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

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

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

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/

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.
www.epa.gov/weatherchannel .

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

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

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 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

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 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

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

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

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/

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

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

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

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

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

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 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/

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 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

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/

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

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 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

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 .

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 – 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

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 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 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 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 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

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

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

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/

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

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

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/

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

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

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 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 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 .

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

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 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 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 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/

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 .

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

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

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 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 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, 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 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/

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/

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/

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 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 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 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/

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 .

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 .

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

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

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 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

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/

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 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

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

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

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 Bleaching: a White Hot Problem
The Bridge offers *oral Bleaching: a White Hot Problem,* exploring the effects of rising ocean temperatures on the coral in San Juan, Puerto Rico. Using water temperature data from ocean observing system buoys, students will compare 2005 and 2006 temperatures and forecast coral bleaching events and their long term effects.
http://www.marine-ed.org/bridge/index_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 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 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 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 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 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 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 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

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-West: A Center for Ocean Science Education Excellence
COSEE-West is a collaboration between the Universities of California Los Angeles and Southern California. COSEE-West is dedicated to three goals: Educating the public about oceans and their impact on their daily life and increasing general environmental awareness; using ocean science as an incentive to increase general science literacy; and increasing the number of students that choose science and ocean science careers.
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

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/

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

***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

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 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

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 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/

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
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 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/ .

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

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

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

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/

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

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 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

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 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 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 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 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/

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 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

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 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

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/

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/

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 .

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

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 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/

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/

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 .

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

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

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 .

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

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 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/

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 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 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/

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/ .

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 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 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 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 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 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 .

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

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/

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/

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/ .

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 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

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 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/ .

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

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

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

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

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 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/

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

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

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 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

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

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 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/

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

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 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

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

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

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/

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/

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

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/

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/ .

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/

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
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, 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 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 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 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 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

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

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

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

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 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/ .

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

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/

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

A 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

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/

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 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 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/

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/

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

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

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'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

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/

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

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

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

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/

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/

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 .

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

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: 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/

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 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 .

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

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 .

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 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 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 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/

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/ .

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/ .

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

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/

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

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 .

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 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

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.
http://www.keepoceansclean.org

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: 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

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/

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 .

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

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/

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 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

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

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 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 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

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

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

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

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/ .

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-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

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/

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/

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

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

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

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 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 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 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 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 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 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/

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

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

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

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 .

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 .

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

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

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 .

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

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

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 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

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/

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/

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/

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 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/

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/

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/

NASA's 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 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 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 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 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 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 15-22, 2007, 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 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 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 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 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 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 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 Ocean Economics Program
This ocean economics website, supported by researchers and economists and sponsored by NOAA's Coastal Services Center, provides useful data on ocean-related economic activities and resource trends. The site includes a market values database, a non-market values portal, a living marine resources database, and a federal marine expenditures section.
http://noep.csumb.edu/

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 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 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 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/ .

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 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 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

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

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
.

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 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 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 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

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 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 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'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 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/

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

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 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-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/

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 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

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 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 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 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 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 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 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 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 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 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 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/

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 .

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/

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 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 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

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.
http://www.scseagrant.org/library/library_pubs_marine.htm

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

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 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

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 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/

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 .

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

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

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
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 new, exciting summer programs that are not 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

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

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 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/

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/

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

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 .

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

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

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

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

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 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 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/

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

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 .

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

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/ .

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

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 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 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

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

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 .

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 .

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

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

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 .

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/

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
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 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 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

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

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.

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 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

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 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 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 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 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 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 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 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/

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/

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

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 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 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 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 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 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/current.html

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

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 .

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.
http://www.seafoodwatch.org/cr/cr_seafoodwatch/ .

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

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 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 2007 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://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

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/

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

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

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

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

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 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

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 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#

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/

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 .

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 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/

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

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 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 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

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 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 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/

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/

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 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/

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/

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 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

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 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 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

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 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 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 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 .

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/

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

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/

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

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 .

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

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

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 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 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/

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

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 .

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

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/

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/

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/

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

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/

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/

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

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 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

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

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/

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 .

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 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 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
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/

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

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/

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/

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

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/

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/

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 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/

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 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 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/edu_wheels.htm

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

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

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 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

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-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

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 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 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 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

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 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 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
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/

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 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

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