

**NATIONAL MARINE PROTECTED AREAS CENTER
INFORMATION EXCHANGE FOR MARINE EDUCATORS
MAY 2004**

This update is provided as a service from 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. Contact me directly to discuss further enhancements or to contribute information for future issues. Please let me know if you wish or do not wish to receive future updates by sending **me** an email (**do not** "reply to all") at phyllis.dermer@noaa.gov.

The information included here has been compiled from many different sources, including SeaSpan, NSTA Express, edinfo at FREE, EE-NEWS @NAAEE, Creec-LA, EEinGEORGIA, Scuttlebutt, and others. I have attempted to verify web addresses, but make no guarantee of accuracy. The Department of Commerce/NOAA does not necessarily endorse the views expressed or the facts presented on these sites. If you have trouble downloading some of the more interactive activities, try using Internet Explorer[®] instead of Netscape[®].

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MPA FACTS

Federal MPA Legislative Authorities

There are many different kinds of marine protected areas created under different local, state, tribal, or federal authorities. The National MPA Center has a quick guide to some of the legislation that provides the authority for various federal agencies and government entities to establish, manage, monitor and/or evaluate marine protected areas at the federal level. More extensive information, with links to the legislation, can be found on the Ocean Planning Information System (OPIS) Legislative Framework page. For more information, check out http://mpa.gov/mpa_programs/mpa_legislation.html and <http://www.csc.noaa.gov/opis/html/legal.htm>.

Notable Addition to MPA Library

The authors describe four important non-use values to consider when considering MPAs: option value, quasi-option value, bequest value, and existence value. The direct link to this paper is at <http://unicorn.csc.noaa.gov/mpa/barnuv.pdf>

Barr, B. W., Ehler R., and Wiley, P. 2003. "Ishmael's Inclinations: Non-Use Values of Marine Protected Areas." Chapter 12 in: *The Full Value of Parks: From Economics to the Intangible*, pp 157-68. Rowman and Littlefield Press, Lanham, Maryland.

Main MPA Library URL:

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

PROGRAM OF THE MONTH

Geographic Data in Education

The Geographic Data in Education (GEODE) Initiative, for middle school through college, is dedicated to the improvement of Earth and environmental science education through the use of data visualization and analysis tools to support inquiry-based learning. An integrated program of research and development, the GEODE Initiative provides curriculum, educational software, and teacher professional development. The curriculum integrates scientific visualization into an inquiry-based program of hands-on labs, group work, and discussions to enhance students' understanding of the scientific and social issues associated with our changing environment.

Software:

WorldWatcher

WorldWatcher is a tool for displaying and analyzing gridded geographic data in the form of color maps. WorldWatcher provides an accessible and supportive environment for students to explore, create, and analyze scientific data. Its goal is to provide students with access to the same features found in the powerful, general-purpose visualization environments that scientists use while providing them with the support they require to learn through the use of the tools.

My World

My World is a Geographic Information System (GIS) that enables users to construct interactive maps and analyze them using database and geospatial queries. My World provides a carefully selected subset of the features of a professional GIS environment which include: multiple geographic projections, table and map views of data, distance-

measurement tools, buffering and query operations, and customizable map display. These features are accessed through a supportive interface designed with the needs of students and teachers in mind.

Curriculum:

Looking at the Environment (LATE), for high school

This year-long curriculum teaches about the use of natural resources through case studies, including land use, water management, and investigation of the local environment. Students use both the WorldWatcher and ArcView software to help in each of the highlighted case studies. Computer-based and laboratory inquiry activities are combined with discussions, lectures, readings, written assignments, and oral presentations in an integrated approach.

Planetary Forecaster Project (Grades 6 to 8)

In this project, students use the software WorldWatcher to explore the major factors that lead to variations in the temperature on Earth and then use what they learn to make temperature predictions on a fictional "newly discovered" planet. The project places the students in a research role, asking them to predict the temperature ranges on the new planet and identify the areas that will be habitable based on their predictions.

For more information, check out <http://www.worldwatcher.northwestern.edu/> .

WEBSITE OF THE MONTH

The American Meteorological Society's *DataStreme Ocean* Website: A User-friendly Pathway to Ocean Information

DataStreme Ocean is a new semester-long distance-learning course for precollege teacher enhancement that is partially delivered via the Internet. It is an initiative of the American Meteorological Society/National Oceanic and Atmospheric Administration Cooperative Program for Earth System Education. *DataStreme Ocean* explores the ocean in the Earth system with special emphasis on (1) the flow and transformations of materials and energy into and out of the ocean, (2) the physical and chemical properties of the ocean, (3) ocean circulation, (4) marine life and its adaptations, (5) interactions between the ocean and the other components of the Earth system, and (6) the human/societal impacts on and response to those interactions.

