

Concurrent Sessions ~ Saturday, 16 July, 2:00-2:20 & 2:00-2:45 pm

SESSION FORMAT(S): L/HO = Lab/Hands-on; F=Field; C=Computer Workshop; D/L=Demonstration/Lecture;
P/R= Panel/Round-Table Discussion; S=20-Minute Snapshot

AUDIENCE(S): K=Preschool/Kindergarten; E=Elementary; M=Middle School; H=High School; C=College; R=Research Scientists; I=Informal Educators; A=Aquarium, Zoo, Museum Educators; P=Agency Personnel/Policy Makers; G=General

Knowledge is Power

Mrs. Lisa Vaivao-Ino, Matafao Elementary School, Pago Pago, American Samoa
S ~ E,M,H,I,G

2:00-2:20 pm; *Ka'a'ike 107*

Until recently, lessons on educating students on the importance of coral reefs and good stewardship practices have been nonexistent or lacking in the classroom. Six 5th graders from Matafao Elementary were given the opportunity to learn about coral reefs through a 2.5 month after school project. Students learned about why it's important to protect coral reefs, the threats affecting it, and developed ways to help protect and conserve this precious natural resource. Participants were given the opportunity to explore the reefs through surveys and snorkeling activities, conduct research and develop strategies that will help educate their family, friends and people of American Samoa. This report will present the highlights and student deliverables associated with this project.

Native Fishery Observer Program: An Overview

Mrs. Yuko Stender & Signe Opheim, University of Hawai'i Manoa - Marine Option Program, Honolulu, HI
S ~ C,R,I,P,G

2:00-2:20 pm; *Ka'a'ike 108*

The Native Fishery Observer Program (NFOP) provides educational training and career development for native Hawaii-based longline observer candidates. It is a cooperative effort by NOAA Fisheries, Alu Like Inc., and the University of Hawaii at Manoa's Marine Option Program. NFOP focuses on native candidates' strong seafaring background to develop ocean stewardship and awareness, and setting clear goals as an observer. Graduates of the program are eligible to participate in federal observer certificate training without a baccalaureate degree in biological science. The curriculum has been uniquely evolved since the program's inception in 2002, based upon federal course content plus a variety of hands-on instruction and experiences. Graduate have been evaluated as excellent career observers providing high quality data.

Assessment of secondary student attitudes and achievement in marine science using ArcView GIS technology

Dr. Genevieve Healy, University of Colorado, Boulder, CO
S ~ E,M,H,C,R,technology

2:00-2:20 pm; *Laulima 225*

This presentation will summarize the results of research investigating the cognitive and pedagogical implications of integrating ArcView® GIS technology into secondary science classrooms. Four hundred seven secondary students were introduced to a marine science curriculum using ArcView® GIS technology and traditional methods of teaching at different times during implementation and then tested to identify significant effects on students' acquisition of content skills, cognitive skills, and spatial skills. The results suggested that neither ArcView® GIS or traditional instructional methods have a greater effect on secondary students' acquisition of content, cognition, or spatial skills. The implications of this study include contributions to teacher professional development, improving grade level appropriate GIS-based curriculum, and to the knowledge-base of theoretical geoscience research.

Uses of Seaweeds in Food and Industry: Making a Subject Surprisingly Interesting!

Dr. Isabella Abbott & Dr. Cecilia Smith, University of Hawai'i, Honolulu, HI
D/L ~ M,H,C,R,A,G

2:00-2:45 pm; *Agriculture 104*

Phycologists with the University of Hawai'i Botany Department will provide you with new ways to look at and appreciate our fascinating *limu* (seaweeds, marine algae.)

From the Source to the Sea: An Innovative Program for Homeschool Families

Mrs. Debbi Berger, The Florida Aquarium, Tampa, FL
D/L ~ M,I,A,G,homeschool audiences

2:00-2:45 pm; *Ka'a'ike 105A*

Are you interested in capturing a large homeschool audience? An IMLS Leadership grant was awarded to The Florida Aquarium for a three-year collaboration between the Aquarium, Lowry Park Zoo, Nature's Classroom, and the Florida Parent Educators Association to gather information about how to better serve homeschool families. Programming commenced in October for 60 homeschool students, ages 11-14, including classroom sessions, field studies, overnights, boat excursions, and other hands-on experiences. Programming and materials are provided to participating families at no cost. Formal evaluation of knowledge and attitudes for students and families is ongoing. Results will guide the Aquarium and the Zoo in future programming decisions for homeschool, and this session will share interesting and unexpected results of what we have learned.

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Easy-access conservation: Tips and techniques for activating students for environmental action

Mr. Jason Boyce, Vancouver Aquarium Marine Centre, Vancouver, BC, Canada
D/L ~ E,M,H,I

2:00-2:45 pm; Ka'a'ike 105B

The world is filled with stories about endangered animals, disappearing habitats and impeding environmental catastrophes. The challenge becomes, how do you inspire your students to take this information and do something about it? This lecture will offer tips and techniques on how to get students to take simple actions that can achieve conservation in their communities. We will look at the success story of the Great Canadian Shoreline Cleanup, a grassroots program started 11 years ago in Vancouver dedicated to the eradication of aquatic debris. Now, over 30,000 Canadians participate in cleanups across Canada every September, with over 50% of participants being youth. This workshop will give participants the techniques they need to inspire their students to take action.

Online Resources for Virtual At-Sea Research Experiences

Ms. Rachel McEvers, Project Oceanica, Charleston, SC
D/L ~ H,C,R,I,A

2:00-2:45 pm; Ka'a'ike 105CD

Project Oceanica has found an exciting “niche” as a liaison between educators and scientists before, during and after an oceanographic mission. An Oceanica staff member participates on a mission as a Science/Education Liaison with the purpose of generating interesting, informative and educational web-based resources related to the science of the mission, while serving as a translator between scientists and educators. Learn more about this concept and see how many on-line resources can be used as a virtual “at sea” experience.

The Hidden Secrets of Skull Island: Learning Marine Science through Creative Writing

Dr. Sandra Zicus, The University Of Queensland, Brisbane, QLD, Australia
D/L ~ E,M,C,I,A

2:00-2:45 pm; Ka'a'ike 109

The Hidden Secrets of Skull Island is a mystery adventure story that was written and illustrated by 6th grade students in Queensland, Australia. With support from the University of Queensland Centre for Marine Studies and the Bright Minds science education program, the students and teachers learned about coastal ecosystems through a series of classroom and fieldtrip activities. The teachers developed a team process that allowed all students to participate in creating the story and writing the book. The book was published by James Cook University and is supplemented by a teacher’s guide containing extension activities for use in the classroom or field. This session will introduce the book, highlight the process used, and discuss the lessons learned along the way.

Why Whales Do That!

Kecia Joy & Kate Shapiro, Pacific Whale Foundation, Maalaea, HI
D/L ~ E,M,H,I,G

2:00-2:45 pm; KaLama 103

This year, the Pacific Whale Foundation created a dynamic Humpback Whale documentary that shows many magnificent whale behaviors documented from over 30 years of research. During this session, we will present this footage, which is both entertaining and very educational. We will also share an activity booklet to go along with this exciting 22-minute film. It is designed for marine science educators and teachers who instruct 3rd grade and up. A few lucky participants will win one of these DVDs, posters, or an entire “deluxe classroom teaching packet” that includes: a whale tote bag, a whale model, poster, and curriculum, “Why Whales Do That!” DVD, a whale song CD and more as a door prize for attending this workshop— so don’t miss out!

