

**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**  
**INFORMATION EXCHANGE FOR MARINE EDUCATORS**

**MAY 2006**

This update is provided with support from NOAA's Office of Education and by the National Marine Protected Areas Center to share information pertinent to the marine educator community. It is intended to encourage exchange of information and programs. We hope that it will also promote collaboration among the different educators addressing similar issues in their programs.

Please share this email with your colleagues and constituents. If you request materials or respond to a request for information, please mention that you learned about it from NOAA's Information Exchange.

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## **Notable Articles**

### **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>

### **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. With this information in hand, decision-makers can explore partnerships and mechanisms that would help further conservation action outside their borders. The document is composed of several parts - the document, maps of migratory connections for each state, province and territory, and a series of appendices.

<http://www.partnersinflight.org/pubs/ts/04-Connections>

## OPPORTUNITIES OF THE MONTH

It's time to start planning for your summer. Here are just a few of the opportunities out there for students and teachers during the summer break.

### Camp Ocean Pines Summer Camp

The Ocean Adventures resident camp blends nature and adventure for students from grades 4-8. The environment at Camp Ocean Pines allows students to both explore tidepools and the forest. Trained staff inspire students through hands-on marine biology, camp crafts, nature study, games, and evening campfire programs. Partners include Monterey Bay National Marine Sanctuary, Morro Bay National Estuary, California state parks, and others. Students can choose a one or two week session.

<http://www.campoceanpines.org/summercamp>

### Caribbean Management Internship

An unpaid internship in Kingston, Jamaica within the Programme of Assessment and Management of Environmental Pollution in the Wider Caribbean Region is available for 3-6 months. The post offers an opportunity for a current undergraduate or postgraduate student to become acquainted with the workings of an intergovernmental treaty dealing with the conservation and sustainable use of coastal and marine resources and, more specifically, with measures on pollution reduction, control, and management. Under supervision, the intern will provide overall support and assistance to the Coordinator of the Caribbean Environment Programme and its subprograms.

<http://www.cep.unep.org/employment/plonearticle.2006-01-24.3763980340/view>

### Educational Expeditions aboard the Tall Ship SSV Denis Sullivan

Join the crew of the tall ship *Sailing School Vessel Denis Sullivan* as it embarks on educational expeditions. Visit the website for more information on these and additional voyages for adults and students.

- **Great Lakes Exploration: Above and Below** takes place in conjunction with the Keweenaw Land Trust, Michigan Tech University, and George Mason University, July 22-28, 2006 on a tall ship. The expedition departs from Houghton, Michigan and arrives in Green Bay, Wisconsin, exploring Lake Superior, the Soo, the Straights of Mackinac, and more. Transiting nearly 600 nautical miles and three Great Lakes, experience firsthand serving on the ship's crew and learn about the unique ecology and maritime heritage of the Great Lakes. Teachers may take this as a course for professional development credits, rubbing elbows with experts in ecology, maritime history, archeology, and traditional sailing.
- **St. Lawrence Seaway: Past, Present and Future**; from October 3-8, 2006, join the SSV *Denis Sullivan*'s annual 15,000 nautical mile, round trip, southern passage with the only traditional sailing and education vessel offering a six-day sail from the Great Lakes to the ocean. The program departs from the Erie,

Pennsylvania and ends in Montreal, Canada. Lee Murdock, a famous Great Lakes Balladeer and historian, will take participants on a musical journey through the seaway as they explore the shared maritime heritage and influence of the oceans and the inland seas; explore the cultural, environmental, and economic factors intrinsic to its formation, existence, and future; and sail with experts in maritime history and archeology, traditional sailing, Great Lakes shipping, and ecology

- **Land to Sea Expedition** from July 16-20, 2006 on the tall ship, *SSV Denis Sullivan*. This expedition is round trip from Houghton, Michigan, exploring many of Lake Superior's features, including the shoreline of the Keweenaw Peninsula, the Light Station preserve on Manitou Island, Isle Royale National Park, and Superior Shoal with experts in ecology, maritime history, archeology, and traditional sailing. Participants will use ROV (Remotely Operated Vehicle) technology to explore lake ecology and maritime archeology. Professional development credits are available.