The course website offers a comprehensive sampling of ocean information especially suitable for learning in an Earth system perspective. While basic scientific data are updated and delivered continuously the year round, special segments of the website are active during the fall and spring semesters when the course is in progress. The most popular of these is the *Weekly Water News*, alerting the user to current ocean articles and reports available online. Especially popular in this segment is a *Historical Events* section.

Information for teachers wishing to enrolling in the *DataStreme Ocean* course can be found by clicking on the ship appearing to the upper right on the homepage. For more information, check out www.ametsoc.org/amsedu/DS-Ocean/home.html .

REQUESTS

Looking for GIS Model Education Kit Suggestions

Kara is a graduate student creating a cetacean habitat prediction model using GIS (ArcMap ver. 8.3). This model will be part of a marine education kit that will go to local schools and/or be placed on the web. Along with the oceanographic model, the education kit will include tutorials and games regarding processes affecting the presence of whales in the Gulf of Maine, including food distribution, water stratification, phytoplankton accumulation due to fronts, and more. She has ideas about games but is looking for more suggestions. Could anyone recommend authors or projects that have worked with 1) GIS 3-D modeling, 2) GIS oceanography, 3) ocean education using GIS, 4) games for getting ocean education concepts across, and 5) recommend any GIS software that does volumetric modeling. Please contact Kara Johnson at kjohnson@coa.edu .

Looking for Public Access Wetlands in Northeastern US & Atlantic Maritime Canada

Professor Ralph Tiner, Department of Plant and Soil Sciences, UMass-Amherst, is updating his field guide to coastal wetland plants of the Northeastern United States. The book will extend from the Canadian Atlantic Maritimes to Maryland and will also include a primer on coastal wetland ecology and natural history. One section of the book lists places for readers to visit coastal wetlands and he would like to increase the number of sites listed. The following information is requested for each site: name of wetland, type of wetland (salt marsh, brackish marsh, tidal freshwater marsh, tidal swamp), ownership (agency/organization), town, county, and state/province. Please submit any recommendations on publicly accessible places to visit via email to Ralph Tiner at rtiner@pssci.umass.edu .

Seeking Participants in Ocean Science Education Track at NSTA Conference

NMEA is interested in having a marine and aquatic education track of presentations at the Dallas National Science Teachers Association annual conference next year. Having a room dedicated to the ocean sciences would provide a higher visibility and allow greater pre-conference publicity. If you're interested in participating, please contact Jean as soon as possible at Jam05@bellsouth.net .

GRANTS AND OPPORTUNITIES

Brower Youth Environmental Awards

The Brower Youth Environmental Awards recognize six students, ages 13 to 22, for their outstanding leadership and work in conservation, preservation, and restoration - what Earth Island founder David Brower called "CPR for the Earth." Applications are due June 1, 2004. For more information, check out <http://www.earthisland.org/project/viewProject.cfm?subSiteID=40> .

Call for NAAEE Award Nominations - 2004

The Awards Committee of the North American Association for Environmental Education (NAAEE) announces its Call for Nominations for the annual awards to be presented this year in Biloxi, Mississippi at the Association's conference in early November. Nomination deadline is June 15, 2004. For more information, check out <http://www.naaee.org/> .

California Teach Action Grants

The Teacher Action Grants program goals are to inspire teachers and students to reduce the amount of pollution entering creeks and San Francisco Bay, conserve water, become better stewards of natural resources, and improve the quality of wildlife habitat in Alameda and Contra Costa Counties. The deadline for submission is May 19, 2004. For more information, check out <http://www.aoinstitute.org/tag/tag.html> .

My Teacher is the Best

GiveKidsGoodSchools.com, a project of Public Education Network, invites sixth, seventh, and eighth graders to enter the *My Teacher is the Best* Essay Contest. The first prize is a laptop computer to both the student writer and the teacher. Two honorable mention students will receive \$100 savings bonds. Essays deadline is May 31, 2004. For more information, check out <http://www.givekidsgoodschools.com/goodteachers/essay.html> .