Mokupapapa: Discovery Center For Hawaii’s Remote Coral Reefs

Mr. Andy Collins, NOAA, Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, Honolulu, HI
Zachary Caldwell, Mokupapapa, NWHICRER, NOAA
D/L ~ K,E,M,H,C,I,A,G

2:00-2:45 pm; KaLama 107

In May of 2003 NOAA opened a Discovery Center on the bay front in Hilo, Hawai‘i to interpret the natural science, culture, and history of the Northwestern Hawaiian Islands and surrounding marine environment. Interactive displays, engaging three-dimensional models, and immersive theater allow the visitor to experience the wonder and majesty of this special ocean region. A 2,500-gallon salt-water aquarium provides a habitat for some of the fishes from the NWHI reefs. This free, interactive facility is an excellent resource for teachers throughout the State and is open Tuesday through Saturday 9AM to 4 PM, excluding federal holidays.

Why We Monitor Mussels to Megafauna in Monterey Bay: the Importance of Ecosystem Monitoring

Ms. Lisa Emanuelson, Monterey Bay National Marine Sanctuary, Monterey, CA
D/L ~ M,H,C,I

2:00-2:45 pm; KaLama 108

Learn why scientific monitoring is important and how students (grades 7 and up) can get involved in some of these long-term projects. Find out about Monterey Bay National Marine Sanctuary monitoring programs focused on tidepools, sandy beaches, whales and krill, and water quality that involve students and/or volunteers in collecting field data. See a demonstration of online interactive mapping using field data and take home resources to help guide you in student monitoring.

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Olympic Coast National Marine Sanctuary Discovery Center Programs

Robert Steelquist, NOAA Olympic Coast National Marine Sanctuary, Port Angeles, WA
D/L~ E,M,H,C,I,A,P

2:00-2:45 pm; KaLama 109

In July 2004, Olympic Coast National Marine Sanctuary opened its Olympic Coast Discovery Center in Port Angeles, Washington. This 800-square foot facility serves thousands of visitors to Olympic National Park and Olympic Coast National Marine Sanctuary. The center features the Deep Worker Theater, showing videos of submersible exploration on the Olympic Coast and interactive kiosks that highlight marine resources, conservation, research and exploration within the sanctuary.

The Coastal Ecosystem Learning Center Partnership

Ms. Marguerite Duffy, Coastal America, Washington, DC;
Rita Bell, Monterey Bay Aquarium;
Amy Coppinger, Aquarium of the Pacific;
Mark Heckman, Waikiki Aquarium;
Jon Luke, Hatfield Marine Science Center;
Dawn Miller, IGFA Fishing Hall of Fame & Museum
P/R ~ E,M,H,I,A,P

2:00-2:45 pm; Laulima 102

Coastal America's Coastal Ecosystem Learning Center (CELC) network consists of 18 of the nation's premier aquaria and marine learning institutions. Building on their role as public education facilities, the CELCs use the federal Coastal America partnership to expand the educational outreach in their communities. Each CELC has unique access to speakers, data, curricula, training, workshops, videos and conferences. This panel presentation will highlight activities available to educators through the CELC network such as student ocean conferences; fairs, teacher sabbatical programs, and restoration project?

Antarctica: Scientists and Young Students Make Connections

Mrs. Charlene Dindo, Pelican's Nest Science Lab/Fairhope K-1 Center, Fairhope, AL
D/L ~ K,E

2:00-2:45 pm; Laulima 103

The Pelican's Nest Science Lab at the Fairhope K-1 Center in Fairhope, Alabama serves 450 kindergarten and first grade students. Marine scientists from the Dauphin Island Sea Lab have been conducting research in Antarctica and sharing their work, travels, research, and enthusiasm for eight consecutive years! This session will highlight marine scientists, their school presentations, logistics and activities and handouts. - Scheduling a Scientist -School Logistics-School Communications-Antarctica Activities-Artifacts and Equipment-National Science Standards Come and learn about ideas to connect scientists in your community to the classroom, school or special program. Learn how your students can make connections to real science and scientists!

Facilitating a Partnership between Inquiry and the Internet: Southeastern Sea Turtle Website and Accompanying Inquiry-Based Lesson Plans

Ms. Rachel Teller, University of Charleston, Charleston, SC
D/L ~ E,M,I,A

2:00-2:45 pm; Laulima 107

The session features a website on Southeastern Sea Turtles that contains identification techniques, species' characteristics, management practices, and downloadable, inquiry-based lesson plans and activities. The lesson plans will utilize data gathered during the 2004 and 2005 Loggerhead nesting season to aid in understanding concepts ranging from mapping on a coordinate plane, to predicting sex ratios of hatchlings, to critically thinking of ways in which environmental and anthropogenic changes could affect future populations and how, if at all, we can prepare for these changes. The lesson plans and activities provide teachers with an effective and inexpensive means by which to assist students in learning through investigation. These lessons are geared toward middle school classrooms, but could suit any grade level.

LiteraSEA

Ms. Linda Blanchard, Ocean Institute, Dana Point, CA
L/HO ~ K,E

2:00-2:45 pm; Science 10A

The LiteraSEA series is a set of programs at the Ocean Institute for pre K-3rd grade. This series focuses on children's ocean-themed literature and encourages students to investigate the difference between ocean fact and fiction. Books like "House for Hermit Crab" and "Big Al" are used as a starting point to investigate scientific topics such as camouflage, adaptations, and habitat. To add a higher level of scientific investigation for the 2nd and 3rd graders a program in this series was developed around student friendly "scientific research papers". In this presentation we examine how to develop hands-on science activities relating to literature.

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Coral Reefs: An Integrative Teaching Tool (and a Guide to NOAA Resources)

Ms. Alissa Barron, NOAA Coral Reef Conservation Program, Silver Spring, MD
D/L ~ E,M,H,C,I,A,P,G

2:00-2:45 pm; Science 11A

Coral reefs make an excellent case study for helping students understand the interplay of natural and social science in resource management. We will discuss the unique ability of coral reefs ecosystems to capture the imagination of students and clarify environmental science principles, from the basic (food chains) to the Clex (human-environment interdependence). Learn tools and tips for finding NOAA's reef-related educational resources for your classroom (K-16) and partnering with NOAA and other organizations to create hands-on service learning opportunities for your students.

Secrets of the Seahorse...Revealed!

Ms. Charina Layman & Kristin Evans, Birch Aquarium at Scripps, La Jolla, CA
D/L ~ K,E,I,A

2:00-2:45 pm; Science 12A

The Birch Aquarium at Scripps will reveal the "secrets" to their successful standards-based sea horse programs designed for grades K-6. Learn how to use sea horses to create fun multi-disciplinary lesson plans full of activities. This presentation is perfect for classroom and museum teachers alike. Take home unique and engaging approaches to presenting important ocean concepts like conservation and diversity.

Zooplankton Wild, Beautiful and Finally Identifiable!

Ms. Wendy Allen, North Inlet-Winyah Bay National Estuarine Research Reserve, Georgetown, SC
Valerie Chase
L/HO ~ H,C,I,A

2:00-2:45 pm; Science 21A

Gain practice identifying zooplankton using the new illustrated book, *Zooplankton of the Atlantic and Gulf Coasts: A Guide to Their Identification and Ecology*, written by William Johnson and Dennis Allen. Find out if the book's "Quick Picks," "ID hints," and line drawings facilitate plankton identification. Tips for collecting and analyzing plankton data will also be shared during this hands-on workshop.