<http://www.discoveryworld.org/sullivan-educational.html>

### **Summer Interns and Educators for NOAA Science Camp**

Washington Sea Grant, the University of Washington, and NOAA seek five educators and five interns to lead groups of 10-15 middle school campers during NOAA Science Camp, July 10-14, 2006 in Seattle, Washington. Intern applicants must be at least 16 years of age, have an interest in ocean and atmospheric sciences, and possess the leadership skills necessary to manage and motivate a group of middle-school campers. Five educators are also needed—applicants with formal or informal teaching experience who are spontaneous, creative facilitators. All are paid positions; in addition, educators and interns will have the opportunity to meet and interact with scientists in each of the NOAA programs and learn more about research studies, including specific research techniques, as well as explore career opportunities in ocean and atmospheric sciences. Educators will also be able to network with professional scientists who have a demonstrated interest and commitment to the education of our youth. The deadline for application is May 7, 2006. Use Req # 21102 for Interns, #21109 for Educators. For questions contact Julie Hahn, Camp Coordinator, at [jkhahn@u.washington.edu](mailto:jkhahn@u.washington.edu).

<https://uw hires.admin.washington.edu/eng/candidates/default.cfm?szLocationID=88>

### **SEA Education Association Summer Programs**

SEA Education Association (SEA) offers high school students summer programs on shore and at sea which challenge them intellectually and physically by combining coursework, study of the deep ocean and a sailing adventure.

- **Science at SEA** is a 20-day program for high school sophomores, juniors, and seniors focusing on the coastal and offshore marine environment around Cape Cod, Massachusetts. The marine environment is studied from a variety of perspectives—scientific, historical, literary, and nautical. The first half of the program takes place in Woods Hole, Massachusetts, while the second half circumnavigates Cape Cod aboard the *SSV Corwith Cramer*, one of SEA's 134' brigantine tall ships.
- **Oceanography of the Gulf of Maine** is a 19-day program open to high school juniors, seniors, and college freshmen. Each section has two components: one on Appledore Island studying the ecology of the rocky intertidal ecosystem at the Shoals Marine Lab, and one at sea onboard the vessel *SSV Corwith Cramer*. The challenging curriculum provides an introduction to the scientific method, the opportunity to analyze data, and many excursions into the field. Students earn

four undergraduate college credits from Cornell University upon successful completion.

- ***Oceanography of the Southern California Bight*** is a 3-week program for high school sophomores, juniors, and seniors. This summer academic course focuses on marine environments off the southern California coast on Catalina Island and aboard SEA's Pacific based sailing vessel *SSV Robert C. Seamans*. Students earn three undergraduate college credits from the University of Southern California upon successful completion.

The programs fill up quickly; submit your application as soon as possible. In addition, the website offers a wide variety of standards-based lesson plans.

[http://www.sea.edu/academics/program\\_highschoolprograms.asp](http://www.sea.edu/academics/program_highschoolprograms.asp)

[http://www.sea.edu/academics/program\\_teacherprogram.asp](http://www.sea.edu/academics/program_teacherprogram.asp)

## WEBSITE OF THE MONTH

### Exploring the Environment

The Exploring the Environment online series, featuring an integrated approach to environmental earth science through modules and activities, was developed at the NASA Classroom of the Future™ at Wheeling Jesuit University. Through a cooperative agreement with the NASA Goddard Space Flight Center, the online series is supported by NASA's Information Infrastructure Technology and Applications Program, which facilitates public use of Earth and Space Science remote sensing databases over the Internet. The series addresses many of the Science Education Standards from the National Research Council and the Benchmarks for Science Literacy.

Featuring problem-based learning, *Exploring the Environment* promotes science-literate and reflective students who are knowledgeable of the earth's processes and their responsibilities for stewardship. The problems and activities in the modules ask students to address human activities and their impacts upon the environment. The modules and activities incorporate issues such as water quality, biodiversity, climate change, and more. 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/>

## MESSAGE FROM THE BRIDGE

### Coral Bleaching: a White Hot Problem

The Bridge features a series of Data Analysis Teaching Activities (DATA) that can be used to supplement curriculum material with timely and seasonal resources. As we move into the warmer months, the Bridge would like to introduce you to the DATA, *Coral Bleaching: a White Hot Problem*. *Coral Bleaching* explores 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](http://www.marine-ed.org/bridge/index_archive0406.html)

## **GRANTS AND OPPORTUNITIES**

### **Horace Mann Scholarship Program**

The Horace Mann Scholarship Program awards grants to public and private school educators to take college courses. The deadline for application is May 16, 2006. Check the website for details.

