shore schools in Maryland, Delaware, and Virginia.
http://www.wetland.org/wetlandsonwheels.htm

Wetlands & Wonder Video: Reconnecting Children with Nearby Nature
This 14-minute video was produced by the U.S. Environmental Protection Agency discusses the loss of wetlands and the effect that the loss of natural areas closest to us has on our connection to the natural world. The video includes streaming text for the hearing impaired.
http://www.epa.gov/owow/wetlands/education/wetlandsvideo/

Wetlands Training and Curricular Guides
POW! Planning of Wetlands guides educators through the creation, restoration or enhancement of a wetland on school grounds or within the community. *Wow! The Wonders of Wetlands* includes activities in lesson plan format, background information on wetlands, ideas for student action projects, and a wetlands resource guide. An online wetlands course covers basic wetland ecology, types, functions and management.
http://www.wetland.org/educa.htm

Wetlands are Wonderful Scavenger Hunts - Georgia
Reed Creek Park in Martinez, Georgia, will be holding a series of scavenger hunts in November and December. The events will be tailored for school-aged children but all are welcome to explore their neighborhood to learn about the plants and creatures that live in a wetland habitat.
http://www.eeingeorgia.org/net/calendar/details.aspx?s=57828.0.68.4863

Wetpixel.com – Digital Imaging for Divers
Wetpixel is dedicated to providing the latest information on digital underwater photography and imaging, allowing photographers to stay current with the technology and techniques that are changing the way we view the underwater world. The website offers equipment reviews, photography news, a beginner forum, and more.
http://www.wetpixel.com/

WET-WASH Initiative for Coastal Sewage Contamination
Globally, sewage is the largest source of marine contamination by volume. To address this, the United Nations launched a new campaign to clean up the seas by ensuring that people have access to toilets and safe drinking water. The partnership combines the Wastewater Emission Targets initiative with the Water, Sanitation and Hygiene for all campaign. The WET-WASH website has downloadable resources, including a training manual and 10 keys for sustainable municipal wastewater management.
http://www.gpa.unep.org/pollute/sewage.htm .

Whale Rider Family Guide
The award-winning New Zealand film, *The Whale Rider*, premiered July 24,2005 on PBS. *Whale Rider* re-interprets a 1,000-year-old legend about Paikea, the founder of the native New Zealand tribe *Ngati Konohi*, whose members believe their leader arrived in their village on the back of a whale after his canoe capsized. The family viewers guide is a collaboration to create a national outreach campaign and interactive web experience around *The Whale Rider*.
http://www.piccom.org/whalerider/home.html

A Whale of a Story
Electronic Field Trips from Ball State University are interactive, multi-media educational resources, selecting hard-to access places, national parks, and species for their focus. *A Whale of a Story* is a collaboration between Ball State University, Aquatic Adventures, and Scripps Institution of Oceanography, following the migration of the eastern Pacific gray whale. Designed for 3-8 graders, the website offers games, webisodes, and more.
http://www.bsu.edu/eft/home/00front.htm

Whale Trackers
Whale Trackers is a series of documentary programs that explore the lives of whales, dolphins, and porpoises. The videographers join international scientists and conservationists on expedition to investigate species and the diverse habitats they depend on. They examine the threats the animals face with a focus on how we can make a difference through a better understanding of our oceans. The website offers educational materials, videos, a photo gallery, and more.
http://www.whaletrackers.com/

Whale Watch
Through May 31, 2008, the public is invited to embark on a whale watch adventure through the Aquarium of the Pacific's educational whale cruise, in Long Beach, California. Explore the nearby seas to seek out the gray whale, bottlenose dolphin, sea lion, and a host of migratory waterfowl. The ocean adventure includes an educational multimedia presentation by a marine naturalist as well as various hands-on learning activities for all ages. The cost includes aquarium admission.
http://www.aquariumofpacific.org/education/programdetails/whale_watch/