National Geographic Society Education Foundation Teacher Grants

The foundation provides grants to educators to facilitate their work in the classroom, school, district, and community. This year, projects will be funded in either of two broad categories: Promoting Stewardship of Cultural and Natural Resources, and Promoting Geographic Knowledge Through Education. The foundation plans to make approximately \$100,000 available, in grants of up to \$5,000 each. Applications may be submitted by a single teacher or by a project team leader on behalf of a group. Hurry: the application deadline is June 10, 2004. For more information, check out http://www.nationalgeographic.com/education/teacher_community/get_grant.html .

INTERNSHIPS AND TEMPORARY OPPORTUNITIES

Whitefish Dunes Biology and Naturalist Interns and Potawatomi State Park Naturalist Intern

Do you want to live and work within a state park? Willing to live minutes away from one of the best beaches in the Midwest? Able to spend days outside learning from and helping a rare ecosystem? Then Whitefish Dunes State Park, located in Door County WI, is the place for you. We are looking for Biology and Naturalist Interns for the summer 2004 season. Or, if you prefer, check out the Potawatomi State Park Naturalist Internship. These are volunteer positions with housing provided. Gain valuable experience working in a state park setting and with an active and meaningful conservation effort. Schedules can be flexible to allow interns the ability to seek outside employment with local businesses. Internship dates are May 18 - August 30, 2004. Hurry – the deadline approaches rapidly. For more information, contact Carolyn Rock at carolyn.rock@dnr.state.wi.us .

Student-Teacher Field Studies in the National Marine Sanctuaries

Come explore our U.S. National Marine Sanctuaries this summer. A select group of teacher-student pairs will be chosen to attend one of two field studies:

- Gray's Reef Marine Sanctuary in Georgia, grade 9-12, July 23-28, 2004. Test water quality and investigate beach and dune ecology. Activities include exploring the Sapelo Island estuary and operating an ROV.
- Channel Islands Marine Sanctuary in California, grade 5-8, August 9-12, 2004. Research and photograph the geology, flora, and fauna of Santa Cruz Island.

Funding is provided through the National Marine Sanctuary Program in partnership with the National Geographic Society Education Foundation. Application deadline is June 1, 2004. For more information, check out www.ngsednet.org/profdev .

Teacher Seminar Research at SEA

The Sea Education Association in Woods Hole, Massachusetts, is currently accepting applications for teachers (grades 5-9) for its Teacher Seminar Research at SEA. The seminar, funded by the National Science Foundation, provides oceanographic research experience and affords the opportunity to explore the oceanic environment while learning about the scientific research process first-hand. Participants gain experience in conducting scientific investigations in the field, and the enhanced knowledge base necessary to offer similar experiences to their students. Applications are reviewed monthly. For more information, check out <http://www.sea.edu/sea2000/admission2000/teachers.htm> .

Whale Camp

The Whale Camp offers one, two, and three week programs for students age 10-17 and teachers or adults interested in marine biology. The courses take place on the New Brunswick, Canada, island of Grand Manan, located in the the Bay of Fundy. Participants have the opportunity for whale encounters, Atlantic Puffin nesting colony visits, and more. There are sessions for adults and for students in July and August, 2004. For more information, check out www.whalecamp.com .

CONFERENCES, WORKSHOPS, AND PROFESSIONAL DEVELOPMENT

Aquatic Ecosystems and Research Methods Teacher Workshop

The Bruce Museum of Arts and Science in Greenwich, Connecticut, in collaboration with Audubon Greenwich, is hosting a summer teacher's workshop on Aquatic Ecosystems, July 12 - July 16, 2004. The workshop will provide hands-on research experience of Long Island Sound and its watershed tributaries, including marine and fresh water environmental science. Participants will receive classroom and field activities appropriate for elementary and middle school classes. Covered topics include sampling, invertebrate ID, aquarium set-up, and data presentation. For more information, check out http://www.brucemuseum.org/education/teachers_summer.php .

Environmental Education in the Albemarle-Pamlico Sounds Region Workshop

The North Carolina Department of Environment and Natural Resources offers the 2004 Environmental Education Institute: "Environmental Education in the Albemarle-Pamlico Sounds Region" from June 6-11, 2004 in Salter Path, North Carolina. This is a free professional development opportunity for K-12 teachers to integrate Environmental Education into North Carolina's Standard Course of Study Curriculum focusing on inquiry-based field investigations and hands-on activities. Curriculum materials are provided and teachers earn CEU credits and Environmental Education Certification credits. For more information, check out <http://www.ee.enr.state.nc.us/Institutes/APNEP%20Institute%20Info%202004.htm> .