[www.horacemann.com/educator-resources/educator-scholarship-program.html](http://www.horacemann.com/educator-resources/educator-scholarship-program.html)

### **Kodak American Greenways Awards Program**

The Kodak American Greenways Awards Program provides seed money to stimulate greenway, blueway, and trail planning and design. Schools are welcome to apply. The program is a partnership project of the Eastman Kodak Company, The Conservation Fund, and the National Geographic Society, and provides small grants to stimulate the planning and design of greenways in communities throughout America. Grants may be used for activities such as mapping, ecological assessments, interpretative displays, and more. The deadline for application is June 1, 2006.

<http://www.conservationfund.org/?article=2372>

### **Learning in the Arts Grants**

The National Endowment for the Arts awards arts organizations and school districts for educational events, projects, or programs that encourage youth appreciation of and engagement with the arts. Learning in the Arts grants encourage efforts that enhance the quality of and access to arts learning for our nation's children and youth. Learning in the arts is vital for two reasons: it invites children to celebrate and participate in a central part of their cultural inheritance, and it is an important contributing factor in the development of social and academic skills. Projects must address experience, study, performance, and assessment. The application deadline is June 12, 2006.

<http://www.arts.gov/grants/apply/gaP07/learninginthearts.html>

### **Neighborhood Excellence Awards**

The Bank of America Neighborhood Excellence initiative includes two programs to reward leaders and students who work to create positive change in local communities. One of the programs is for Local Heroes, people who make a remarkable difference in their communities by serving neighborhood needs. Another is for Student Leaders, the next generation of neighborhood leaders, who will be rewarded with paid summer internships with community organizations and nonprofits which allow students to experience first-hand how they can help shape their communities. The deadline for application is June 30, 2006.

[http://www.bankofamerica.com/foundation/index.cfm?template=fd\\_neighborexcell](http://www.bankofamerica.com/foundation/index.cfm?template=fd_neighborexcell)

### **Save Our History Grants**

The History Channel® offers Save Our History Grants to support historic preservation efforts in communities across America. The program encourages collaboration between history organizations and schools or youth groups. In addition, the 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. Also included are instructional project guides from previous grant recipients. The deadline for application is June 2, 2006.

<http://saveourhistory.com/>

### **Upcoming Ocean Observatories Initiative Funding**

The Joint Oceanographic Institutions announces that an Implementing Organization Request for Proposal (RFP) will be released shortly to support the development and operation of the Ocean Observatories Initiative, a key component of the broader Ocean Research Interactive Observatory Networks (ORION). The first RFP will lead to a contract for the continued evolution of the design, procurement and operation of the Regional Cable Observatory. Competition for the Regional Cable RFP will be limited to academic institutions, or academically led academic/industry partnerships. The RFP is expected to be released in May 2006, with proposals due 120 days after release. Part of the proposal must address the degree of institutional commitments for this project. Continue to check the website for more detail.

<http://www.orionprogram.org/>

### **Write On! Wetlands Challenge – Call for Student Artists**

Help Environmental Concern celebrate American Wetlands Month this May by creating a children's book about wetlands. The challenge consists of two parts, writing and illustrating. Part one, the writing competition, is now complete. The call for artists invites elementary aged students to illustrate the story's words. The deadline for submission is May 31, 2006.