Whale Watch Weekend and Intertidal Life Festival
The National Park Service hosted the 21st Annual Whale Watch Weekend and Intertidal Life Festival at Cabrillo National Monument, January 19-20, 2008. Participants explored tidepools and observe sea anemones, sea hares, and more; witnessed the return migration of Pacific gray whales en route from Alaskan feeding waters to their Baja California breeding lagoons; and listened as authors, researchers, and educators discuss the latest information concerning Pacific gray whales and intertidal life.
http://www.nps.gov/cabr/

WhaleNet
Wheelock College's WhaleNet Interactive Education website focuses on whales and marine research. Visitors can track marine mammals in real-time or used archived data to research the movements of various species or genders of satellite tagged marine mammals and sea turtles. There is also a program following the track of Erden Eruc as he rows across the Pacific Ocean and circumnavigates the world using only human-powered transportation. A variety of educational units and resources are available.
http://whale.wheelock.edu/Welcome.html

Whales of the Mediterranean Sea
Whales of the Mediterranean Sea, a five-part documentary film series, is now available for download and use by teachers, with subtitles in six languages. The documentaries were produced to raise awareness, address challenges, create opportunities, and offer potential solutions to the problems facing this semi-enclosed sea in one of the most populous regions in the world. All documentaries are accompanied by complimentary education materials.
http://www.whaletrackers.com/whales-mediterranean-sea/

Whales: Voices in the Sea
This website from the Scripps Institution of Oceanography at the University of California, San Diego offers information about whales using Flash graphics, video, and more. Listen to the audio files and view the spectrograms of calls of humpback, beaked, gray, right, sperm and blue whales. The graphics show whale range and short video features offer information about each of the whales, current research on their sounds, and conservation efforts. A major expansion of the website will be unveiled in May 2006.
http://voicesinthesea.org

What Bird
This online bird guide for identifying birds of North America offers users a visual search engine to identify birds, the ability to create your own bird field guides, and consult with experts. You can browse by location, body shape, size, color, and field marks.
http://www.whatbird.com/

What's an Estuary, Now You Know
The Association of National Estuary Programs, in partnership with the National Estuarine Research Reserves, launched the *What's An Estuary? Now You Know* campaign to make the word "estuary" a household word by 2005. A multimedia presentation is available for viewing and downloading from the website. In 2004, the campaign will launch a media campaign featuring television, radio, and print ads.
www.whatsanestuary.com

What's an Estuary? Now You Know CD-ROMs Available
4900 copies of the Association for National Estuary Program's *What's an Estuary? Now You Know* CD-ROMs are available to order from the US EPA's National Service Center for Environmental Publications. There will be a limit of 25 CDs per order, though requests for larger quantities will be considered for special events or estuary education and outreach needs.
http://www.epa.gov/ncepihom/ .

What's in your Watershed?
In the Bridge DATA, *What's in your Watershed?*, students will learn what a watershed is and how it is affected by all its residents, no matter how distant they are from the primary waterway. Students explore Chesapeake Bay Program data to evaluate land use and riparian buffer statistics, along with water quality data from the Bay's various ocean observing systems.
http://www.marine-ed.org/bridge/index_archive0203.html

What's New in the New Year?
Stay current by joining Scuttlebutt, the Bridge website's marine science education email discussion list. This no cost, international listserv provides a forum for educators and scientists to informally discuss marine education ideas, issues, and questions, and allows ocean science programs from across the globe to advertise summer and year-round opportunities for educators and students, as well as countless new classroom resources.
http://www2.vims.edu/bridge/search/scuttle.cfm
http://www.marine-ed.org/bridge

What's the *Scuttlebutt*?
An excellent way to stay current with all the latest news in the world of marine science education is *Scuttlebutt*, the Bridge email discussion list, an international listserv for educators and scientists to informally discuss marine education ideas, issues, and questions, allowing ocean science programs from across the globe to advertise summer and year-round opportunities for educators and students. *Scuttlebutt* is monitored by the Bridge staff, which assists in locating experts to answer posted questions when needed.
http://www.marine-ed.org/bridge/index_scuttle.html