Catch the SEACOOS Wave SEACOOS (SouthEast Atlantic Coastal Ocean Observing System)

Mrs. Margaret Olsen & Elizabeth Rogers, SouthEast Center for Ocean Sciences Education Excellence, Darien, GA
L/HO ~ M,H,I

2:00-2:45 pm; Science 22A

The Center for Ocean Sciences Education Excellence - SouthEast presents "Catch the SEACOOS Wave" for middle and high school teachers. This program engages participants in four classroom-ready activities. Additionally, come and learn how to meet your content standards while also involving students in investigations that use oceanographic data available from the SouthEast Atlantic Coastal Ocean Observing System. These activities are designed by both ocean scientists and teachers to ensure that they are teacher and student-friendly, as well as effective tools for teaching about the real-time dynamics of our oceans. Each participant will receive a wave poster to supplement the activities, as well as additional information about how you can become involved in the exciting opportunities with COSEE SouthEast. This is one session you don't want to miss!

Art and Marine Science – A Fishy Picture

Ms. Amelia (Minnie) Hutchison, Christina School District, Newark, Delaware, Newark, DE
Tami Lunsford, Marine Advanced Technology Education (MATE) Center
L/HO ~ E,M,I,A

2:00-3:45 pm; Art 101A

Learn how to incorporate art into an interdisciplinary ocean curriculum from someone who has done it with great success! Several grade-specific art lessons for elementary through middle school students will be discussed and then created. You will be using watercolors, crayons, oil pastels, construction paper, Model Magic and other art supplies to create 2:00-D and 3:00-D marine science art projects. This affords you the opportunity to take home samples in addition to lessons. Many ways to exhibit your students' work, including how to build a complete underwater environment, and how to integrate technology and the other expressive arts into your subject will also be included.

Exploring Data using Geographic Information Systems (GIS) to Experience Sanctuaries (EDGES)

Ms. Laura Francis, NOAA Channel Islands National Marine Sanctuary, Santa Barbara, CA
Jenny Brady & Steve Moore, Center for Image Processing in Education;
Julie Bursek, Mary Tagliarene, Cathy Sakas, & Anne Smrcina, NOAA National Marine Sanctuary Program
D/L,C ~ M,H,C,R,I,A,P,G

2:00-3:45 pm; Ka'a'ike 219

The Channel Islands, Florida Keys, Gray's Reef and Stellwagen Bank national marine sanctuaries have teamed up with the Center for Image Processing in Education (CIPE) to provide real scientific data and educational materials for teachers and students. Classroom ready EDGES lessons explore the locations and characteristics of the thirteen national marine sanctuaries, compare the bathymetry and width of continental shelf of the Pacific and Atlantic oceans, examine the impact of bathymetry on the distribution of sediments and marine habitats, and reveal how scientists study oceans using satellites, stationary buoys, and drifting buoys. One lesson assists students with designing their own projects including data collection and analysis using ArcView GIS software. Participants will receive a copy of the EDGES curriculum.

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Watersheds from a Raindrop's Perspective: Using Maps and Aerial Photography to Teach Watershed Concepts to Today's and Tomorrow's Decision Makers

Mr. Beth Thomas & Jeffrey Pollack, North Inlet-Winyah Bay National Estuarine Research Reserve, Georgetown, SC

D/L ~ M,H,C,I,P,G

2:00-3:45 pm; *KaLama 104B*

At the North Inlet-Winyah Bay National Estuarine Research Reserve, the coordinators of the K-12/ Community Education Program and the Coastal Training Program for professional decision makers have been working together to deliver watershed and stormwater education to an assortment of local audiences. This session will feature one result of their partnership: an adaptive watershed education activity that uses maps and aerial photography to teach watershed concepts ranging from the basics of the water cycle to specific site design principles for managing stormwater quality. Participants in this session will learn where to acquire suitable maps and aerial imagery, how to use these resources to delineate watershed boundaries, and how to identify development features and use time series imagery to teach about the effects of growth and urbanization. Participants in this session will receive a variety of teaching tools and reference materials.

Home School in a Nutshell: How to start, maintain and, expand programs for home school audiences

Fawn Custer & Charlie Plybon, Oregon Sea Grant, Newport, OR;

Athena Crichton, Oregon State University-Hatfield Marine Science Center

L/HO ~ K,E,M,H,I,A

2:00-3:45 pm; *KaLama 204*

Come learn about the ins, outs, ups, and downs of starting a home school program at a marine science center. Discuss strategies, schedules, evaluations, and curriculum and take home examples of activities and crafts to use in your own Home School Day.

Standards and Assessment: How marine education can help keep no child from being left behind

Mr. Mark Wiley, NH Sea Grant/UNH Cooperative Extension, Durham, NH

L/HO ~ E,M,H,I,P

2:00-3:45 pm; *Laulima 101*

The current environment of standards and assessment have teachers and administrators scratching their heads trying to figure out how to maintain interesting and effective science programs and still meet the requirements of "No Child Left Behind." This activity-based workshop will address how engaging marine education programs can play a pivotal role in achieving the standards, improving student performance, and maintaining teacher sanity. Participants will examine the relationship between standards, classroom assessment, and large-scale assessment to understand how to incorporate marine education programs effectively. Participants will develop a standards-based plan for their marine education program with an aligned assessment they can use and share after the conference.

Using the Web to Promote Inquiry in Marine Science Education

Dr. Alec Bodzin, Lehigh University, Bethlehem, PA

C ~ E,M,H,G

2:00-3:45 pm; *Laulima 226*

Learn how to take advantage of the Web to promote inquiry teaching and learning. This presentation will highlight: (1) Web-based inquiries for learning marine science with authentic data sets; (2) a role-playing debate simulation in which learners investigate issues concerning the fate of an ocean resort threatened by a migrating inlet and then debate the future of this and other oceanfront structures threatened by coastal erosion; (3) online photojournals of coastal environments that students can use to investigate coastal processes and coastal issues such as erosion, how human activities modify shorelines, and development issues people living on the coast encounter; and (4) the use of digital images to investigate unique coastal features.

Communicating Ocean Sciences: a college course co-taught by scientists and educators

Mr. Craig Strang, Lawrence Hall of Science, Berkeley, CA

L/HO ~ E,M,C,R,I,A

2:00-3:45 pm; *Science 20A*

NSF's emphasis on "broader impact" has led to programs that help scientists share knowledge with K-12 classrooms. Communicating Ocean Sciences (COS) is a college course developed by COSEE California to (1) promote scientist/educators collaborations, (2) increase ocean sciences in K-12 classrooms, (3) provide diverse college role models for K-12 students, and 4) ensure future scientists are effective educators. COS is co-taught by a scientist and educator. Graduate/undergraduate science students interested in teaching are introduced to inquiry-based teaching and learning theory. Students then teach a six lesson ocean sciences unit in K-12 classrooms. The course has been taught at UC Berkeley, UC Santa Barbara, University of Oregon and Oxnard Community College. We are recruiting colleges and informal education organizations interested in offering the course.

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Techniques for introducing students to sampling methods

Dr. Erin Baumgartner, Curriculum Research & Development Group, Honolulu, HI
L/HO ~ M,H,I,A

2:00-5:00 pm; Hale 217

Field ecology is a great way to introduce students to scientific methodology, and concepts like biodiversity, zonation, and invasion biology. It isn't possible to examine every area in detail, but using representative samples from an area can enable us to estimate the composition of a larger site. We will share techniques to help introduce students to sampling, and enable them to carry out studies of species diversity and abundance in diverse areas like forest, wetlands, intertidal zones, even schoolyards. Techniques include an introduction to sampling in general and the power of the strategy, techniques for sampling for diversity and abundance, extension activities to visualize zonation patterns, and strategies for linking these techniques biology, ecology, and general science curricula.