[http://www.wetland.org/EC%20main/edu\\_writeon06.htm](http://www.wetland.org/EC%20main/edu_writeon06.htm)

## **CONFERENCES, WORKSHOPS, AND PROFESSIONAL DEVELOPMENT**

### **Acropora ssp. Information Gathering Workshops**

NOAA Fisheries Service published a proposed rule to list elkhorn *(Acropora palmata)* and staghorn *(Acropora cervicornis)* corals as threatened under the Endangered Species Act. Pending a final determination on this rule, NOAA Fisheries is sponsoring stakeholder input workshops throughout south Florida, the Florida Keys, Puerto Rico, and the U.S. Virgin Islands to collect information concerning the conservation of the species. The information gathered during all seven of the workshops will be considered in the development of any future conservation measures. These workshops are open to the public and all are invited to attend and participate.

<http://sero.nmfs.noaa.gov/pr/protres.htm>

### **American Water Resources Association Spring Specialty Conference**

American Water Resources Association (AWRA) and its GIS Technical Committee members offer the AWRA 2006 Spring Specialty Conference, May 8-10, 2006 in Houston, Texas. Discuss how to integrate GIS with watershed modeling, flood control, environmental management, and infrastructure planning and maintenance.

<http://www.awra.org/meetings/Houston2006/index.html>

### **Applied Environmental Education Program Evaluation – Online**

This 11-week online course, *Applied Environmental Education Program Evaluation*, will be offered this summer through the University of Wisconsin-Stevens Point, June 12-August 25, 2006. This course was developed as a cooperative effort between the

Environmental Education and Training Partnership (EETAP) at the University of Wisconsin-Stevens Point and the U.S. Fish and Wildlife Service National Conservation Training Center. The course is designed to assist environmental educators and natural resource professionals in evaluating their education programs. Participants have the opportunity to develop and apply skills in designing evaluation tools such as surveys, observation forms, and interview and focus group guides.

<http://www.uwsp.edu/natres/rwilke/eetap/>

### **Charting an Interdisciplinary Voyage - Massachusetts**

This curriculum development workshop for teachers, August 8-18, 2006 with an optional voyage August 19-22, in Woods Hole, Massachusetts, is based on Massachusetts Frameworks for Grades 3-6. The workshop will assist upper-elementary school teachers to link New England maritime history to science, math and social studies skills using an interdisciplinary voyage-based curriculum.

[http://www.sea.edu/academics/program\\_teacherprogram.asp](http://www.sea.edu/academics/program_teacherprogram.asp)

### **Coastal Ecosystem Workshop - California**

The Farallones Marine Sanctuary Association and the Gulf of the Farallones National Marine Sanctuary are hosting their annual educators' workshop, August 10-11, 2006 in Montara, California. Geared towards middle and high school teachers, the *Coastal Ecosystem Workshop: Wonders of the San Mateo Coast*, will focus on the rugged, diverse coastal ecosystems of San Mateo County. Participants will join sanctuary staff on field trips to rocky intertidal and sandy beach sites to participate in coast-wide monitoring efforts and will learn how to incorporate inquiry-based monitoring projects into their curriculum.

<http://www.rudyalicelighthouse.net/CalLts/PtMntara/PtMntara.htm>

### **Earth System Science Education Annual Meeting**

The Earth System Science Education for the 21st Century (ESSE 21) Annual Meeting, August 7-11, 2006 in Durham, New Hampshire, is an opportunity for program participants to share ideas regarding Earth system science in the classroom. Space will be available for posters/demos/presentations of your Earth system science education related content, programs and materials. ESSE 21 offers small grants to college and universities, especially minority institutions, to spark collaboration among educators and scientists in developing undergraduate and graduate courses, curriculum materials, and degree programs in Earth system science. Watch the website for future updates.

<http://esse21.usra.edu/ESSE21>

### **Environmental Educator Workshop - Alaska**

This teacher workshop is sponsored by Center of Instruction, Professional Development, and Evaluation, and will take place June 18-24, 2006 in Seward, Alaska. Participants will experience six days of glaciers, fjords, and wildlife in Alaska while learning Investigating and Evaluating Environmental Issues and Actions (IEEIA), an environmental education curriculum and the focus of the workshop. The deadline for application is May 31, 2006.