Where on Earth?
Embark upon a geographical adventure with NASA Jet Propulsion Laboratory's Multi-angle Imaging SpectroRadiometer (MISR) Mystery Image Quizzes. These puzzles are designed to inspire understanding of the physical, biological, and human processes that influence our home planet and cover topics from archaeology to zoology. Several available resources for discovering and revealing the meaning of image features help new geographical detectives to solve the challenging quiz questions.
http://www-misr.jpl.nasa.gov/education/whereonearth.html

Whooping Cranes Migration
This educational website was developed through a partnership of Annenberg/CPB, Journey North, and the Whooping Crane Eastern Partnership. This site connects to an extensive selection of lessons, activities and information, facts about Whooping Cranes in question/answer format, and background information about the Whooping Crane

Reintroduction Study. Users can also connect to highlights from the Year 3 Reintroduction and Migration including maps, video clips, and photos http://www.learner.org/jnorth/fall2003/crane/index.html .

The Why Files
Science touches our lives in countless ways. Yet people often think science is relevant only to a white-coated, lab-dwelling elite. The Why Files portray science as a critical human endeavor conducted by ordinary people. They use news and current events as springboards to explore science, health, environment, and technology, with plenty of focus on the ocean. Their real-life approach to science writing, and correlation to science teaching standards, can help you bring the news and science into the classroom. http://whyfiles.org/index.html .

Wider Caribbean Sea Turtle Conservation Network
The Wider Caribbean Sea Turtle Conservation Network (WIDECAST) is an international scientific network comprised of volunteer Country Coordinators (mainly sea turtle experts, natural resource professionals, and community-based conservationists), an international Board of Scientific Advisors, and Partner Organizations in more than 30 Caribbean States and territories. The program offers an educator's handbook and a teacher's activity manual to help teachers bring the study of sea turtles into classrooms. Contact Karen Eckert at keckert@widecast.org

WikiEducator
The Commonwealth of Learning is an intergovernmental organization created by Commonwealth Heads of Government, Canada, to encourage the development and sharing of open learning and distance education knowledge, resources, and technologies. They support WikiEducator, an online community resource for the development of free educational content. Check out the Virtual University for Small States links (VUSSC Node).
http://www.wikieducator.org/Main_Page

Wild Classroom and Explore Biodiversity
This non-profit organization from Washington offers Explore Biodiversity, founded as an educator's resource, and The Wild Classroom, an outreach portal, to provide teachers with quality videos for use in their classrooms. The websites include video podcasts on a wide range of subjects.
http://www.explorebiodiversity.com/main/videopodcast.html
http://www.thewildclassroom.com/

Wild Oceans
The IMAX film, *Wild Oceans*, follows the struggle for sea life off the coast of South Africa. A downloadable teacher's guide is available.
http://wildoceanfilm.com/admin/mod_documents/view_file.php?id=5

Wild Republic's Learning Adventure
Wild Republic's Learning Adventure features lesson plans about nature, animals and their habitat. The 2004-2005 lesson plans are provided by Audubon Adventures and include marine mammals, animal talk, ponds, and more. There is also a special purchase program for discounted plush animals, including water birds and birds of prey.
http://www.wildrepublic.com/lessonplans/2004/index.html

Wild Things 2003 - Habitat is Home Sweet Home
The U.S. Fish and Wildlife Service and its partners sponsor a *Wild Things* Electronic Field Trip yearly. This year they broadcasted a free, live, interactive satellite learning adventure geared towards Grades 5-7. *Wild Things* helps students and teachers explore and learn about National Wildlife Refuges and the fascinating critters that inhabit them.
www.nationalgeographic.com/geographyaction, http://www.wildthingsfws.org/

WildFinder
The World Wildlife Fund has created the WildFinder database, which allows users to find out where various species live around the world. The information in the database is based on 825 ecoregions and currently includes information for four large taxa: birds, reptiles, mammals, and amphibians. Visitors can search by country, U.S. ZIP code, or city; search by species name; and also view a map gallery that contains some pre-selected themes.
http://www.worldwildlife.org/wildfinder/