Recognizing Runoff and Establishing a Sense of Place via the Internet: a coastal pollution website

Dr. Jessica Kastler, Louisiana Universities Marine Consortium, Chauvin, LA
C ~ M,H,I,P

2:00-5:00 pm; Kupa'a 203

Use interactive, web-based, aerial photos of small watersheds to connect land uses to coastal non-point-source pollution in Barataria and Terrebonne Estuaries. Initial views of satellite images of the whole basin give you the option to zoom in on a smaller section of an aerial photograph that gives both greater detail and an assessment of whether that smaller watershed is meeting its designated uses according to the Louisiana Water Quality Assessment. Links describe both land use sources of pollution and the pollutants themselves. They also point the user in the direction of learning how to avoid pollution in the first place. Participants will receive the CD version for use offline.

The National COSEE Network: Moving from a 'Herd of Cats' towards a transformative model for ocean sciences education

Dr. Susan Cook, Consortium for Oceanographic Research and Education (C.O.R.E.), Washington, DC
S ~ M,H,R,I,A,P

2:30-2:50 pm; Ka'a'ike 107

Since the establishment of the Centers for Ocean Sciences Education Excellence initiative by the National Science Foundation and other federal agencies in 2002, remarkable progress has been made in building a common culture of collaboration across a diverse group of institutions and individuals. Milestones in this process will be described starting with the fundamental tasks of getting to know colleagues, identifying common ground and building trust. Other key steps have included an insightful 'reality check' from the COSEE National Advisory Board, a facilitated strategic planning exercise, the development of a network business plan with assigned tasks and responsibilities and the formation of small cross-center task forces. The role of each step in building a transformative network will be discussed.

Ocean Observing Systems Provide Opportunities for All Citizens to Become Ocean Stewards

Dr. Blanche Meeson, Ocean.US, Arlington, VA
S ~ K,E,M,H,C,R,I,A,P,G,technology,film makers,broadcasters,writers

2:30-2:50 pm; Ka'a'ike 108

The coming ocean observing system provide an unprecedented opportunity to change both the public perception of our ocean, and to inspire, captivate and motivate our children, our young adults and our peers to pursue careers allied with the ocean and to become stewards of our Planet's ocean. Within this context educators participating in the Ocean Research Interactive Observatory Networks Workshop (January 2004) and in the Integrated Ocean Observing System-Coastal Ocean Observing System and Education Workshop (March 2004) collectively sought to articulate recommendations for education allied with ocean observing systems (global, coastal, in situ and remote sensing) and to outline a plan for implementing those recommendations. The session will focus on these community recommendations, the proposed plan, and opportunities for participation.

Multi-faceted marine-related issues - what are students thinking?

Ms. Anna Switzer, Michigan Sea Grant, Ann Arbor, MI
D/L ~ M,H,C,I

2:30-2:50 pm; KaLama 104A

'Making thinking visible' is a current thrust in the broad field of education. In order to know how best to teach about marine issues we need to understand how our students bring together information from diverse domains such as ecology, economics, politics, and ethics. An in-progress, technology-based, concept-mapping tool that is fast and easy for teachers to use to uncover their students' thinking will be introduced. The information gained can be used as a starting point for teaching complex marine-related issues as well as to compare pre- and post-unit student thinking. The development of future citizens and leaders with the ability to think on multiple levels and use multiple disciplines will be enhanced. Design feedback will be welcomed.

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A Binational Effort to Make Environmental Education a Priority: The Environmental Education Council for the Californias

Ms. Lindsey Peavey, Pro Peninsula, San Diego, CA

S ~ M,H,C,I,A,P,G,non-profits

3:00-3:20 pm; Ka'a'ike 107

The Environmental Education Council for the Californias (EECC) was developed in 1998 by community-based organizations, individuals, industry, government and nongovernmental organizations from both sides of the U.S.-Mexico border. The EECC is a binational network of environmental research, policy, outreach, advocacy, and grassroots organizations working to advance a culture of sustainability in the San Diego – Tijuana region by addressing the environmental, economic and social access issues surrounding environmental education in the Californias. Focusing on increasing environmental awareness and understanding encourages subsequent behavior leading to responsible action for the environment. The EECC shows how educators can come together ensuring education is a priority to increase all aspects of environmental health. The EECC strives to inspire positive relationships with the coast and ocean.

Bringing the Great Lakes into the classroom through outreach aboard the U.S. EPA's R/V Lake Guardian

Dr. Elizabeth Hinchey-Malloy, Illinois-Indiana Sea Grant, Chicago, IL

Paul J. Horvatin & Glenn Warren, U.S. Environmental Protection Agency

S ~ E,M,H,C,R,I

3:00-3:20 pm; Ka'a'ike 108

The R/V Lake Guardian, EPA's largest research vessel, is operated by the U.S. EPA Great Lakes National Program Office (GLNPO). GLNPO scientists utilize the R/V Lake Guardian to assess the health of the Great Lakes ecosystem by monitoring the water, sediments, air and aquatic life of the Great Lakes. In addition to research activities, GLNPO actively promotes application of Great Lakes science to K-12 and university curricula by utilizing the R/V Lake Guardian for educational outreach. Details of the on-board teacher workshops, student research cruises, and community education events aboard the R/V Lake Guardian will be presented, along with plans that are underway to equip the vessel for live, interactive broadcasts with classrooms throughout the Great Lakes states.

Effects of Invasive Algae on the Coral Reef Ecosystem of Hawai'i

Dr. Jennifer Smith, Department of Botany, University of Hawai'i, Honolulu, HI

D/L

3:00-3:45 pm; Agriculture 104

Several species of seaweed have been introduced to Hawai'i's coral reef ecosystems over the last thirty years. Some of these species have become highly invasive where they are causing numerous problems including: reducing biodiversity, killing reef-building corals, threatening the persistence of Hawai'i's unique coral reef ecosystems and causing significant economic problems. This presentation will provide an overview of the problem of marine invasive species in Hawai'i including some of the strategies that scientists and resource managers are using to try to stop these alien invaders.

Out of the tank and into the community; a symbiotic journey of educational partnerships

Ms. Amy Coppenger & John McCord, Aquarium of the Pacific, Long Beach, CA

D/L ~ E,M,H,C,I,A

3:00-3:45 pm; Ka'a'ike 105A

A true case of symbiosis, the Aquarium of the Pacific utilizes partnerships to help fulfill its mission. By linking informal science institutions like aquariums to the formal teaching world, both partners achieve and exceed their educational goals. The Aquarium will explore past and current partnerships and give examples of how you can create these valuable symbiotic relationships.

Teaching Marine Science Through Movement

Mr. J. Robert Causton, Oxford Central School, East Stroudsburg, PA

L/HO ~ E,M,I,A

3:00-3:45 pm; Ka'a'ike 105B

Physical Education is "learning through movement" in its purest form. This presentation focuses on utilizing movement to teach marine science to elementary and middle school students, incorporating both the REVEL project and MARE programs into a kinesthetic experience for gross motor learners. Participants will experience the activities first hand, focusing on both the introduction of new material and assessment of classroom knowledge. This concept has been embraced by educators from all disciplines and truly makes a curriculum interdisciplinary.

Concurrent Sessions ~ Saturday, 16 July, 3:00-3:45 pm

From the Deep Ocean to Your Own Backyard: Using Authentic Research as the Central Focus in the Classroom.