<http://eelink.net/cgi-bin/ee-link/newclick/515645>

### **Fundamentals of Environmental Education - Online**

This 10-week online course, *Fundamentals of Environmental Education*, was developed by EETAP and will be offered September 11-November 17, 2006. The course is appropriate for both classroom teachers and for non-formal educators who work with

students and/or teachers. It provides educators with the knowledge and skills necessary to incorporate quality environmental education into their instruction. Participants discuss the history, definition, and goals of environmental education; develop an understanding of the professional roles and instructional methods of environmental educators; and interact with other educators from across the country.

<http://www.uwsp.edu/natres/rwilke/eetap/>

### **Gulf and Caribbean Fisheries Institute**

The 59th annual meeting of the Gulf and Caribbean Fisheries Institute will be held November 6-10, 2006 in Belize City, Belize. Papers and posters are solicited for a variety of themes including management and socioeconomics of marine fisheries, marine protected areas science and management, marine science education, and more. In addition to the core sessions, there will be three special sessions at the conference: Large Pelagic Fishes in the Caribbean Sea and the Gulf of Mexico: Current Status; Historical Perspectives for Gulf and Caribbean Fisheries; and Caribbean Connectivity. Abstracts are due July 31, 2006.

<http://www.gcfi.org/Conferences/59th/Belize59.htm>

### **International Conference on Aquatic Invasive Species**

The International Conference on Aquatic Invasive Species, hosted by the U.S. Geological Survey, May 14-19, 2006 in Key Biscayne, Florida, is an international forum for the review of accumulated scientific knowledge, presentation of the latest field and laboratory research, introduction of new technological developments for species control and mitigation, discussion of policy and legislation to prevent new introductions, ballast water and other shipping-related issues, and public education and outreach initiatives to raise awareness about aquatic invasive species.

[http://www.icaais.org/html/info\\_intro.html](http://www.icaais.org/html/info_intro.html)

### **Lab and Field Explorations in Marine Science - California**

Join this continuing program for middle and high school teachers, June 26-30, 2006 in Monterey Bay, California. The five-day summer course provides techniques for incorporating meaningful watershed and marine-related experiences into core curricula, and demonstrates how research data are collected, analyzed and used in resource management and protection of the marine environment. The course includes lab, field, schoolyard, computer, and classroom activities. Participants will be provided lesson plans, handouts, data sheets, guide books, maps, and lectures to use in the classroom. The registration deadline has passed, but additional space may be available, with preference given to California educators. Contact Traci Conlin at [tconlin@mlml.calstate.edu](mailto:tconlin@mlml.calstate.edu) for more information.

<http://teach.mlml.calstate.edu/>

### **Let's Go Native – Georgia**

Educators will become empowered by these two interdisciplinary, practical workshops offered through the Georgia Conservancy, May 19-20, 2006 in Roswell, Georgia. Learn the skills necessary to complete interactive projects for the indoor and outdoor classroom and connect to the curriculum with hands-on activities and scientific investigations. *Georgia's Native Waters* offers 212 pages of interdisciplinary lessons and activities for K-12 students that inspire them to apply classroom knowledge to real-world situations through the investigation of many of Georgia's amazing aquatic ecosystems as found in each of Georgia's five diverse eco-regions, while at the same time connecting how community values can impact these areas. *Georgia's Native*

Seasons studies the natural world as it passes through stages that are part of a continuing cycle. The deadline for registration is May 8, 2006.

<http://www.georgiaconservancy.org/Events/Event.asp?id=272&yy=2006&mm=5&dd=19>

### **Mapping Oceans and Coasts: GIS Workshop for Teachers - California**

The Center for Image Processing in Education, Channel Islands National Marine Sanctuary, and Ocean Explorers Master Teachers offer a three-day Mapping Oceans and Coasts GIS workshop for teachers July 12-14, 2006 in Camarillo, California. During the workshop, participants will explore the biological, physical, and geological characteristics of our oceans and coastlines and learn how GIS can be used to manage, understand, and protect these areas. The workshop includes hands-on training in GIS and GPS technologies, ocean monitoring techniques, and a field trip out to the Channel Islands. Participants will receive a set of classroom-ready GIS lessons, their choice of GIS software to use in the classroom, and implementation strategies and project ideas. The deadline for application is May 26, 2006.

