



**NATIONAL MARINE PROTECTED AREAS CENTER
INFORMATION EXCHANGE FOR MARINE EDUCATORS**

OCTOBER 2004

This update is provided as a service 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 try to mention that you learned about it in the MPA Information Exchange.

The information included here has been compiled from many different sources, including SeaSpan, NSTA Express, edinfo at FREE, EE-NEWS@NAAEE, CREEC, EEinGEORGIA, Scuttlebutt, and others. We have attempted to verify web addresses, but make no guarantee of accuracy. The Department of Commerce/NOAA does not necessarily endorse or promote the views or facts presented on these sites.

To subscribe to this distribution list, send a blank message to requests@willamette.nos.noaa.gov with "subscribe infoexchange" in the subject field. Similarly, to remove yourself from the list, send the subject "unsubscribe infoexchange".

Contact the MPA Center's education coordinator directly at phyllis.dermer@noaa.gov, or by phone at (865) 932-5074, to discuss further enhancements or to contribute information for future issues.

Race Rocks

Race Rocks is Canada's first MPA established under the Oceans Act, and contains extraordinary ecological significance. These small islands and intertidal and subtidal reefs are located in the Strait of Juan de Fuca, south of Vancouver Island. It is managed by the staff and students at Lester B. Pearson College of the Pacific, for research and education

The website won the Commonwealth of Learning Award for Educational Excellence in Distance Education Material. The website allows you to "view" the site through 360-degree virtual reality panoramas around the island. The website offers video clips and photographs of sea lions and other marine mammals observed near Race Rocks. There are links to whale watching guides and plenty of background information about the normal inhabitants of the area. In addition, the site has a taxonomy activity, and accessible online lesson plans through the Jason Project.

For more information, check out <http://www.racerocks.com/> . For additional information about using the virtual field trip as an educational activity, check out http://ali.apple.com/ali_sites/ali/exhibits/1000007/ .

Notable MPA Literature

Integrating Marine Reserve Science and Fisheries Management

The National Fisheries Conservation Center has posted the Consensus Statement "Integrating Marine Reserve Science and Fisheries Management." The 30-page statement is the product of a two and a half day conference in June, 2004, featuring an expert panel from the fields of marine ecology, fishery management, economics, population dynamics, and modeling. The statement provides an objective examination and assessment of the information regarding potential biological, social, and economic consequences of marine reserves, their potential effectiveness as a fishery management tool in the U.S., the methods for integrating their application with existing U.S. fisheries management and how marine reserves might be designed, monitored and evaluated. In addition, the statement addresses sources and magnitudes of uncertainty associated with marine reserves and conventional management approaches, and recommends areas for further study. For more information, check out <http://nfcc-fisheries.org/consensus/index.php> .

Consensus Statement. June 7-9, 2004. Integrating Marine Reserve Science and Fisheries Management. National Fisheries Conservation Center.

Main MPA Library URL:

http://www2.mpa.gov/mpa/mpaservices/virtual_library/virtual_library.lasso .

PROGRAM OF THE MONTH

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 four- to 14-day field programs where students snorkel coral reefs and mangroves, assist researchers with fish surveys and aquaculture projects, work the waters with a local fisherman, and much more.

The Discovery Program is designed for students aged 11-15, to provide an introductory field immersion experience to marine science, the environment, and local culture through adventure, activity, hands-on learning, exploration, discussion, and team building. For older students, ages 14-18, the Immersion Workshop is broader in scope and depth of content, with a focus on cultural perspectives and the complexities involved in natural resource management. All programs incorporate debriefing activities that encourage students to apply the critical thinking skills necessary to value and respect diverse perspectives and the environment.

Students have fun, pose questions, investigate, experiment, solve problems, assume responsibility, use creativity, and construct meaning. Through the curriculum and

program offerings, Creative Education strives to impact each participant in the following ways:

Natural Science Exploration

- Increase awareness of the natural world
- Increase knowledge of marine science, coastal ecology and resource management
- Develop an appreciation for the complex relationships between humans and the natural environment
- Provide the tools necessary to make well informed, ecologically sound and sustainable decisions concerning the environment

Personal Growth and Cultural Awareness

- Increase self-awareness
- Increase tolerance and respect for the opinions and perspectives of others
- Increase appreciation and respect for cultural differences
- Cultivate a sense of adventure and love of exploration

The field locations are chosen for their proximity to the United States, stable political environments, intriguing habitats, and strong local scientific communities. Each destination is also facing environmental challenges within a unique situational framework, allowing students to explore complex issues within a manageable structure. Programs and locations include Bay Islands Marine Ecology on Roatan Island, Honduras; Grand Manan Island Ecology on Grand Manan Island, New Brunswick, Canada; Bahamas Tropical Marine Ecology on Lee Stocking Island, Bahamas; Belize Tropical Ecology at the rainforests and reefs of Belize; and Green Eggs & Sand: Horseshoe Crab and Shorebird Resource Management at Delaware Bay.