Mrs. Susan Sewell, Columbus School District, Sun Prairie, WI
D/L ~ E,M,I

3:00-3:45 pm; Ka'a'ike 105CD

This session will demonstrate how middle school students can become scientific researchers, and how research can become the central learning focus in the classroom throughout the year. The presenter will focus this session on the study of hydrothermal vents. Students study hydrothermal vents, how scientists develop testable research questions, and how they write proposals to fund their research. Using this as a model, students then become researchers themselves. They will behave as scientists as they explore their own environment. They will learn to develop testable research questions, set up long-term research studies, learn to collect and interpret data, and eventually present their findings to their peers. Classroom teachers will take away many ideas including authentic writing ideas and how to create a six foot hydrothermal vent model complete with glowing bacteria mats, tube worms and spider crabs. Additionally, teachers will learn how they can personally get involved in research opportunities such as the REVEL Project.

The Grand Bay BioBlitz: Integrating Scientists, Educators and Community Members to promote the importance of maintaining coastal biodiversity

Ms. Jennifer Buchanan, MS Department of Marine Resources, Moss Point, MS
L/HO ~ M,H,C,R,I,A,P,G

3:00-3:45 pm; Ka'a'ike 109

Last spring, the Grand Bay National Estuarine Research Reserve sponsored a 24:00-hour BioBlitz in order to obtain a "quick snapshot" of all the living plants and animals found in the wildlands of the reserve. This project not only served to update the reserve's species lists but also provided community members with an up close and personal adventure into many of the reserves distinctive habitats. Scientists and educators integrated with the public to document well over 600 species of plants and animals (once the insects are counted that number will jump tremendously). In his presentation I will highlight last year's bioblitz and will demonstrate a few activities that we taught to the teachers who participated in our associated teacher's workshop. I will also show you how you can sponsor your own bioblitz.

A Mobile Science & Technology Classroom: The Maui Digital Bus

Diana Papini & Ellen Moshein The Maui Digital Bus Akimeka, LLC, Kihei, HI
D/L ~ K,E,M,H,C,R,I,A,P,G

3:00-3:45 pm; KaLama 104A

See examples of Digital Bus Science Projects Created by Maui K-12 students during the 2004-05 school year. Demonstrations and displays of some of the innovative technology the students use as research and communication tools will be on display. The Maui Digital Bus is a state of the art mobile science and technology lab utilizing wireless technology. Our goal is to cultivate skills and interest in science and technology in the youth of Maui County by offering hands-on, hi-tech, standards based science projects to grades K-12. The laptop computers, digital microscopes, LabPro sensors, GPS devices, and digital cameras are the tools students use as they engage in projects out in the field throughout Maui. The current curriculum offered to schools for free include scientific studies of the beach, the wetlands, watersheds, and water chemistry.

Every Square Inch Counts: Comparing Seafloor Life in the National Marine Sanctuaries

Dr. Jennifer Saltzman, Farallones Marine Sanctuary Association, San Francisco, CA
Jennifer Stock, Cordell Bank National Marine Sanctuary
L/HO ~ M,H,I

3:00-3:45 pm; KaLama 108

Learn how students and marine biologists study tidepool life from shore, and deep rocky reefs from the porthole of a submersible. Using life sized photos, identification cards, and quadrats, you will learn to identify several species and determine their abundances. Comparisons will be made between the different benthic (bottom) habitats and communities in the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries. Free activities for your middle and high school classroom.

Our Ocean Planet: Oceanography in the 21st Century

Mr. Bob Stewart, Texas A&M University, College Station, TX
D/L, P-BL ~ E,M,H,C,I

3:00-3:45 pm; Laulima 102

In this workshop I will compare and contrast the traditional teaching of oceanography with ways more appropriate to the 21st century. Oceanography books used in our classrooms at all levels tend to be very similar to oceanography books of the 19th century. Jules Verne would be familiar with the topics. Yet, if he visited an oceanography laboratory, he would be lost. The focus of oceanography in the 21st century differs in many important ways from oceanography included in textbooks. Why are we teaching 19th century oceanography? What is new? What is the focus of oceanography in the 21st century?

Chinese arts & crafts in environmental education @ Ocean Park Hong Kong

Ms. Isabel M.Y. Li & Calvin Chan, Ocean Park, Hong Kong, Aberdeen, HKSAR, China
L/HO ~ K,E,M,H,I,A,G

3:00-3:45 pm; Laulima 225

Do you like to bring Chinese arts & crafts into your class? Join this workshop and learn some Chinese arts & crafts. We will teach you Chinese painting, origami and Chinese flour dough! These fun-filled activities bring arts, Chinese culture and environmental education together! In Ocean Park Hong Kong, we are incorporating cultural elements to our education programmes so as to inspire children and their parents on environmental conservation. We will share our experience and give you a quick tour of Chinese culture. You will not only bring back home the craftworks you make, but also receive a free Chinese painting brush so you can practice your Chinese painting at home!

Concurrent Sessions ~ Saturday, 16 July, 3:00-3:45 & 3:00-4:45 pm

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AUDIENCE(S): K=Preschool/Kindergarten; E=Elementary; M=Middle School; H=High School; C=College; R=Research Scientists; I=Informal Educators; A=Aquarium, Zoo, Museum Educators; P=Agency Personnel/Policy Makers; G=General

Learn and Teach about Marine Protected Areas

Ms. Phyllis Dermer, NOAA / National Marine Protected Areas Center, Blaine, TN

L/HO ~ E,M,H,I,A,P,G

3:00-3:45 pm; Science 11A

The National Marine Protected Areas Center develops a variety of educational materials about marine protected areas (MPAs). These special places provide a wide range of educational opportunities to teach about our ocean and coastal bounty, and an ideal focal point for place-based education programs. This session will introduce lesson plans, games, and other materials that teachers can use to bring MPAs into their classroom. Participants will play a prototype of an MPA game and contribute ideas to its further development. The MPA Center also supports connections, partnerships, and an exchange of information between MPA educators and others working in marine resource education, and materials highlighting a variety of different educational programs and websites will be available.

Evaluation of a Multi-Visit, Multi Year Urban Outreach Program

David Christopher & Joe Harber, National Aquarium in Baltimore, Baltimore, MD

D/L ~ E,R,I,A,P

3:00-3:45 pm; Science 12A

Research has shown that multi-visit, multi-year programs have a greater impact on changing environmental attitudes and behaviors than “one-shot” experiences. The National Aquarium in Baltimore, with funding from the Howard Hughes Medical Institute, developed Aqua Partnerships with 11 Baltimore City Public Schools. Students in this project participated in six sequential Chesapeake Bay watershed education activities over the course of two years. As a result, students’ attitudes towards the environment and science changed significantly. Learn how you can apply the lessons learned to your program and take home ideas for your own evaluations, including a sample student survey.

Explore the Ocean Without Getting Wet: Multimedia Expeditions to the Arctic and to the New England Seamount Chain

Diana Payne, Connecticut Sea Grant, Groton, CT

Jenna Carlson, Ocean Technology Foundation

D/L ~ M,H,C,I,A,G

3:00-3:45 pm; Science 22A

Join in on two recent expeditions - Mountains in the Sea: Exploring the New England Seamount Chain (sponsored by NOAA OE) and an SSEA (sponsored by NSF) via interactive CD and DVD. Overviews of each expedition will highlight the rich scientific and educational multimedia resources. Participants will leave with a copy of the CD/DVD and methods to incorporate the resources into the classroom.

Learn to Draw Marine Organisms Quickly, Accurately, and Beautifully

Patrick Ching, Hawai'i Naturally, Kamuela, HI

L/HO ~ K,E,M,H,C,I,A,G

3:00-4:45 pm; KaLama 103

Wouldn't you just love step up to the board in your classroom and draw a turtle that looks like a real turtle instead of six circles? Join Marine Science Symposium speaker, Patrick Ching, and liberate the artist in you. Bring plenty of blank paper and art supplies if you happen to have them.