Fundamentals of Environmental Education

The *Fundamentals of Environmental Education* online course will be offered June 14 – August 20, 2004 and September 13 – November 19, 2004. The course content was produced in collaboration with national environmental education experts, using materials from organizations such as NAAEE, World Wildlife Fund, Project Learning Tree, Project WILD and Project WET. The course is based on the *Guidelines for the Initial Preparation of Environmental Educators* document published by NAAEE. For more information, check out http://www.eetap.org/html/online_ee_course.php.

Gulf and Caribbean Fisheries Institute Annual Meeting

The meeting will be held in St. Petersburg, Florida, November 8-12, 2004. There will be sessions focusing on Socio-economics and Management, Marine Protected Areas, Habitat in the Marine Environment, and Marine Science Education. Abstracts are due July 31, 2004. More information will be added to the website; check out <http://www.gcfi.org/Conferences/57th/StPete2004.htm>.

Interdisciplinary Watershed Investigations Professional Development

Michigan Technological University Educators' Professional Development Institute Series for Teachers (grades 3-12) hosts an *Interdisciplinary Watershed Investigations Workshop*, June 20-26, 2004, Houghton, Michigan. Teachers will learn methods used in watershed assessment. For more information, check out http://wupcenter.mtu.edu/teachers_professional.html.

Learning Ocean Science through Ocean Exploration Workshop

Presented by Paula Keener-Chavis and Dr. Valerie Chase, this 6-hour pre-NMEA conference workshop, Sunday, July 18, 2004, provides hands-on activities from the Ocean Exploration curriculum, mixed with website connections, so that you can see the interaction between technology and classroom instruction in ocean science. Participants will receive a copy of *Learning Ocean Science through Ocean Exploration*, CDs of the Ocean Exploration website (surf the OE website without an Internet connection) and other NOAA materials. It's offered for a very modest fee. For more information, contact Valerie Chase at vchase529@worldnet.att.net.

Mangrove Forest Ecology, Management and Restoration training workshop

The third Mangrove Forest Ecology, Management and Restoration training workshop will be held in Hollywood, Florida, February 21-24, 2005. The training site is within a mangrove restoration project at West Lake Park operated by Broward County. The workshop includes an introduction to mangrove forest ecology, management options and problems, and restoration design issues, and includes case studies and field trips. The emphasis is on cost-effective successful mangrove management and restoration, and cost figures for typical projects are discussed and explained. For more information, check out www.mangroverestoration.com.

Seminars on Science: Sharks and Rays – Ecology, Classification and Evolution

The American Museum of Natural History offers this six-week summer workshop, June 28 - August 8, 2004. Key science concepts and processes covered in the course include diversity and adaptation, anatomy, fossil evidence, and data analysis. Participants will have access to Museum scientists and educators and receive teaching tools to take back to their classroom. For more information, check out <http://learn.amnh.org/courses/sharks.php>.

Texas A&M University's Marine Advisory Service Educator Workshops

Texas Marine Advisory Service will be hosting two development workshops for Texas educators on the environment and natural resources in Texas and the Gulf Coast. Teachers, science curriculum specialists, and department heads working in public and private schools are encouraged to register. Training sessions for elementary school educators are June 28-30; training for secondary school educators will take place July 7-9. For more information or to enroll, contact lbeach@neo.tamu.edu .

EDUCATIONAL RESOURCES

Aquatic Invasive Species: An Educator's Information and Materials Guide

This guide is a compilation of selected educational materials on aquatic invasive species, including curricula, posters and print materials, videos, books and compact discs, and web sites. The guide is available for down-loading at http://www.seagrant.umn.edu/exotics/ais_guide.pdf . But for more information, make sure you check out the rest of this extensive website, at <http://www.seagrant.umn.edu/exotics/> .

CORAL Discussion Board

The Coral Reef Alliance is proud to announce the CORAL Discussion Board. We hope this site will stimulate dialogue on a variety of issues related to coral conservation. The discussion board will allow individuals, organizations, businesses and government agencies within the fields of marine conservation, park management, science, education, and tourism to seek technical advice and share lessons learned with others in a global network of communication. For more information, check out <http://www.coralreefalliance.org/parks/cdb> .

Environmental Education in New Zealand Schools

There's a new focus on environmental education in other countries, also. A four-volume report highlighting research on environmental education practice provides lessons for school-based development of New Zealand curriculum for programs in special focus areas, and is meant to serve as a resource for schools who want to develop their own environmental education programs. The report, Environmental Education in New Zealand Schools: Research into Current Practice and Future Possibilities, is from the New Zealand Council for Educational Research and Waikato University. For more information, check out www.minedu.govt.nz/goto/eereports .