ECO Journeys are available to public, private and charter schools, family groups, home schools, community groups and teacher groups. Creative Education creates long-term relationships with the groups that participate in the programs, providing continuity, depth of content, and long-term impact. For more information, check out www.creativeed.org/ECOhome/fieldprograms.htm .

WEBSITE OF THE MONTH

A Resource Guide For Oceanography and Coastal Processes

The *Oceanography and Coastal Processes Resource Guide* has been developed and rigorously field-tested by the 1993-1997 Operation Pathfinder participants. The Operation Pathfinder project was funded by the U.S. Navy, Sea Grant, and the Department of Interior. After multiple publications, the Guide was redesigned for delivery via CD-ROM and made interactive using NOAA and Navy data sets; the contents of the CD are also posted on the COAST web site.

The primary reason for the development of these lessons was to 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.

This *Resource Guide* is aligned with National Science Education Standards. There are 81 lesson plans, each complete with basic scientific background information, educational objectives, materials lists, instructions, evaluation, and extensions for further learning. There are lesson plans and activities for both elementary and middle school, and high school. The website is easy to use and the navigation bar affords quick access to what you're looking for.

The website has served as a guidebook and primer providing major resources that have been widely used in classrooms across the nation by both teachers and students. These activities were selected as the 'best of the best' from a total of 1,441 activities that were developed by teachers for teachers during the Operation Pathfinder Institutes.

You can access resource guide from two websites; go to www.coast-nopp.org/toc.html or www.usm.edu/aquarium. While on USM's Scott Aquarium website, click on Resources to access the *COAST Resource Guide*. And while you're there, check out the *Coral Reefs Resource Guide*.

REQUESTS

Cyberschoolbus Seeking Teachers to Review Content

The United Nations Cyberschoolbus is looking for teachers and curriculum supervisors to review content and lesson plans being developed for the website. The site currently provides a wide variety of educational resources, including a Cleaner Oceans curriculum, a briefing paper on climate change, and a Water Quiz. Reviewers will receive free materials for their classroom. For more information, check out <http://www.un.org/Pubs/CyberSchoolBus/index.html>.

Request for Information for Massachusetts Ocean Education Guide

The Massachusetts Office of Coastal Zone Management is developing a directory of Massachusetts ocean education resources. The directory will include a very wide range of formal and informal educational activities, including field trips, speakers, curricula, publications, after school programs, workshops, film/video, and other programs designed to assist K-12 educators in teaching about the Commonwealth's ocean resources. If you have an ocean science program of any type within the Commonwealth of Massachusetts, we would like to hear from you before October 11, 2004, if possible. The submission form can be found at <http://www.mass.gov/czm/oceanmginitiative.htm>. For more information, please contact Sarah Joor at sarah.joor@state.ma.us or (617) 626-1244.

GRANTS AND OPPORTUNITIES

Annual Grants - California

Once again, check out the following upcoming grants and contests:

Coastal Art & Poetry Contest California students are invited to submit their work to the California Coastal Commission's annual coastal art and poetry contest. This cycle's application deadline is January 31, 2005. For more information, check out <http://www.coastforyou.org>.

Jiminy Cricket's Environmental Challenge education program is sponsored in part by The Walt Disney Company, to encourage California fifth-graders to practice environmental stewardship in a fun and educational way while incorporating California state curriculum standards. Students may take a pledge to do something that will help the environment or, if they choose, may enter the class project competition, targeting a real-world environmental problem with an action plan to address it. The application deadline is October 31, 2004. For more information, check out <http://www.iceckids.org/>.

British Petroleum Conservation Program

The BP Conservation Program helps to develop the capacity of young conservationists through support, training, and awards. Applications are accepted for international projects in Africa, the Pacific, Latin America or the Caribbean, and other regions, that address a biodiversity conservation priority of global importance at the species or habitat level, involve local people, have in-country approval, and are led by students or early career conservationists. The application deadline is October 31, 2004. For more information, check out <http://conservation.bp.com/applications/default.asp> .

California Bay-Delta Authority Requests for Proposals

The California Bay-Delta Authority announces two solicitations for proposals, the Science Program and the Ecosystem Restoration Program. For more information, check out <http://www.calwater.ca.gov/Solicitation/> .

CREST Requests for Proposals

The Coastal Restoration and Enhancement through Science and Technology (CREST) program is soliciting proposals for studies addressing fish and wildlife and their habitats within the topic areas of evaluating restoration techniques, improving restoration design, and human dimensions of coastal restoration efforts (including outreach and education). The program's research agenda is focused primarily on alleviating the urgent needs of the north-central Gulf Coast. Funding is available for research, under- and graduate student support, and under- and graduate student research. The deadline for pre-proposals is November 15, 2004. For more information, check out <http://www.gulfcrest.org/rfp.htm> .