Building the World's Second Largest Marine Protected Area, the Northwestern Hawaiian Islands

Mr. Andy Collins, NOAA, Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, Honolulu, HI

D/L ~ K,E,M,H,C,R,I,A,P,G

3:00-4:45 pm; KaLama 107

The Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve is the second largest marine protected area in the world, after the well-known Great Barrier Reef of Australia. The Reserve spans 1200 nautical miles of the Pacific Ocean, and is 100 nautical miles wide for its length, Crising an astounding 132,000 square miles of area. It is the single largest protected area ever created by the United States and contains the majority of coral reefs found in U.S. waters. The Reserve, originally created by Executive Order, is now being proposed as the nation's 14th National Marine Sanctuary. Come learn about this amazing, little known ocean wilderness, and the intricate process underway to protect it for generations to come.

Concurrent Sessions ~ Saturday, 16 July, 3:00-4:45 pm

Integrating Multicultural Outreach in Marine Protection

Ms. Michelle Templeton & Cristy Cassel, Monterey Bay National Marine Sanctuary, Monterey, CA
D/L ~ M,H,C,I,A,G

3:00-4:45 pm; KaLama 109

Education and outreach play an extremely important role in increasing community action towards marine protection. The Monterey Bay National Marine Sanctuary's MERITO program (Multicultural Education for Resource Issues Threatening Oceans) aims to provide programs and materials geared towards diverse multicultural communities, giving our entire community the tools to help conserve and protect our special marine resources. This session provides a case study for how multicultural marine education has been successfully incorporated into the MBNMS program and is being used as both a regional and national model. Highlights include developing multicultural partnerships, K-12 science programming, community-based outreach, teacher training opportunities and college internship programs.

Put Sharks Into Your Class: Hands-on Activities with Monterey Bay Aquarium Educators

Mrs. Jennifer Matlock, Kathy McElroy, & JR Sosky Monterey Bay Aquarium, Monterey, CA
L/HO ~ K,E,I,A

3:00-4:45 pm; Laulima 103

Explore the myth and mystery of sharks with educators from the Monterey Bay Aquarium. Sharks are feared and revered around the world, which makes them an excellent inquiry topic. Workshop participants will experience shark-related, hands-on activities as inquiry starters. These standards-based activities target K-5 students and integrate science with math, language arts and shark conservation. Most can easily be adapted to other habitats and animals. The presentation will include take-home resources.

“It’s Our Water” A Five-Week, Way-Cool, High-School Earth/Environmental Science Curriculum

Mark Townley, Lee County High School & Environmental Education Fund, Raleigh, NC
Joan Giordano, Albemarle-Pamlico National Estuary Program

D/L,L/HO ~ M,H,C,I,A,P,G

3:00-4:45 pm; Laulima 107

The Albemarle Pamlico National Estuary Program (APNEP) contributed significantly to the \$250,000 raised to develop “It’s Our Water” (IOW). IOW is an adaptable North Carolina-specific Earth/Environmental Science curriculum and resource guide for North Carolina high school students and teachers. Students work in their own communities and find the materials deeply relevant to their daily lives. Training and resources are free of any charge. It covers water quality and quantity, monitoring and maintaining water quality, and the impacts individual choices and actions have on water quality. IOW centers around field activities in a local stream that lead to a final report and recommendations by the class. These activities are coordinated with a series of videos, demonstrations, classroom activities, homework and quizzes. IOW is aligned with the NC Standard Course of Study for the Earth/Environmental Science high school graduation requirement.

Teaching Science Through Traditional Storytelling

Dr. Gloria Snively, University of Victoria, Victoria, BC, Canada
L/D,L/HO ~ E,M,H,C,G,science ed

3:00-4:45 pm; Science 10A

Storytelling has always been an important aspect of indigenous cultures throughout the world. Most of the songs and dances tell a special story of life—which is the science of Aboriginal people. The vast majority of science textbooks are designed to reflect Western worldviews and orientations, so it becomes difficult to integrate Aboriginal ways of knowing. Yet, Aboriginal peoples practice “science” all year long – in their traditional knowledge around fishing, hunting, traveling, building, agriculture, medicine, astronomy—in the art of caring for a cedar tree when gathering cedar bark. Aboriginal stories often incorporate western modern scientific terms and concepts which can be “teased out” and understood within the context of native language systems. This presentation will begin with a power point presentation describing traditional ecological knowledge and wisdom past and present. Selected traditional stories will be presented and participants will be involved in developing science units of study that guide students into a process of approaching stories for study with a view toward understanding the implications of native traditional science and applying stories to science instruction. The goal is to find innovative ways to encourage more Aboriginal youth to be interested in science so that they are able to connect the traditional science with Western science concepts and processes, and additionally, to engage all students in an authentic understanding of the contributions of traditional ecological knowledge and wisdom to long-term sustainable communities and environments.

Fun with Phytoplankton

Ms. Wendy Wicke & Julie Cahill, SouthEast Phytoplankton Monitoring Network (SEMPN)/NOAA, Charleston, SC
L/HO ~ E,M,H,C,I,A,G

3:00-4:45 pm; Science 21A

Just about every living organism on the planet depends on phytoplankton for survival. Come participate in a two-hour workshop where scientists from the National Oceanic and Atmospheric Administration (NOAA)'s Southeast Phytoplankton Monitoring Network (SEPMN) will lead you through an underwater adventure. This program will demonstrate standards-based hands-on activities developed to fit into your science curriculum. Educators will leave with a variety of activities geared towards understanding phytoplankton and the role they play in the marine environment. Some of the activities include: Digital and Light Microscopy, Marine Ecosystem Food Web, Ciguatera Fish Poisoning, Fashion-A-Phyto, Plankton Jeopardy, and more. Come join in the fun!

Concurrent Sessions ~ Saturday, 16 July, 3:30-3:50 & 4:00-4:20 pm

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AUDIENCE(S): K=Preschool/Kindergarten; E=Elementary; M=Middle School; H=High School; C=College; R=Research Scientists; I=Informal Educators; A=Aquarium, Zoo, Museum Educators; P=Agency Personnel/Policy Makers; G=General

Snapshot report of an environmental service-learning exchange program between American Samoa Community College and Hawaii Community College

Ms. Karolyn Braun, American Samoa Community College Sea Grant Extension, Pago Pago, American Samoa;
Darren Okimoto; Eric Hanson; Fa'alafi Jones, American Samoa Community College;
Laura Brezinsky, Hawai'i Community College;
Ula Hasager, Kapiolani Community College
S ~ C

3:30-3:50 pm; Ka'a'ike 107

In Hawaii and American Samoa, fragile native plants, animals and island ecosystems are threatened by human encroachment and introduced invasive plant and animal species. Recognizing the need for increased education awareness in these Pacific island communities, we have developed an environmental service-learning exchange course in partnership with Hawaii Community College which moves beyond the classroom and is designed to extend the students' environmental and cultural knowledge of both locales. Students from each institution will be participating in a videoteleconference lecture course in the Spring involving guest speakers from various resource and conservation organizations, followed by a four-week exchange program in the summer involving fieldwork on various natural resource/conservation projects in each place. This report will summarize the highlights and outcomes associated with this program.