Wildfowl and Wetlands Trust Education Website
The Wildfowl and Wetlands Trust presents WWTlearn – Learn from the world's wetlands. This education site includes downloadable lesson plans, data sets, background materials and images about water, wetlands and wetland life. Designed to the English National Curriculum, it is adaptable to U.S. standards. There is also a quarterly e-newsletter.
http://www.wwtlearn.org.uk/index0.html

Wildland Fire Lessons Learned Center
The purpose of this website is to improve safe work performance through organizational learning in interagency wildland fire. The website offers resource documents, newsletters, lessons learned, and more.
http://www.wildfirelessons.net/Home.aspx

Wildlife and Whale Cruises
The Aquarium of the Pacific invites the public on whale watch cruises through their educational "Wildlife and Whale Cruise," Saturdays and Sundays in February and March, 2006. Cruises include an educational multimedia presentation by a marine naturalist as they search for migrating animals along with hands-on learning activities for children of all ages, including *Whale Biofact Discovery* and the *Plankton Tow.*
http://www.aquariumofpacific.org/EDUCATION/OUTDOOR/whale.htm

Wildlife Forever
The mission of Wildlife Forever is to conserve America's wildlife heritage through conservation education, preservation of habitat and management of fish and wildlife. The Wildlife Forever CD-ROM Curriculum is a conservation education supplement that teaches students about a variety of wildlife species, natural resources, ecological concepts, and conservation. The curriculum includes 14 lesson plans designed to cultivate a feeling of personal responsibility for the wonders of nature.
http://www.wildlifeforever.org/

Wildlife-Friendly Yard Program
The AZA is spearheading a wildlife-friendly yard program. This new program will focus attention on some important issues surrounding the health of our waterways and provide people with a tangible way to take action. By encouraging people of all ages to help

make their own yards friendlier for wildlife, habitats "downstream" from these lawns will be healthier for animals like otters, salmon, whales, manatees, and catfish. For additional information about how your organization can participate in this project, contact Dot Siegfried at dsiegfried@aza.org, or call (301) 562-0777, ext. 254.
http://www.riverbanks.org/s04education/wildlifefriendly.shtml

Windows to the Universe
Windows to the Universe is a website covering earth and space sciences for use by the general public. It includes documents, animations, data sets, and much more, exploring the historical and cultural ties between science, exploration, and the human experience. The site is written in three reading levels approximating elementary, middle school, and high school reading levels. Topics include the hydrosphere, climate and global change, and more.
www.windows.ucar.edu/cgi-bin/tour_def/earth/earth.html

Wings Over Water Festival
Wings Over Water, on North Carolina's Outer Banks, celebrates the wildlife and wildlands in eastern North Carolina, drawing visitors from all over the country to experience the unique landscape, dunes, marshes, and inland forests of the Outer Banks while participating in birding, natural history, outdoor recreation, and paddling programs. The festival is a partnership between the Fish and Wildlife Service, the National Park Service, the Outer Banks Chamber of Commerce, and more.
www.wingsoverwater.org

Winter Wonderland
The Bridge features a series of Data Analysis Teaching Activities (DATA) that can be used to supplement curriculum material with timely and seasonal resources. Winter Wonderland focuses on how snow is formed and explores the idea that no two snowflakes are the same. The activity also discusses the water cycle and how water in the ocean can become snow in the mountains. Students will evaluate archived snowfall data and forecast snowfall at home and at the 2006 Olympic Games.
http://www.marine-ed.org/bridge/index_archive0102.html

Wonderful World of Weather
This standards-based Real Time Data Module for elementary students, developed by the Center for Improved Engineering and Science Education (CIESE) at the Stevens Institute of Technology, allows students to investigate weather phenomena locally and in other places around the world. By using hands-on activities and real-time data investigations, the students develop an understanding of how weather can be described in measurable quantities, such as temperature, wind and precipitation.
http://www.k12science.org/curriculum/weatherproj/index_NEW.html .