The Comprehensive Program Fund

The Comprehensive Program supports grants and cooperative agreements to improve postsecondary education opportunities. It encourages reforms, innovations, and improvements of postsecondary education that respond to problems of national significance and provide access to quality education for all. Combinations of institutions and other public and private nonprofit institutions and agencies are eligible to apply. The pre-application deadline is November 3, 2004. For more information, check out www.ed.gov/legislation/FedRegister/announcements/2004-3/091304a.html .

Constitutional Rights Foundation's Mini-Grant Program

Constitutional Rights Foundation's Robinson Mini-Grant Program honors the late Maurice R. ("Robbie") Robinson, founder of Scholastic, Inc., champion of innovative education, and longtime supporter of effective citizenship education. Each year, the foundation awards mini-grants for K-12 service-learning projects designed to address serious community issues. Environment is one of the six citizenship project categories. The deadline for application is October 15, 2004. For more information, check out http://www.crf-usa.org/network/crf_robin.html .

Coral Reef Conservation Fund - National Fish and Wildlife Foundation / NOAA

The National Fish and Wildlife foundation, in partnership with the NOAA's Coral Reef Conservation Program, is accepting proposals for projects that build public-private partnerships to reduce and prevent degradation of coral reefs and associated reef habitats. Projects should address causes of coral reef degradation, from coastal watersheds to the reefs and surrounding marine environment; this could include locally-based outreach, education and community awareness initiatives related to coral reef conservation. The deadline for pre-proposals is January 31, 2005. For more information, check out <http://www.nfwf.org/programs/coral.htm> .

The Crowder-Messersmith Conservation Fund

This fund, administered by the Audubon Naturalist Society, promotes "Small Projects Doing Big Things for Conservation." Grants are awarded to applied research projects; projects with significance to local residents; projects that will benefit the human, plant and animal residents of a particular habitat; and individual researchers or teams of researchers as opposed to institutions. Careful consideration is given to the project's impact on endangered species and habitat protection, public education value, and direct impact on local populations. The application deadline is February 11, 2005. For more information, check out http://www.audubonnaturalist.org/cgi-bin/mesh/special_interests/crowder_messersmith .

EPA Environmental Education Grant Program

The Grant Program sponsored by EPA's Office of Environmental Education supports environmental education projects that enhance the public's awareness, knowledge, and skills to help people make informed decisions that affect environmental quality. EPA awards grants each year based on funding appropriated by Congress. Annual funding for the program ranges between \$2 and \$3 million. The application deadline is November 15, 2004. For more information, check out <http://www.epa.gov/enviroed/grants.html> .

EPA Fellowships - Three Opportunities

As part of its Science to Achieve Results (STAR) and Greater Research Opportunities (GRO) programs, the EPA is offering Graduate Fellowships for master's and doctoral level students in environmentally related fields of study. They also offer Undergraduate Fellowships for bachelor level students under the GRO program. The deadline for receipt of pre-applications is November 23, 2004. For more information, check out <http://es.epa.gov/ncer/fellow/> .

Georgia Science Teachers Awards

The Georgia Science Teachers Association (GSTA) and the Georgia Science Teachers Education Foundation sponsor a variety of awards, including Science Teacher of the Year, Teacher of Promise, Mini-Grants, and ScienceQuest Teacher Scholarship. The deadline for application is October 25, 2004. For more information, check out <http://www.georgiascienceteacher.org/awards.htm> .

Good Neighbor Service-Learning Grant Program

The State Farm Good Neighbor Service-Learning Grants are available to teachers, youth (ages 5-25), and school-based service-learning coordinators to implement service-learning projects for National Youth Service Day, April 15-17, 2005. National Youth Service Day mobilizes youth as leaders to identify and address the needs of their

communities through service and service-learning, supports youth on a lifelong path of service and civic engagement, and educates the public, the media, and policymakers about the year-round contributions of young people as community leaders. The application deadline is October 18, 2004. For more information about this and other service learning awards and grants, check out http://www.ysa.org/awards/award_grant.cfm .

International Conservation Grants

The British Petroleum Conservation Program hosts a nine-page reference document that lists and links to international conservation project funders. For more information, check out http://conservation.bp.com/pdfs/potential_funders.pdf.

NAAEE 2004 Conference Scholarships

Applications are now being accepted for three categories:

- Diversity Scholarship – to assist individuals representing minority groups from urban areas. International and Spanish-speaking educators are encouraged to apply.
- College Students Scholarship – to support deserving full time junior, senior, or graduate students with commitment to environmental education
- Mississippi Educator Scholarship – to recognize Mississippi teachers that excel in the classroom and to MS environmental educators that are in need of financial assistance.

Deadline for Applications is October 15, 2004. For more information, check out <http://naaee.org/conferences/> .