[http://www.evisual.org/index.php?option=com\\_content&task=view&id=39&Itemid=35](http://www.evisual.org/index.php?option=com_content&task=view&id=39&Itemid=35)

### **Marine Biotechnology and Bioinformatics - California**

Learn to incorporate hands-on biotechnology and bioinformatics activities into your classroom and research through this marine science summer educator workshop, July 10-28, 2006 in Monterey Bay, California, presented by Moss Landing Marine Laboratories, California State University at Monterey Bay, and San Jose State University. Participants will investigate a local invasive mussel using biotechnology techniques to generate their own novel DNA data and the latest bioinformatics software to analyze it. Participants will also learn how to incorporate these cutting edge science techniques into their instructional programs. Program components include a 3-week workshop for middle and high school teachers, activities, handouts, lectures, and lab exercises to use in your classroom, expert assistance with developing and testing custom lesson plans, and much more. The registration deadline has passed but additional space may be available, with preference given to California educators. Contact Traci Conlin at [tconlin@mlml.calstate.edu](mailto:tconlin@mlml.calstate.edu) for more information.

<http://www.marinebiotech.net/>

### **National Interpreters Workshop**

The theme for the 2006 National Interpreters Workshop, November 7-11, 2006 in Albuquerque, New Mexico, is *Sharing Stories along the Way*. Registration materials will be online in mid May. There will be over 100 concurrent sessions, 16 off-site sessions to a variety of Albuquerque's high desert locations, expert speakers, and more. Special events include a variety of awards, including media excellence for interpretive projects, professional awards, and agency awards that recognize outstanding interpreters.

<http://www.interpnet.com/niw2006/index.htm>

### **Natural History and Conservation of Florida Turtles Summer Workshops - Florida**

The fourteenth annual summer workshops for formal and non-formal educators on the natural history and conservation of Florida turtles are based on the belief that education is the foundation of conservation and that educators play a key role in conserving these ecologically important vertebrates. The workshops are designed to provide educators with an introduction to the ecology and conservation of Florida turtles through both classroom presentations and first-hand field experiences. Participants will be introduced to the diversity of Florida turtles, basic identification techniques, natural history, causes of decline, and conservation measures, as well as educational activities and resources.

Highlights include field trips to upland, riverine, and coastal habitats where participants will have an opportunity to study several species in the wild.

- Boyd Hill Nature Park, St. Petersburg, June 5-8, 2006.
- Guana Tolomato Matanzas National Estuarine Research Reserve, Ponte Vedra Beach, June 12-15 2006
- Apalachicola National Estuarine Research Reserve, Apalachicola, June 19-22, 2006

<http://heinrichecologicalservices.com/2006registration.pdf>

### **NOAA Ocean Exploration Workshop – New York**

Join Dr. Valerie Chase for a hands-on, secondary earth and life science workshop using some of the more than 200 lessons from the Ocean Explorer website during this free, pre-NMEA conference workshop on July 16, 2006 in New York, New York. The activities emphasize the use of real ocean science data in a classroom setting. The workshop features exercises from the curriculum book *Learning Ocean Science through Ocean Exploration* and also several that highlight deep vent earth science. The activities range from easy middle school to challenging high school level. Participants will receive additional materials for their classroom. The workshop is first come, first served for 32 participants.

Contact Dr. Valerie Chase at [vchase529@worldnet.att.net](mailto:vchase529@worldnet.att.net)

### **Scientific Photography - Bermuda**

Scientific Photography, July 30-August 19, 2006 at the Bermuda Biological Station for Research, is an intensive class comprised of lectures, required reading, laboratory exercises, demonstrations, and field assignments. This three-week course exposes students to the use of photography as a scientific tool. Marine science educators are especially encouraged to apply. Partial scholarships may be available.

<http://www.bbsr.edu/Education/summercourses/summercourses.html#photog>

### **Submerged Cultural Resources Law Enforcement Class**

The National Park Service's Submerged Resources Center, the NOAA Marine Sanctuary Program, and Archaeological Resource Investigations are co-sponsoring a Submerged Cultural Resources Law Enforcement Class, in Convoy Point, Florida, May 15-19, 2006. The course provides training on all aspects of the investigation and prosecution of archeological crimes involving submerged cultural resources. It is open to all government law enforcement officers, archeologists, and prosecuting attorneys assigned to management units or jurisdictions that include submerged cultural resources. The application deadline is past; contact Larry Murphy as soon as possible to check if registration is still possible.