Wonders of Water – American Zoo and Aquarium Association National Awareness Campaign
American Zoo and Aquarium Association (AZA) members are providers of animal care, conservation, and public education about wildlife, providing the highest standard of animal care while offering enjoyable educational experiences for families. This year, AZA zoos and aquariums embark on a public education campaign, *Wonders of Water,* to let the world know that everyone can make a real difference to help animals and our planet. It focuses on water-themed educational messages and family fun.
www.azasweb.com

Worksheet Library
This website features printable worksheets for teachers of grades K-6. The worksheets are aligned to National Standards and can be searched by grade level, subject, or standards. Some worksheets are free for downloading; others are available to members.
http://www.worksheetlibrary.com/

World Atlas of Seagrasses
UNEP/World Conservation Monitoring Center released the World Atlas of Seagrasses. The Atlas is the first book to summarize the global status of seagrasses. The book is a collaboration of leading experts in the field.
http://www.unep-wcmc.org/marine/seagrassatlas/

World Conservation Monitoring Center Interactive Map Service (IMAPS)
UNEP-WCMC has been pioneering the delivery of interactive map-based conservation data on the Internet. Current GIS data sets that UNEP-WCMC maintain include Coral reefs, Seagrasses, Mangroves, and Protected Areas. The web GIS maps are easy to use and offer a basis for scientific inquiry and exploration in the classroom.
http://www.unep-wcmc.org/index.html?http://www.unepwcmc.org/reception/ims.htm~main .

World Conservation Monitoring Center Publications and Information
The United Nations Environment Program – World Conservation Monitoring Center maintains a large number of reports on different aspects of the environment, including biodiversity, ecosystems, and climate change. The website has a list of reports, many downloadable.
http://www.unep-wcmc.org/index.html

World Database on Protected Areas
The newly redeveloped World Database on Protected Areas includes features to increase access to maps, spatial files, metadata, and other information on the world's terrestrial and marine protected areas, including viewing in Google Earth or downloading data in various formats. Additional features aid the updating of data and quality control. It incorporates The MPA Global Database, created as part of the *Sea Around Us Project* at the University of British Columbia.
http://www.wdpa.org/

World Database on the Protected Areas of the World
The World Database on Protected Areas (WDPA) Consortium website contains information about the 2004 World Database on the Protected Areas of the World, a CD-ROM product. It was part of the WDPA Consortium efforts to share conservation information for the Fifth World Parks Congress. The Consortium welcomes contributions to the database by experts on protected areas.
http://www.biodiversity.org/wcpa/ev.php?URL_ID=1697&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1099533914 .

World Ecosystems Beyond Borders
World Ecosystems Beyond Borders engages students in a dynamic study of local and global environmental issues. The units compare issues faced by Wisconsin communities and communities abroad. Each unit contains background information,

activities, and a list of additional resources. The materials were prepared with a middle school audience in mind and can be easily adapted and used in the high school classroom. Topics include aquifer depletion, dams, and more.
http://global.wisc.edu/outreach/k-12/webb/

World Environment Day
World Environment Day, commemorated each year on June 5, is a principal vehicle through which the United Nations stimulates worldwide awareness of the environment and enhances political attention and action. This year's theme is *Wanted! Seas and Oceans – Dead or Alive?,* and the host nation will be Spain. A down-loadable poster is available in six languages.
http://www.unep.org/wed/2004/ .

World Heritage in Young Hands
This educational toolkit developed by the World Heritage Organization is designed to teach about the importance of the preservation of cultural and natural heritage around the world. The toolkit proposes classroom and extra-curricular activities, offers student activity sheets, and provides a series of enlarged photographs of World Heritage sites, a poster, a World Heritage map, stickers and thematic overhead projection sheets to be used for classroom discussions. It is available in English, French, and Spanish.
http://whc.unesco.org/education/sindex.htm

World Heritage Sites
The United Nations Educational, Scientific and Cultural Organization (UNESCO) encourages the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. The World Heritage List has 754 properties - 582 cultural, 149 natural and 23 mixed properties in 129 States. The natural site datasheets provide plenty of information for comparisons. The *World Heritage Information Kit* is a downloadable document that provides a program overview.
http://whc.unesco.org/pg.cfm?cid=1 .