Name NOAA's New Ship for Ocean Exploration

The National Oceanic and Atmospheric Administration is sponsoring a contest to "Name NOAA's New Ship for Exploration" for student teams in grades 6-12. This contest will begin on October 15, 2004. Posters with guidelines and a prize list will be mailed out to U.S. science teachers in grades 6-12 who are in the 2003-2004 NSTA Teacher Registry. Complete information about the contest will be posted on the NOAA Education website, www.education.noaa.gov, on October 15, 2004.

Prudential Spirit of Community Awards

The Prudential Spirit of Community Awards, sponsored by Prudential Financial in partnership with the National Association of Secondary School Principals, recognize students in grades 5-12 who have demonstrated exemplary community service. To be eligible, students must have engaged in a volunteer activity that occurred at least partly during the previous twelve months. The application deadline is October 29, 2004. For more information, check out <http://www.principals.org/awards/prudential.cfm> .

Public School Innovation Grants

The National Education Association Foundation Grants support public school teachers, education support personnel, and/or faculty who collaborate to develop and implement innovative ideas that result in high student achievement, improve teaching and learning, including the use of technology. The application deadline is September 15, 2004. For more information about this and other grants, check out <http://www.nfie.org/programs/grantguides.htm> .

Rolex Awards for Enterprise

The Rolex Awards for Enterprise provide financial support for groundbreaking projects that expand knowledge of the world, improve quality of life on the planet, or enhance the human condition. Applications are encouraged for projects in science and medicine, technology and innovation, exploration and discovery, the environment, and cultural heritage. Projects should be innovative, feasible, and demonstrate a spirit of enterprise. For more information, check out <http://www.rolexawards.com/> .

Environmental Excellence Awards

The SeaWorld / Busch Gardens / Fujifilm Environmental Excellence Awards recognize the outstanding efforts of K-12 students and teachers across the country who are working at the grassroots level to protect and preserve the environment. The award eligibility criteria have recently been expanded to recognize and reward community groups who are also protecting planet Earth. This is an awards program, not a grant; project applicants should demonstrate significant accomplishments that have occurred prior to the application deadline. The application deadline is November 30, 2004. For more information, check out <http://www.seaworld.org/conservation-matters/eea/index.htm> .

Zoom In On Invasives Photo Competition

IUCN, with sponsorship from Fujifilm, has launched a photo competition to raise awareness of the impact of alien invasive species on native animals and plants, ecosystems, and people's livelihoods. Professional and amateur photographers are invited to submit entries related to the impact of alien invasive species in a diversity of ecosystems (marine, freshwater and terrestrial) that also show a link to socio-economic activities. The winner will receive a cash prize of \$1000. The ten best photos will be displayed at the upcoming 3rd IUCN World Conservation Congress, whose theme is *Biodiversity Loss and Species Extinction - Managing risk in a changing world*. The entry deadline is October 22, 2004. For more information, check out http://www.sur.iucn.org/competition/concurso_entryrules.htm .

INTERNSHIPS AND TEMPORARY OPPORTUNITIES

Presidential Management Fellows Program

The Presidential Management Fellows Program is a leadership development program that provides opportunities to work with and impact public policy, to serve one's country, and to receive competitive pay, benefits, and career advancement. America is looking for outstanding graduate students to work in the Federal service, including at NOAA. This rigorous two-year paid program includes 80-hours of training each year, challenging assignments, accelerated promotions, and opportunities to network between agencies. Fellows are hired by agencies to work on domestic and international issues in public administration, technology, science, and many other fields. Graduate students are eligible to apply between September 1 and October 15, 2004. For more information, check out www.pmf.opm.gov .

CONFERENCES, WORKSHOPS, AND PROFESSIONAL DEVELOPMENT

American Cetacean Society International Conference

The American Cetacean Society announces their 9th international conference, *Learning From Whales: Education, Inspiration & Action*, November 11-14, 2004, Long Beach,

California. Their focus this year is a central part of their mission to protect cetaceans—education—and how to use it to inform and inspire. Attendees will leave the conference armed with new information. Breakout groups for peer interaction will provide materials to be used when attendees return to their classrooms or boats. For more information, check out <http://www.acsonline.org> .

American Museum of Natural History Winter & Summer 2005 Courses

The American Museum of Natural History offers accredited courses (through the City University of New York) in a variety of natural science topics. Included on the 2005 schedule are The Diversity of Fishes and Sharks and Rays. For more information, check out <http://learn.amnh.org/courses/courses.php> .

Aquatic Nuisance Species Teacher Workshop - Mississippi.

The Scott Aquarium of The University of Southern Mississippi will offer an Aquatic Nuisance Species workshop November 17-19, 2004, Biloxi, Mississippi. The workshop includes lectures by guest scientists, numerous educational activities, and a field trip to Horn Island and the Grand Bay National Estuarine Research Reserve. Participation is limited to 18 teachers; accommodations and meals will be provided. This workshop has been approved for 1.4 CEUs. With sponsorship by the National Sea Grant College and the MS-AL Sea Grant Consortium, the total cost for this workshop is only \$25. For more information, contact Shelia A. Brown at shelia.brown@usm.edu .