Contact Larry Murphy at [larry\\_murphy@nps.gov](mailto:larry_murphy@nps.gov)

### **Summer Workshops for Teachers**

This summer in June through August, 2006, the U.S. Department of Education will hold 14 Teacher-to-Teacher regional workshops for teachers to learn from fellow educators who have had success in raising student achievement. A number of workshops will focus on enhancing teaching skills in math and science. Three are cosponsored by the National Park Service and will be dedicated to math, science and history.

<http://www.t2tweb.us/Workshops/Schedule.asp>

## Teacher Workshops - Virginia

The Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERRVA) is offering a series of free teacher workshops at the Virginia Institute of Marine Science in Gloucester Point, Virginia this summer.

- ***Estuarine Aquarium Keeping in the Classroom***; July 18-19, 2006; Teachers will learn the art and science of keeping Chesapeake Bay species in classroom aquaria, with an emphasis on raising juvenile blue crabs and summer flounder. In addition to learning the information necessary for proper maintenance and troubleshooting, participants will tour the Virginia Sea Grant fish aquaculture facility and the Virginia Institute of Marine Science aquarium, and will receive the 20-page CBNERRVA *Estuarine Aquarium Keeping for Beginners* manual.
- ***Water Quality***; July 25-26, 2006; This workshop is designed to allow teachers to learn more about water quality, how to access water quality monitoring data from throughout the Chesapeake Bay and across the nation, and how to use curricular activities from the CBNERRVA *York River Water Quality Curriculum* that uses water quality data from the York River to answer applied marine science questions. The first day of the workshop will be indoors training in water quality parameters and their measurement, use of the York River Water Quality Curriculum and the use of on-line data resources. The optional second day offers participants a canoe trip on Taskinas Creek in York River State Park to investigate water quality first-hand.
- ***Chesapeake Bay Habitats***; August 9-10, 2006; Learn more about York River estuarine habitats, the aquatic animals that live there, and York River water quality. Participants will canoe; explore vanishing islands; catch aquatic animals from sand flat, salt marsh creek and submerged aquatic vegetation habitats; perform water quality monitoring tests; and learn about schoolyard habitats, student oyster restoration, and groundwater.

<http://www.vims.edu/cbnerr/education/index.htm>

## Wilderness in the American Context – Distance Learning

Wilderness in the American Context has just been revised and is now available through the Wilderness Management Distance Education Program, sponsored by the Arthur Carhart National Wilderness Training Center and the University of Montana's College of Forestry and Conservation. This course provides a broad perspective of what wilderness is and how the idea developed, and exposes the student to some of the differing values, ethics, and expectations of wilderness held by society. Students will examine the early history of wilderness preservation that ultimately led to federal protection in the Wilderness Act and subsequent legislation, including how each agency applies these laws.

<http://wmdep.wilderness.net/>

## EDUCATIONAL RESOURCES

### 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/>

### **ConservationEvidence.Com**

The ConservationEvidence.com website collates information on the effectiveness of conservation practice. It provides two services. The main section 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. It also provides a method for adding case studies; additional studies in the marine and aquatic environments could be useful.

<http://www.conservationevidence.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>

### **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](http://naaee.org/pages/publications/eetap_newpubs)

### **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/](http://www.st.nmfs.noaa.gov/hurricane_katrina/)

### **Global Systems Science**

Global Systems Science is an integrated, interdisciplinary course for high school, consisting of nine student books, teacher guides, and software. Each book deals with a societal issue that requires science for full understanding. The books may be sequenced in a custom one-year integrated science course or serve as supplementary materials for existing high school biology, physics, chemistry, Earth science, or social studies courses. 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>

### **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>

### **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/>

### **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 such as real-time data collection, simulations, inquiry-based lessons, interactive web lessons, micro-worlds, and imaging, 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>

### **Marine Debris Module**

This module, from one of the crew members of the 2005 Educators at Sea Expedition to the Northwestern Hawaiian Islands, is a toolkit for teachers who want to teach their students about marine debris by looking at its 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>

### **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>

### **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. It is available for downloading from the Internet courtesy of the Northwestern Hawaiian Islands Multi-Agency Education Project.