World Meteorological Organization
The U.N.'s World Meteorological Organization website offers information on weather, climate, and water. The Topics section contains links to thematic pages on over four dozen areas of interest, including women in meteorology, Antarctic activities, disasters, and much more. The website also offers information on weather conditions and links to the Severe Weather Information Centre with a real-time interactive map of the world.
http://www.wmo.int/

World Ocean Day
World Ocean Day, observed yearly on June 8, is an opportunity to celebrate our world ocean and our personal connection to the sea. The Ocean Project helps to coordinate events and activities worldwide with aquariums, zoos, museums, and the World Ocean Network. The website includes activity ideas and helpful hints to get you started. A list of some of last year's celebrations is posted, and this year's list will be up on the website by June 1, 2005.
http://www.theoceanproject.org/news/oceanday.html
www.worldoceanday.org
http://theoceanproject.org/wod/index.php

World Ocean Observatory
The World Ocean Observatory is dedicated to information, education and public discourse about the ocean defined as an integrated global social system. The intent is to communicate the full spectrum of ocean issues — climate, fresh water, food, energy, trade, transportation, public health, finance, governance, recreation and culture. The website contains links to ocean science, human uses, maps, databases, and more. The education section links to online curriculum and resources.
http://thew2o.net/

World Ocean Observatory Online Events
The World Ocean Observatory is dedicated to information, education, and public discourse about the ocean defined as an integrated global social system. Upcoming online events include explorations about the International Polar Year, Sea Turtles, Marine Education, Underwater Exploration, Ocean Energy, Coral Reefs, and more. Subscribe to the newsletter for reminders and essays about these events.
http://www.thew2o.net/events/index.php

World Ocean Day
The World Ocean Day website offers inspiration for planning World Ocean Day (June 8, 2008) events, along with a global event map with everything from ocean excursions and watershed cleanups to community projects to stitch together a fluffy underwater display. List your event on the website to help get the word out. Download the resources in the media and outreach kit and additional offers, including Seas the Day bookmarks, Monterey Bay Aquarium National Seafood Wallet Guides, and 41pounds.org postcards.
http://www.theoceanproject.org/wod/

World Ocean Passport
The World Ocean Network's mission is to inspire and foster a change in individual behavior towards a sustainable management of the global ocean, and its task is to coordinate communication to the public about ocean issues and marine resource management. The World Ocean Passport is an educational tool for its member organizations to promote ocean awareness and conservation with their visitors.
www.nausicaa.fr/reseau/ .

World Oceans Day – June 8
World Oceans Day, celebrated yearly on June 8, was created in 1992 at the UN Earth Summit in Rio de Janeiro. The Ocean Project has established a North American World Ocean Day planning committee in an effort to coordinate efforts, develop and suggest awareness-raising tools, resources, and activities, and establish an annual theme. Please let them know what you are planning so they can highlight your organization on their WOD website. Visit the website periodically as people send in their activities.
http://www.theoceanproject.org/news/oceanday.html .
www.worldoceanday.org

World Water Day
The theme for this year's World Water Day, March 22, 2006, is *Water and Culture*. Check out the UNESCO website for examples of past celebrations and downloadable booklets to help celebrate water for life. Annenberg Media offers lessons about water in many of their free Video on Demand offerings, including:

- Water properties, The World of Chemistry, http://learner.org/redirect/march/wchem67.html

- Role of water in formation of landscapes and threats from pollution, Earth Revealed, http://learner.org/redirect/march/earth68.html
- Water is for Fighting Over, Human Geography: People, Places, and Change, http://learner.org/redirect/march/hgeog69.html
- Egypt: Gift of the Nile and Oil and Water, The Power of Place: Geography for the 21st Century, http://learner.org/redirect/march/place70.html

http://www.unesco.org/water/water_celebrations/index.shtml

World Water Day 2004
The UN International Strategy for Disaster Reduction and the World Meteorological Organization have been charged with coordinating World Water Day 2004 on March 22, 2004. This year's theme is *Water and Disasters*.
http://www.unesco.org/water/water_celebrations/index.shtml .