Florida Office of Coastal and Aquatic Managed Areas Interactive Map

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

iLoveSchools.com

iLoveSchools.com is a free matchmaking service for education. School teachers request materials and supplies while school supporters search for a school in need of their gifts of money, new or used goods or other educational supplies. iLoveSchools.com supports

any institution that educates children, including pre-schools, home schools and private schools. For more information, check out <http://www.iloveschools.com/index.php> .

Investigating the Climate System

Investigating the Climate System offers problem-based modules for studying clouds, energy, precipitation, weather, and wind. Learning activities, assessment rubrics, and prerequisite knowledge are included in these down-loadable booklets, correlated to national academic standards for Grades 5-12. For more information, check out <http://spacelink.nasa.gov/products/Investigating.the.Climate.System/> .

Meeting Standards Naturally

A free CD-ROM, *Meeting Standards Naturally*, has been developed for K-12 educators to promote academic excellence and environmental literacy. This was developed by the Environmental Education and Training Partnership (EETAP) which is funded by the U.S. EPA's Office of Environmental Education. The CD explores how teaching about the environment can be used to achieve national education standards for core disciplines such as math, science and social studies. It also discusses what environmental literacy means and how it helps prepare students to effectively make environmental decisions that impact their daily lives. For more information, check out http://www.eetap.org/html/new_products.php#CDROM .

Navigating Change

The goal of Navigating Change is to motivate, encourage and challenge people to take action to improve the environmental conditions in their own backyards, especially as it pertains to our coral reef ecosystems. We want people to take responsibility for the stewardship and sustainability of our islands and our ocean. We are targeting our message to the youth of Hawai'i because the future is in their hands. Classroom videos, teacher curriculum and more are available on our website. For more information, check out <http://www.hawaiianatolls.org/research/NavChange2002/index.php> .

Ocean Discovery Kits

NOAA's National Ocean Service has launched three discovery kits explaining the science behind NOS activities, designed to make complex subjects accessible to teachers and students at the high school level. Each kit includes an on-line tutorial, a roadmap to resources, and a set of lesson plans correlated to National Science Education Standards. Discovery Kits have been developed for Corals, Tides & Water Levels, and Geodesy. For more information, check out <http://oceanservice.noaa.gov/education/welcome.html> .

The PBS Borders Environmental Project

Each POV Borders episode asks visitors to consider an aspect of their everyday lives in ways that challenge their preconceptions, and expand our own "borders" of understanding. Lesson plans for K-12 teachers are designed to facilitate online storytelling and sharing. Each of the three lesson plans focuses on Earth, Water, or Air. Downloadable in pdf or html format, students explore how human activity and industrialization is altering air quality, water is used in their local communities, and the social impact of land use. Don't forget to check out the link to the Watershed Game (<http://www.bellmuseum.org/cgi-bin/start.pl?user=bellmuse&prog=start.pl&name=&submit=Let%27s%2Bgo!>) . For more information, check out <http://www.pbs.org/pov/borders/2004/educators/index.html> .

Seashore Survivors eField Trip

The Alaska SeaLife Center recently launched *Seashore Survivors*, a virtual tour of Alaskan intertidal invertebrates. This interactive eFieldTrip is a fun, way for students to learn about these creatures. The tour focuses on the adaptations that intertidal animals need to brave the surf, tides, and predators. In addition to the virtual tour, students can submit their questions for scientists to answer, and teachers can download a trip journal for their students to complete as they follow the tour. For more information, check out <http://www.efieldtrips.org/Invertebrates/index.htm> .

Shorebirds of the Pacific Flyway eField Trip

The U.S. Fish and Wildlife Service offers schools nationwide the opportunity to participate in an eFieldTrip titled, "Shorebirds of the Pacific Flyway: Who Are These Olympic Flyers?" The trip is designed to help students learn about what a shorebird is and how to identify shorebirds of the Pacific Flyway. The virtual visit is now open and will be available through the end of the school year. Due to technical difficulties, the live webchat was postponed, so you still have time to sign up. For more information, check out <http://www.efieldtrips.org/Shorebirds/index.htm> .

INITIATIVES and JOURNALS

Oceanus Online

Oceanus, the oceanography magazine produced by Woods Hole Oceanographic Institution, has a free version on-line. The magazine explores ocean research, engineering, and education at WHOI. For more information, check out <http://oceanusmag.whoi.edu> .