Colonial Coast Birding & Nature Festival - Georgia

The Colonial Coast Birding & Nature Festival celebrates Southeast Georgia as a birder's paradise, offering a wide variety of habitats and wildlife. Shorelines, salt marshes, old rice fields, woodlands, tidal rivers, freshwater wetlands and more all host their own fascinating bird communities. The festival is not just for birders, offering field trips and seminars that will appeal to all types of nature lovers, including different vendors, conservation groups, kids' activities, arts and crafts, even a live raptor show. For more information, check out www.coastalgeorgiabirding.org .

Congress on Caribbean Biodiversity

The fifth Congress on Caribbean Biodiversity, January 25-28, 2005, Santo Domingo, Dominican Republic, will host specialists from numerous fields working towards the protection of biodiversity. Abstracts are requested on topics including biogeography, ecology, invasive species, environmental education, and more. The deadline for abstract submission (in English or Spanish) is November 15, 2004. For more information, contact Professor Carlos Ml. Rodriguez Peña., at carlos_rquez96@yahoo.com .

Earthwatch Institute Annual Conference - Massachusetts

Join Earthwatch Institute on Saturday, November 5-6, 2004, Cambridge, Massachusetts, for their annual conference, "Making Connections: Women, Science, and Sustainability." You will have the chance to meet the scientists, connect with former expedition team members, and attend lectures and panel discussions on their key research and education initiatives. Check out the educator track for pre-conference workshops at the New England Aquarium. And if you're in the Los Angeles area instead, the Los Angeles Zoo's Education Center is hosting an Earthwatch Institute Regional Education Gathering on October 20, 2004. For more information about the conference, check out <http://www.earthwatch.org/conference/index.html> . For the LA gathering, contact pmorad@earthwatch.org.

Hands-on Learning in the Ballona Wetlands - California

The Center for Ocean Sciences Education Excellence-West (COSEE-West) invites you to wade into the water, November 19, San Pedro, California, for environmental and marine science research and education. K-12 teachers may receive documentation for professional development hours upon request. Additional content information and classroom materials will be provided. For more information, contact Peggy Hamner at phamner@ucla.edu.

International Aquarium Congress

The Monterey Bay Aquarium will host the 6th International Aquarium Congress, December 5-10, 2004, Monterey, California, as part of their 20th anniversary celebration. The theme, "Making Connections, Inspiring Conservation" envisions us working together to seek effective strategies to protect our oceans and advance conservation. The program includes a series of workshops that aim to draw participants together in meaningful discussion about the future of our oceans. For more information, check out <http://www.iac2004.org/>.

Islands, Vents, and Oceans...Essential Ecosystems For Many Species Nonformal Workshop - Mississippi

The Center for Ocean Sciences Education Excellence: Central Gulf of Mexico (COSEE-CGM), the Office of Naval Research - National Oceanographic Partnership Program (NOPP), and other partners will sponsor a Nonformal Educators' Workshop December 2-3, 2004, Biloxi, Mississippi. Workshop topics will include marsh restoration; methane seeps and hydrothermal vents and the role that sulfide-producing bacteria play on vent ecosystems; and oceans past, present, and future. The workshop is open to 70 nonformal educators and teachers; CEUs will be offered. Housing and meals are included in the \$25 registration fee. For more information, contact Shelia A. Brown at shelia.brown@usm.edu.

Jekyll Island Turtle Crawl - Georgia

The Jekyll Island Sea Turtle Project is hosting the second annual Turtle Crawl, October 9, 2004, to benefit the new Georgia Sea Turtle Center at Jekyll Island. All proceeds from the event will go to support the development and educational efforts of the Center. With a planned opening in 2006, the Georgia Sea Turtle Center will be the first of its kind in the state. The Turtle Crawl will feature athletic competitions, entertainment, and educational activities. For more information, check out www.jekyllisland.com.

Key to the Sea Workshop - California

Key to the Sea is a marine environmental education program designed for teachers and elementary school children throughout Los Angeles County. Learn about watershed stewardship, storm water pollution prevention, and marine conservation through engaging hands-on educational activities. Participants receive a free curriculum guide aligned to California state standards, all the supplies needed to conduct the activities in the classroom, and you can take your students to the partnering aquarium for a Beach Exploration. There are workshop dates from November through April at different locations. For more information, check out <http://www.healthebay.org/>.