World Water Monitoring Day
America's Clean Water Foundation and the International Water Association invite your participation. On October 18, 2004 citizens of the global community will join in World Water Monitoring Day, a worldwide opportunity to positively impact the health of rivers, lakes, estuaries and other waterbodies. Volunteer monitoring groups, water quality agencies, students, and the general public are invited to test four key indicators of water quality: temperature, pH, dissolved oxygen, and turbidity. Register your activities on this website or check out links to some of the information and monitoring going on in your area.
http://www.worldwatermonitoringday.org/ .

World Water Monitoring Day
World Water Monitoring Day is September 18, 2008. World Water Monitoring Day offers communities around the world a chance to positively impact the health of rivers, lakes, estuaries, and other waterbodies. Register your activities on this website or check out links to some of the information and monitoring going on in your area. Check out the water monitoring kits available through the website.
http://www.worldwatermonitoringday.org/index.html

World Water Monitoring Day
America's Clean Water Foundation and the International Water Association invite citizens and organizations to share in the experience of water quality monitoring. World Water Monitoring Day, October 18, 2003, serves as a global educational platform for watershed leaders, educators, and trained volunteers to help the public better understand how the actions of individuals in a watershed can impact many others.
http://www.worldwatermonitoringday.org/

World Wetlands Day, Yearly on February 2
World Wetlands Day takes place yearly on the 2nd of February and offers an opportunity "to undertake actions aimed at raising public awareness of wetland values and benefits in general and the Ramsar Convention in particular." The Ramsar Bureau hosts a central website for the use of everyone organizing World Wetlands Day activities. The theme for 2004 is "From the Mountains to the Sea - Wetlands at Work for Us", 2005 is *Cultural and biological diversity of wetlands*, and 2006 is *Her Future at Risk*. Information is also available in Spanish and French. The 2007 theme is *Fish for tomorrow?*
http://www.ramsar.org/wwd/wwd_index.htm

World Wide Biome Project
The World Wide Biome Project is designed to encourage students to learn about ecosystems in their locale and share their findings with students from around the world through the Internet. Students or classes do an evaluation of a habitat in their biome according to a standard method of investigation, and then send the data in to the World Wide Biome Project. Their data is then converted into a series of web pages. This allows students to learn from other projects and compare and contrast the information.
http://www2.kpr.edu.on.ca/cdciw/biomes/

WorldWideScience
The WorldWideScience site is a global science gateway that is meant to help connect a worldwide audience to various national and international scientific databases. The site is maintained by the Office of Science and Technical Information with the U.S. Department of Energy. Visitors to the site's homepage can click on an interactive map of the world's countries to locate participants and their websites. There is an advanced search option, along with contact information.
http://worldwidescience.org/

Wreck of the Portland
Partners from the National Undersea Research Center (NURC) and Stellwagen Bank National Marine Sanctuary conducted two live video broadcasts from the R/V Connecticut back to shore to the Pilgrim Monument and Provincetown Museum. The broadcasts are archived on the Internet, along with a slide show and additional materials.
http://www.nurc.uconn.edu/livedive/index.htm

Writing Center
The University of Kansas offers this website to provide writing support for students who might be having trouble getting started with their own assignments or term papers, through writing tutorials and guide sheets. The website offers sections specifically designed for undergraduate or graduate students, including guides to crafting an effective thesis statement and working on pre-writing strategies. The Writing Guides section includes a sample writing gallery and an assignment planner.
http://www.writing.ku.edu/