Hawaii's Living Reef Program: a Collaborative Statewide Outreach Effort

Ms. Melissa Bos, State of Hawaii Division of Aquatic Resources, Honolulu, HI
S ~ G

3:30-3:50 pm; Ka'a'ike 108

The Coral Reef Outreach Network (CRON) is a partnership involving over 40 governmental, non-profit, and commercial organizations, which formed to unify outreach efforts in the Main Hawaiian Islands. The Living Reef Program was launched by the CRON in June 2004 with two goals: to increase public awareness of the importance of coral reefs and to teach and encourage reef-friendly behavior. Key messages of the program are 1) corals are living animals, 2) island lifestyle and economy are dependant on coral reefs, and 3) individuals can take action to protect reefs. Public service announcements, an awards program, a website, videos, and public events are just some of the many ways these messages are being delivered to the local population.

Lessons from the taro patch: using freshwater algae as demonstration organisms for teaching biology

Dr. Alison Sherwood, Department of Botany, University of Hawai'i, Honolulu, HI
S ~ K,E,M,H,C,R,I,A,P,G

4:00-4:20 pm; Agriculture 104

This presentation will be aimed at educators who are using live organisms in the classroom to demonstrate biological principles. Seaweeds, or marine algae, are commonly used by educators in coastal areas as examples of aquatic plants in marine environments. Here I illustrate how many of the algae growing in freshwater habitats are also useful demonstration organisms. I will focus especially on streams and taro fields in the state of Hawaii, which are known to contain hundreds of species of freshwater algae. Such information may be particularly relevant in cases where educators and/or their schools are located inland from the coastal regions of the state.

Family Science Programs at the USC Wrigley Institute on Catalina Island

Ann Close & Ellen Kelley, USC Wrigley Institute for Environmental Studies, Los Angeles, CA
S ~ K,E,M,H,I,G

4:00-4:20 pm; KaLama 104B

The USC Wrigley Institute for Environmental Studies has been leading family science programs at the Wrigley Marine Science Center on Catalina Island for over five years. We offer families (from age five and up) a chance to participate in educational programs covering topics in oceanography, marine biology, geology, botany and anthropology. The greatest challenge we face is accommodating the varying needs of diverse age groups AND providing a quality "family" experience. Come hear how we make this fun program happen!

Just Schooling Around

Courtney Thompson, Ripley's Aquarium of the Smokies, Gatlinburg, TN
S ~ I,A

4:00-4:20 pm; KaLama 204

In the United States, home schooling is becoming increasingly more popular. While home school parents may not have the resources to provide their children with a hands-on activity that supplements science topics in their curriculum, informal institutions do. At Ripley's Aquarium of the Smokies, in addition to offering a discount to home school families, we also offer a monthly program designed just for them. Be sure to attend this session to learn how to implement a similar program at your institution.

Concurrent Sessions ~ Saturday, 16 July, 4:00-4:20 & 4:00-4:45 pm

Reality shows in environmental education

Ms. Isabel M. Y. Li, Ocean Park Hong Kong- Education Department, Hong Kong, China
S ~ K,E,I,A,G

4:00-4:20 pm; Lailima 225

Explorers! Detectives! Scientists! These are all attractive careers to children. In Ocean Park Hong Kong, students participate in reality shows such as being a junior scientist, a coastal explorer or a bird detective. Through these activities, students will not only have fun acting like a professional, they are also encouraged to learn actively and devotedly. In this presentation, we will share the concept of the reality shows and show you the materials we use to facilitate the programme.

Ocean Crafts

Kate Shapiro & Kecia Joy, Pacific Whale Foundation, Ma'alaea, HI
L/HO ~ E

4:00-4:45 pm; Art 101A

Join Pacific Whale Foundation's Ocean Science Discovery Center for a session full of imagination and creative ocean crafts. Learn how to make some of our favorite crafts using local ingredients splashed with Hawaiian charm. Leave with great ideas and tools to expand your existing activities and curriculum.

A Recipe for Volunteer Success

Elizabeth Keenan, Milena Salas & Shelley Duffy, Aquarium of the Pacific, Long Beach, CA
D/L ~ I,A

4:00-4:45 pm; Ka'a'ike 105A

Volunteerism is an integral part of informal institutions such as the Aquarium of the Pacific. As dedicated members of our staff, volunteers play an important role in carrying out the mission of the Aquarium. Join us as we share some of our approaches to training, rewards and recognition.

Coral Reef Education - Coordinators Approach

Christianera Tuitele, Coral Reef Advisory Group, Utulei, American Samoa;
Solialofi Tuaumu, Coastal Zone Management Program;
Deborah Vaoolii & Malia Vaofanua, Department of Marine & Wildlife Resources
D/L ~ E,H

4:00-4:45 pm; Ka'a'ike 105B

Presenters will discuss the approach they utilize in the territory. This approach entertains different methods by government departments focusing on one topic instead. Each presenter will briefly present on their focus area.

ROVing Otter: A web-controlled undersea robot for marine education and research.

Dr. Steve Moore, California State University, Monterey Bay, Seaside, CA
D/L,L/HO ~ M,H,C,R

4:00-4:45 pm; Ka'a'ike 105CD

Subtidal habitats are inaccessible to the vast majority of students — even students living near the coast. Since people generally learn best through active, hands-on, exploration and discovery, this inaccessibility creates a serious pedagogic challenge for marine science educators. ROVing Otter is a real underwater robotic vehicle that students (or scientists) can control via the Internet from anywhere in the world to “fly” through a real kelp forest habitat off the coast of central California. This active exploration/discovery project is still in its infancy, and it is NOT a simulation, so things can and do go wrong, but that just adds to the fun and learning! High-bandwidth Internet access, a reservation, and calm seas are required.

Hightide Project Data Crunch: Student collected Data being used in a long term study of the Lafayette Eatuary in Norfolk Virginia.

Mr. Michael Bates & Greta Bates, Norfolk Public Schools/ Old Dominion University CCPO, Portsmouth, VA
D/L ~ M,H

4:00-4:45 pm; Ka'a'ike 109

This presentation will inform participants of the Hightide Project's website and instruct them on use of the online data and lesson plans. The project provide an opportunity for High School aged students to have hands on data collection experiences on a weekly basis. The students deploy a CTD instrument to collect data on the Salinity, temperature and pressure at the mouth of the Lafayette river. Participants will be provided with a collection of lesson plans that are useful in the following areas of marine science: Physical Oceanography, Chemical Oceanography, Estuarine studies and Meteorology

Spilling the beans - making population dynamics fun

Mr. Russell Stevens, Two Oceans Aquarium, Cape Town, South Africa
P/R ~ K,E,M,H,I

4:00-4:45 pm; KaLama 104A

The staff of the Two Oceans Aquarium have developed a game which is used together with a data collection activity to illustrate the principles of population dynamics. Counters or beans are used to represent a fishery. In the scenario played out by the game, participants act as either poachers, conservation officials or marine scientists the roll of the dice determines variables such as recruitment, mortality and harvesting. Newspaper articles are used to set the scene and stimulate a realistic debate. This population dynamics activity will be shared with the opportunity for participants to play the game and give feedback and discover ways in which it could be adapted to contexts outside of a South Africa.

Concurrent Sessions ~ Saturday, 16 July, 4:00-4:45 pm

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Multiple Intelligence Through the Eyes of Walter Anderson

Mrs. Kathy DeWein, Teacher, Clarksville, TN

D/L ~ G

4:00-4:45 pm; KaLama 108

Walter Anderson was an artist of many expressions. Multiple Intelligence shows us that our students learn in a variety of ways. We will explore his art and life and in turn show how we learn and teach to reach our students. Multiple intelligence looks at student's varied learning styles and applies it to assessing their knowledge of content standards. Walter Anderson used art in all its forms to convey an extreme knowledge of the ocean and creatures connected to its web. Through his art, we will strive to see how students can be assessed in a community of inquiry-based activities. Participants will test their particular learning style and hopefully understand how to transfer, other styles as well, in developing exciting and enriching programs for their students. Students will in turn, form a community of creative learners able to be assessed, not only on written expression, but on diverse kinetic expression as well. All levels of education can develop the knowledge and skills necessary to assess today's inquisitive student across all curriculum subjects.