Learning Ocean Science through Ocean Exploration Curriculum Professional Development – Massachusetts and South Carolina

The New England Aquarium will host a professional development institute for grade 6-12 teachers, October 16, 2004, Boston, Massachusetts. The South Carolina Aquarium, Charleston, South Carolina, will host an Introduction to Learning Ocean Science through Ocean Exploration on October 16, 2004, and a follow-up session for those educators who have already attended the introduction to the Curriculum Session on November 13, 2004.

Both workshops will use the new Ocean Exploration curriculum and a CD-ROM of NOAA's Ocean Exploration website. Bring the excitement of current ocean science discoveries to your students. You will do inquiry- and standards-based activities tied directly to ocean expeditions described on the CD-ROM by ocean science explorers. Receive a copy of Learning Ocean Science through Ocean Exploration and the CD-ROM interpreting these multidisciplinary ocean discovery voyages using "new technological eyes" to study life and earth science on the ocean floor.

Check out the Ocean Explorer website at <http://oceanexplorer.noaa.gov> .
For more information about the Massachusetts workshop, please email jrubin@neaq.org
For more information about the South Carolina workshop, please email kbryan@scaquarium.org.

LiMPETS Workshop - California

The Long-term Monitoring Program & Experiential Training for Students network provides a unique opportunity for teachers to gain the necessary skills and confidence to engage students in monitoring activities in the field (website <http://limpets.noaa.gov>). This weekend workshop, sponsored by the Monterey Bay National Marine Sanctuary and the Monterey Bay Aquarium, October 18-19, 2004, Monterey, California, will cover two aspects of the program: rocky intertidal and sand crab monitoring. Teachers will be trained in the LiMPETS protocols including online data entry, and receive materials for use in the classroom. Teachers will also be introduced to resources and curriculum from the Monterey Bay Aquarium that relate to the rocky intertidal and sandy beach environments. For more information, contact Lisa Emanuelson at Lisa.Emanuelson@noaa.gov .

Mapping Ocean Sanctuaries Teacher Workshop - California

Learn how to use Geographic Information Systems to study geography and ocean science and involve your students in field data collection and analysis using their own data along with data from scientific and governmental institutions. The *Mapping Ocean Sanctuaries* teacher workshop, November 19-21, 2004, Camarillo, California, will involve 3 days of hands-on training in GIS and GPS technologies. Participants will receive a copy of the Exploring Data with GIS to Experience Sanctuaries (EDGES) curriculum which includes four classroom ready GIS lessons looking at the national marine sanctuaries. The participants will also receive a copy of *Mapping Our World* book which includes a one-year site license for ArcView 3.X GIS software. For more information, check out http://www.channelislands.noaa.gov/edu/edu_teacher.html .

Project Design and Evaluation – New Jersey

The Project Design and Evaluation course, November 17-19, 2004, Tuckerton, New Jersey, provides coastal resource management extension and education professionals with the knowledge, skills, and tools to design and implement projects that have

measurable impacts on the audience they want to reach. This interactive curriculum can help you increase the effectiveness of your projects by applying valid instructional design theory to their design. The course is cosponsored by the Jacques Cousteau National Estuarine Research Reserve and NOAA's Coastal Services Center. For more information, contact Lisa Weiss at weiss@imcs.rutgers.edu .

Remotely Operated Vehicles (ROVs) Workshop – Massachusetts

The Stellwagen Bank National Marine Sanctuary, Woods Hole Oceanographic Institute and other partners offer an ROV Teacher Workshop, October 15-16, 2004, in Falmouth, Massachusetts. Participants will be introduced to ROV technology, research, monitoring and exploration; discuss infusing technology into the high school curriculum; help develop lesson plans for use in high school classes and after school programs get connected with a technology mentor; and more. For more information, check out <http://stellwagen.nos.noaa.gov/> .

Remotely Operated Vehicles (ROVs) Workshop – Texas

The Flower Garden Banks National Marine Sanctuary is sponsoring a teacher workshop in partnership with Alvin Community College, the Texas State Aquarium, and the Marine Advanced Technology Education (MATE) Center, to bring science technology into the classroom, October 22-24, 2004, Corpus Christi, TX. Workshop participants will learn how technology, especially underwater ROVs, is used to research and explore sanctuary ecosystems in support of resource management. They will leave the workshop having constructed and tested their own mini-ROV to take back to the classroom, along with lesson plans and ideas for incorporating their new knowledge into the classroom. Participants will also learn how to form a team at their high school and/or undergraduate college program to participate in the annual Underwater ROV Competition sponsored by the MATE Center. For more information, contact Shelley DuPuy at shelley.dupuy@noaa.gov .