Writing Guidelines for Engineering and Science Students
The University of Vermont offers this helpful website for both students and educators alike. These guidelines for scientific writing are designed to help students communicate their technical work and contain advice, models, and exercises for common writing and speaking assignments in engineering and science. Some of the specific resources include how to write for different audiences and how to design both presentation slides and scientific posters; also included are sample memos, letters, and resumes.
http://www.writing.eng.vt.edu/

Writing Resource Center
Effective strategies for becoming a better writer are useful resources for all of us, and this website from Empire State College was developed specially for adult learners and faculty use. The website offers sections such as Grammar & Punctuation, ESL Resources, and Documenting Resources. The site contains specific resources that

include worksheets for faculty on how to conduct informal writing activities, to a writing exercise on developing a research question and much more.
http://www.esc.edu/ESConline/Across_ESC/WritingResourceCenter.nsf/homepageForm?OpenForm

Wyland Ocean Challenge, "Clean Water for the 21st Century"
The Wyland Ocean Challenge promotes student understanding of the complex and interrelated issues that affect our water systems through art. The program is a marine life art and science educational curriculum available free to every K-6 classroom. The program meets national standards for science and art, and includes art activities, case studies, and science experiments to teach students about the water on our planet.
http://www.wylandoceanchallenge.org

Wyland Ocean Challenge Cleanup
The Wyland Foundation, PADI, and Project AWARE have joined together for a 15-state, 16-city Wyland Ocean Challenge Coastal Celebration and clean-up tour, to inspire over 1 million people to promote, protect and preserve the nation's marine habitats. The campaign will be conducting a 1,700-mile series of cleanups and festivals along the east coast of the United States. The campaign will be feature music, celebrity speakers, family activities, prize giveaways, and community clean-up events.
http://www.wylandoceanchallenge.org/index.cfm?do=costalcleanindex .

Yale Project on Climate Change
The Yale School of Forestry and Environmental Studies' Project on Climate Change offers resources and information to promote action on climate change. The resources are organized by category, including Business & Finance, News Media, Environmentalists & Civil Society, and more.
http://www.environment.yale.edu/climate/

Year of Clean Water Outreach Materials – Nonpoint Source and Stormwater
The EPA website highlights different monthly topics to celebrate the Year of Clean Water and 30 years of the Clean Water Act. Materials include information brochures, posters, and even crossword puzzle placemats that can be customized for your organization. The Watershed Events newsletter highlights several education and outreach campaigns.
http://www.epa.gov/water/yearofcleanwater/month.html
http://www.epa.gov/owow/watershed/eventspring03.pdf

Year of Science
The Year of Science 2009 website offers many reasons to celebrate science. Monthly celebrations include weather and climate, biodiversity and conservation, and more. For June's Ocean and Water theme, the website will feature a slide show entitled *A Day Without the Ocean*. They are collecting digital images (photos or scanned drawings) from the ocean education community, scientists, teachers, students, and anyone else interested, that illustrate what the world would be like if we lost this resource for a day.
http://www.yearofscience2009.org/

Year of Science Education Sampler
NOAA Education celebrates the 2009 Year of Science with a website and companion DVD, offering background materials, multimedia resources, informal activities, lesson plans, and curricula from across NOAA. The materials are geared for educators and

students of grades 3-12. The resources from the DVD can be individually downloaded from the website.
http://oceanservice.noaa.gov/education/yos/

Yellowstone Fires Interview Montage
Voices from the Past – Lessons for the Future is a video montage of lessons learned from the Yellowstone fires of 1988. The clip is about 12 minutes and is a sampling from 23 interviews and over 60 hours of video.
http://www.wildfirelessons.net/Home.aspx

Your Local Ecosystem
What rivers and streams flow through your neighborhood? What wildlife is local to where you live? Foxes, deer, and rabbits use utility right of ways as corridors to cross even busy urban and suburban areas. This website from the Environmental Literacy Council offers links to information about your area, often by just inputting your zipcode.
http://www.enviroliteracy.org/article.php?id=287