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 Na Honua Maui Ola, guidelines for culturally healthy and responsive learning environments in Hawai'i that were developed by the Native Hawaiian Education Council in partnership with the Ka Haka `Ula O Ke`elikolani, College of Hawaiian Language, University of Hawai'i-Hilo.

<http://www.hawaiiatolls.org/teachers/NavChange.php>

### **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/>

### **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. A comprehensive information package will be available on the IUCN website.

<http://www.iucn.org/themes/ssc/redlists/techdocs.htm>

### **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 4<sup>th</sup> grade lesson plan.

<http://www.ngdc.wvu.edu/~hferguson/educationNGDC/>

### **Shipwreck Trail Photo-Mosaic Mission**

Check out this website from the National Marine Sanctuaries, which posts mission logs from the recent Shipwreck Trail 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 to divers and the general public on the maritime heritage of the Keys. Study the photo-mosaics online, and share our nation's submerged cultural heritage.

<http://sanctuaries.noaa.gov/missions/2006fknms/>

### **Submarine Ring of Fire**

NOAA's Ocean Explorer has launched The Submarine Ring of Fire 2006 expedition website. This is the second signature expedition for NOAA's Ocean Exploration 2006 field season, with six additional signature expeditions to follow. 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. Web coverage includes content essays written especially for this mission. Web logs, including video and images, written by scientists and other explorers at sea capture daily activities and discoveries. An "Ask an Explorer" feature is also available to submit questions to and receive answers from the explorers while at sea. The Ocean Explorer Expedition Education Module available through the Education link on the website includes lesson plans designed specifically for this expedition; interactive educational multimedia presentations on plate tectonics, mid-ocean ridges, subduction zones, and chemosynthetic and hydrothermal vent life; a list of other resources; and more.  
<http://oceanexplorer.noaa.gov/explorations/06fire/welcome.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 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](mailto:noaa-outreach@noaa.gov)

### **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>

### **Tools of Change**

Community-based social marketing has been recognized as an effective method 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 is founded on the principles of community-based social marketing and 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/>

### **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>

## **INITIATIVES and MISCELLANEOUS**

### **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/>

### **Caribbean Birds Festival**

Conservation organizations throughout the Caribbean have launched the fifth annual month-long celebration of the region's bird life. 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. The month-long annual festival highlights the fact that the Caribbean islands are recognized as one of the top three areas on the planet for biodiversity conservation because of the high number of endemic plant and animal species. Birds of the region are threatened primarily due to destruction of their habitats and climate change.

<http://www.birdlife.org/news/news/2006/04/cebf.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>

### **Endangered Species Day**

May 11, 2006 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. With over 1,800 species worldwide now listed as threatened and endangered, and thousands more threatened with extinction unless they are protected, every such public education effort is greatly needed. The website includes links to websites with background information and lesson plans.

<http://www.stopextinction.org/>

### **The Gulf of Mexico Alliance**

The Gulf of Mexico Alliance is a partnership between the states of Alabama, Florida, Louisiana, Mississippi and Texas, intent on significantly increasing regional collaboration

to enhance the ecological and economic health of the Gulf of Mexico. The Alliance has identified five issues that are regionally significant and can be effectively addressed through increased collaboration at the local, state and federal levels. These priorities represent an initial focus for action through the Alliance:

- 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>

### **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. The ship works in the Thunder Bay National Marine Sanctuary and Underwater Preserve and is part of the fleet managed by NOAA's Great Lakes Environmental Research Laboratory in Ann Arbor, Michigan. Powered by soy biodiesel combined with bio-hydraulic and bio-motor oils, the environmentally-friendly vessel is well suited to working in the eco-systems it is helping to research. In conducting research and helping 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 (GEOSS), an effort now supported by 62 countries and 43 international organizations. Other NOAA boat operations are implementing similar bio-product conversions.

<http://www.noaanews.noaa.gov/stories2006/s2615.htm>