Seafood Sense: Fisheries Technology for Food Educators - Delaware

Penn State Cooperative Extension, Pennsylvania Sea Grant and Delaware Sea Grant offer a unique professional development opportunity for food educators in the region, November 2-4, 2004, Lewes, DE. Seafood specialists will lead a two-day training on seafood preparation and safety. Hands-on cooking activities will provide participants will practical opportunities to learn about buying, handling and preserving seafood, seafood composition and nutrition, and commercial fishing practices. The workshop will include seafood cooking and sampling, curriculum ideas for use in the participant's own educational workshops, a tour of a local seafood market, and a seafood issues internet tour. The deadline for registration is October 22, 2004. For more information, check out <http://www.ocean.udel.edu/seagrant/outreach/seafood/seafoodsense.html>

Virtual International Educators' Web Site – Conference Listing

This website, with listings about national and international conferences, is maintained by the Harvard Graduate School of Education. Please note that it does not currently have any environmental education conferences listed. For more information, check out <http://www.gse.harvard.edu/%7Eviews/conferences.html> .

What Are Our Birds Telling Us? – Alaska Workshop

The Alaska Natural Resource and Outdoor Education Association will host an educators' workshop and lecture, October 20, 2004, Anchorage, Alaska to explore what can we learn from birds about environmental change. The evening event will include hands-on

educator activities related to birds and the environment, dinner, a panel discussion of changes that are being observed in the scientific and native communities in regards to bird populations, and more. For more information, check out www.anroe.org .

Youth Groundwater Congress

The Youth Groundwater Congress is a three-day national conference sponsored by The Groundwater Foundation, November 3-5, 2004, Washington, DC. Delegates will have the opportunity to learn more about groundwater, voice their concerns regarding water issues, and develop possible solutions. It will provide a venue for youth to network with each other and environmental professionals, and a chance for youth and adults to gain a better understanding of each other's viewpoints. For more information, check out http://www.groundwater.org/pe/youth_congress.html .

EDUCATIONAL RESOURCES

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). For more information, check out <http://www.arkive.org/> .

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. For more information, check out <http://channelislands.noaa.gov/edu/shoretosea.html> .

Earth Science Week – Natural Hazards

This year, Earth Science Week, October 10-16, 2004 focuses 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. For more information, check out <http://www.earthsciweek.org/> .

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. For more information, check out <http://www.dfg.ca.gov/coned/index.html> .

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. If you haven't seen it before, be sure to check this one out! For more information, check out <http://www.enaturalist.org/index.htm> .

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. For more information, check out <http://www.theeworks.org/> .

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. For more information, check out <http://www.handsontheland.org> .

Journey of the Loggerhead:

This interactive DVD on marine turtles, from Environmental Media, was designed and filmed in the company of countless staff and volunteers of local nesting beach monitoring programs, domestic and international agencies, colleges and universities, aquaria, nature centers, and rehabilitation programs. The DVD contains GIS data, satellite tracking information, still photographs, extensive interviews, and a 26-minute video about the loggerhead and other marine turtle species. There is also an on-line Curriculum Correlations guide. For more information, including a 10-minute preview, check out <http://www.envmedia.com/production/loggerhead/index.htm> .

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. The series will be held in the following locations:

- Audubon Aquarium of the Americas, New Orleans, Louisiana, October 7, 2004.
- Shedd Aquarium, Chicago, Illinois, October 21, 2004.
- Hubbs-Sea World Research Institute, San Diego, California, November 11, 2004
- Monterey Bay Aquarium, Monterey, California, November 13, 2004

For more information, check out http://www.nmfs.noaa.gov/prot_res/acoustics/lecture.htm .

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. For more information, check out <http://www.aims.gov.au/pages/facilities/bookshop/monitoring-methods/monitoring-methods.html> .

Nonformal EE Programs – Guidelines For Excellence

The *Nonformal Environmental Education Programs – Guidelines for Excellence* comprises a set of recommendations for developing and administering high quality nonformal environmental education programs. The guidelines describe six key characteristics that can help guide the program development process: Needs Assessment, Organizational Needs and Capacities, Program Scope and Structure, Program Delivery Resources, Program Quality and Appropriateness, and Evaluation. The Nonformal Guidelines are the ninth volume in the National Project for Excellence in Environmental Education series. For more information, check out <http://naaee.org/publications/pubdescriptions.php/> .

OceanAGE - Ocean Careers to Inspire Another Generation of Explorers

NOAA and NASA announce the first OceanAGE Web Chats for the 2004-2005 school year, on October 19 and 20, 2004, with scientists recently returned from an 11-day mission to the R.M.S. *Titanic*. OceanAGE is an interactive online offering that inspires students to learn more about oceanographic careers and the importance of pursuing the mathematics, science, and technology coursework required to become an ocean explorer. Participants have the opportunity to interact through Web Chats and Web Forums with the talented scientists who explore our ocean planet. From underwater submersible pilots to research scientists, these marine explorers provide students with first-hand knowledge about their exciting careers through live interactions, video interviews, profiles, and mission logs.