Hawaii Marine Science Seminar

Mr. Dennis O'Rourke, Great Destinations Travel, Muncie, ID

D/L ~ H

4:00-4:45 pm; Laulima 101

This is an opportunity for teachers to escort their students to Hawaii for a two week program in Marine Science. This program has enough instructional hours to qualify for a semester of credit, if approved by local school corporations. The program includes many cultural activities, field trips, and ocean labs. Teachers attending this presentation will receive more detailed information regarding the curriculum and daily itinerary. In addition teachers will receive information needed to initialize this program in their home schools.

The Transect Program – Transforming Students and Teachers into Scientists

Dr. Leslie Sautter, Project Oceanica, Charleston;

Gorka Sancho & Rachel McEvers, College of Charleston, SC

D/L ~ H,C,R,I

4:00-4:45 pm; Laulima 102

Imagine being at sea aboard a huge research vessel, on an intensive 5-day Transects research cruise, collecting biological, physical and geological samples around the clock, and being an integral member of a scientific team Crised of 10 peers. Following the cruise, you spend many hours in the lab conducting your research, as part of the program's Oceanographic Research course. You prepare a scientific poster, oral presentation and a manuscript of your research results and present your work. Your research is posted at <http://oceanica.cofc.edu/Transects/home.htm>, and included in the Transects database/GIS. Students learn oceanography by doing it in this NSF-supported program! Although currently an undergraduate program, we are partnering with COSEE to develop a version for teachers. We need your input!

NOAA's Discovery Stories: Case Studies in Coastal and Ocean Science Created in Partnership with NSTA

Dr. Wendy Sera & Bruce Moravchik, NOAA's National Ocean Service, Montgomery Village, MD; Tyson Brown, National Science Teachers Association

D/L ~ M,H,C,R,I,A,P,G

4:00-4:45 pm; Science 11A

NOAA's National Ocean Service has enormous data assets, most of which are on the Internet. NOAA and NSTA have collaborated to produce educationally useful, student-friendly materials from NOAA's data and information, from numerical data to aerial photographs of coral reefs. NOAA's new Discovery Stories (<http://www.oceanservice.noaa.gov/education/Stories>) are the result of this partnership. Discovery Stories are case studies in coastal and ocean science drawn from research conducted at NOAA's National Ocean Service. They are accompanied by a set of supporting resources, including student guides, interactive quizzes, exercises with real data, teacher guides, and interviews with National Ocean Service scientists that explore how scientists think. The presentation describes how these products were developed, and demonstrates the resources offered by each.

Seals: Linking Students and Science Through Authentic Research

Ms. Amy Ferland, The Maritime Aquarium at Norwalk, Norwalk, CT

D/L ~ E,M,H,I,A,G

4:00-4:45 pm; Science 12A

Learn how students and teachers participate in research at The Maritime Aquarium at Norwalk. Since 2000, middle and high school students have designed and carried out their own field research on harbor seals in Long Island Sound. New technology can now broadcast these wild animals into the classroom via the internet. Come explore more about this program and our new seal curriculum. This workshop will include information on harbor seal ecology, the history of the program, lessons and a research demonstration.

Concurrent Sessions ~ Saturday, 16 July, 4:00-4:45 & 4:40-4:50 pm

Badges are Beneficial

Ms. Fawn Custer, OSU-HMSC Sea Grant, Seal Rock, OR
L/HO ~ I,A,G,scout leaders

4:00-4:45 pm; Science 20A

Scout leaders are always looking for new and exciting ways to help their scouts earn badges. Some organizations offer scout days where children go to stations and work on various badge requirements. In this workshop you will receive copies of badges for the different ages, the means to contact your local councils, outlines to help you fulfill requirements and allow the scouts an exciting learning experience and of course, hands on activities. For Boy Scouts: Oceanography and Environmental badges. For Girl Scouts: Brownies may earn Eco Explorer or Water Everywhere; Juniors earn Water Wonders, Wildlife, & Earth Connections; Cadette/Senior earn Shore to Sea and Wildlife.

Ocean Science Education - Lessons from NASA

Dr. Paula Coble, NASA, Washington, DC
D/L ~ K,E,M,H,C,R,I,A,P

4:00-4:45 pm; Science 22A

NASA's mission in Earth science is "to understand and protect our home planet by using our view from space to study the Earth system and improve predictions of Earth system change." NASA's research strategy uses an end-to-end systems approach, in which Earth observations are integrated into models to permit predictions of future conditions that can inform resource management and policy decisions, for the economic and social welfare of Earth's citizens in all nations. This approach to research at NASA is typical of the result-oriented emphasis for science research in the U.S. over the past decade. This presentation will focus on recent developments in NASA research and applications and their implications for teaching science.

***Caulerpa taxifolia*: Current Research and Lesson Plans on One of the World's Worst Invasive Species**

Dr. Linda Walters, University of Central Florida, Orlando, FL
P. Sacks, Winter Park High School; S.F. Zaleski, University of Southern California Sea Grant Program
S ~ K,E,M,H,I,A,G

4:30-4:50 pm; Agriculture 104

Since 1984, aquarium releases of *Caulerpa taxifolia* – aquarium strain (a.k.a. the killer alga) have led to this species becoming established in coastal waters in Europe, southern California, and Australia. In all locations, the ecological and economic costs have been astronomical. To reduce the likelihood of future invasions of this and other species by aquarium dumping and to help educators and their diverse audiences understand the biology of *Caulerpa taxifolia* and its invasion history, we have developed a PowerPoint presentation and packet of lesson plans on these topics that we are excited to share at this conference.

The Oceanography Camp Especially for Girls: 15 Years of Fostering Ocean Sciences Literacy and Careers by Engaging Teens

Ms. Teresa Greeley, College of Marine Science, University of South Florida, St. Petersburg, FL
Angela Lodge, Peter Betzer
S ~ E,M,H,C,R,I,A,P

4:30-4:50 pm; KaLama 204

The Oceanography Camp especially for Girls (OCG) was developed to inspire and motivate young women entering high school to consider scientific careers. Each three week program provides multi-disciplinary, hands-on experiences in both laboratory and field environments. Over 600 teens have participated. Program activities include a day at sea aboard a research vessel, coastal fieldtrips, in-depth laboratory research explorations, and career interviews with scientists. One of the programs major strengths is one-to-one mentoring between teen-aged girls and scientifically accomplished women. The mission of the Oceanography Camp for Girls is to promote a positive sense of science, self, and stewardship. Join us as we share program impacts, what works, sustainability, and a model for launching an Oceanography Camp in your community!

A story of water droplet - linking water, air & conservation together

Mr. Kai Shun Chan, Ocean Park Corporation, Aberdeen, HKSAR, China
S ~ K,E,M,H,I,A,G

4:30-4:50 pm; Lailima 225

Environmental issues like water and air pollution, conservation of animal and plant & environmental protection, are important topics for discussion in classroom. How can these diversified environmental issues be distributed to students in an effective way? We will show you how Ocean Park Hong Kong make use of electronic resources, a CD-ROM, to bring student into a "Journey of Droplet;" so as to link water, air, animal and plant together and let students have a better understanding on the above mentioned topics and their relationship. We will also show you how we extend students' learning after class by using the on-line post-activity worksheets to encourage students in participating environmental protection!