- October 19, 1:00-2:00 p.m. EST, with Dr. Roy Cullimore, microbiologist who studied the “rusticles” on the R.M.S. *Titanic*
- October 20, 1:00-2:00 p.m. EST with Jeremy B. Weirich, LTJG, Maritime Archaeological Program Officer for NOAA’s Office of Ocean Exploration

The complete profiles, video interviews of the scientists, and live event instructions on the Web events are available on the OceanAGE Web site at <http://oceanexplorer.noaa.gov/edu/oceanage/welcome.html> .

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. For more information, check out <http://herb.northwestschool.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 developed by the authors who are scientists at the World Resources Institute. According to co-author Jon Maidens, continuous degradation of the reefs can lead by 2015 to loss in revenues from dive tourism by as much as US\$300 million per year. For more information, check out http://marine.wri.org/pubs_description.cfm?PubID=3944 .

Sea Around Us

The Sea Around Us Project, is a Fisheries Centre partnership with Philadelphia's Pew Charitable Trusts. The aims of the project are to provide 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 Mammals and Fisheries: Food for Thought* and *Seamounts: Biodiversity and Fisheries*. I had some trouble getting around on the site - try using Internet Explorer if you have trouble accessing the features using Netscape. For more information, check out <http://www.seaaroundus.org/project.htm> and <http://www.seaaroundus.org/BooksReportsF.htm> .

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 (next year) at no charge to anyone who orders 10 or more copies of the book for classroom use. A portion of the proceeds from the sale of the book will be donated to WIDECAST (Wider Caribbean Sea Turtle Conservation Network). The publisher sold the entire first printing in less than two months, a second printing is planned but the timeline is unsure. The WIDECAST office has about 300 left in stock, so if you'd like to purchase a copy, please contact author Dr. Karen Eckert at keckert@widecast.org soon.

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. For more information, check out <http://www.skyeyeweather.com/learn.html> .

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. For more information, check out http://www.smithsonianeducation.org/educators/lesson_plans/lesson_plans.html .

Teaching the Poetry of Rivers

The Colorado Foundation for Water Education offers online lesson plans for teachers that address the interdisciplinary study of watersheds, and assist students with submissions to the River of Words Poetry Contest. These self-paced lesson plans integrate culture, history, poetry, and watershed science. For more information, check out <http://cfwe.org/row.asp> .

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". For more information, check out <http://www.hear.org/index.html> .

INITIATIVES and JOURNALS

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;
- Create an infrastructure of national and state partners who are advocates for effective science teaching and learning.

Building a Presence for Science networks are being implemented and established throughout the states, with key leaders in each state and a point of contact for science in every public and private school form the network. The program brings standards-based teaching and learning into schools in participating states and helps teachers implement the National Science Education Standards (NSES) in conjunction with state science standards.

California teachers, check out the CABAP website, with online resources to help you find instructional materials covering each of the 4th and 5th grade science standards, teacher-oriented science content, and links to other resources and understand the intent of specific standards as described in the California Science Framework, and a contest, too, at <http://www.cabap.org/> .

For more information about the national initiative, check out <http://ecommerce.nsta.org/bap/mission.asp> .

National Wildlife Refuge Week

Whether to hunt, fish or watch wildlife, thousands of Americans will flock to national wildlife refuges for National Wildlife Refuge Week October 10-16, 2004. Visitors will celebrate the National Wildlife Refuge System's 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 Service biologists on national wildlife refuges.

The National Wildlife Refuge System, established in 1903, has 544 national wildlife refuges, more than 3,000 waterfowl production areas, and spans approximately 100 million acres. It provides habitat for more than 700 species of birds, 220 species of mammals, 250 reptile and amphibian species, more than 1,000 fish, and countless species of invertebrates and plants. The refuges offer recreational trails, hunting and fishing, and hundreds of environmental education programs across the country.

Here's a taste of some of the nation-wide celebrations:

- October 9 and 10, 2004, Chincoteague National Wildlife Refuge, Chincoteague, Virginia. Contact: (757) 336-6122 or R5RW_CHNWR@mail.fws.gov
- Oct. 16, 2004, Patuxent Research Refuge, Laurel, Maryland. Contact: 301-497-5766

For more information, check out <http://refuges.fws.gov/> .

New Feature: REVISITING COOL WEBSITES

The archives of the information previously shared in the Information Exchange (available in pdf format at http://www.mpa.gov/information_tools/education.html#InfoExchange) list all the programs and information featured since these updates began in 2002. To make the information gathered easier to review, we plan to format the information into a searchable database. As this is a work in progress, and there are many subscribers to this listserv who may have recently joined, this section will briefly mention some of the many excellent programs included earlier.

U.S. Geological Survey's Water Science for Schools

Examines dozens of water topics, in English or Spanish. The Water Cycle diagram is available in 36 languages. <http://ga.water.usgs.gov/edu/>

Federal Resources for Educational Excellence (FREE) Website

The FREE website makes it easy to search for teaching & learning resources from more than 40 federal organizations. <http://www.ed.gov/free/index.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/>