

## Concurrent Sessions ~ Friday, 15 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

### **Distribution and relative seasonal abundance of whale sharks, *Rhincodon typus*, in the northern Gulf of Mexico**

Ms. Carolyn Burks, NOAA/NMFS, Pascagoula, MS

S ~ R

2:00-2:20 pm; Hale 219

Between 1989 and 1998 three spatially and temporally intensive aerial surveys were conducted by the National Marine Fisheries Service, in the northern Gulf of Mexico. Here we report on seasonality, distribution and aggregations of whale sharks observed during these surveys.

### **The ARMADA Project: Research and Mentoring Opportunities for Educators**

Ms. Gail Scowcroft, Graduate School of Oceanography, Narragansett, RI

Jill Johnen, Andrea Keckes

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

2:00-2:20 pm; Ka'a'ike 105A

The ARMADA Project, funded by the National Science Foundation, provides scientific research experiences for teachers. ARMADA Teachers are paired with leading scientists in lab, field, or shipboard research. Prior to the research experiences there is a week long intensive focused upon standards-based pedagogies, mentoring strategies, and advanced ocean science topics. ARMADA teachers develop ways to bring the research experiences into their classrooms as they mentor novice teachers in their school district. They also attend two National Science Teachers Association Conventions to present information on their research and mentoring experiences. Scientists have the opportunity to satisfy their broader impact goals by actively engaging ARMADA teachers in their research projects. This presentation will discuss ARMADA opportunities for both teachers and scientists.

### **Charles Darwin & the Earthquake Still Shaking the World**

Richard Anderson, Modesto Junior College, Modesto, CA

S ~ G

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

What shook Darwin out of the 19th century paradigm into which he was born? This on-site 12-minute film moves from the "bellstone" of Darwin's birth town to Valdivia, Chile, where Darwin was shaken two minutes by an earthquake that devastated Talcahuano and Concepción, Chile; then to the Andes for Darwin's epiphany of "deep time" viewing marine fossils in strata 13,500 feet above sea level; then to the Galapagos where he observed finches, flightless cormorants, and other endemic species that eventually, for him, broke the shackles of species fixity and Bishop Ussher's calculations. An entertaining introduction to Darwinian evolution. Then I will raffle 15 free video copies!

### **Straight from the VINE, the Virgin Islands Network of Environmental Educators**

Susan Curtis, Coastal Zone Management Program, St. Croix, USVI

S ~ G

2:00-2:20 pm; KaLama 104B

The goal of VINE is to open communication and sharing amongst environmental and cultural educators in the U.S. Virgin Islands. Find out how to market a new networking group and your environmental programs to educators, school administrators and other stakeholders. Will give an overview of VINE's first year and highlight barriers, solutions and achievements. See how VINE is trying to get our INCREDIBLE natural resources incorporated into the USVI education system.

### **MEET YOUR NEIGHBOR—THE MOON!**

Dr. Stephenie Slahor, Palm Springs, CA

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

2:00-2:45 pm; Hale 216

My lecture combines a little science, a little art and a lot of fun as it describes the origin and formation of the Moon, its geology, and its phases and librations. Special emphasis is given to the role of the Moon's phases and gravitational pull as they influence the Earth's tides and waters.

### **Training students to be good scientists using a salt marsh model**

Ms. Tara Fogleman, Savannah State University, Savannah, GA

Dr. Mary Carla Curran, Savannah State University

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

2:00-2:45 pm; Hale 217

Students trained to monitor marsh ecosystems can provide scientists with credible data about marsh health. The purpose of this study is to challenge students to collect data as accurately as a scientist or teacher. We will test this hypothesis by having K-12 students (or NMEA participants) create a salt marsh model using clay, straws (as "stems"), and shell macaroni (as "snails"). After the participants collect data on stem height, density, and snail number of the models, we will discuss our results and trouble-shoot potential difficulties that students may encounter. Handouts for modifications, assessment tools, and a field-based component will be provided.

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### **Baldwin County Grasses in Classes Program**

Margaret Sedlecky, Weeks Bay NERR/ Baldwin Co. Board of Ed., Bay Minette, AL  
Lisa Allen, Gulf Shores High School; Judy Reeves, Baldwin County High School  
D/L,L/HO ~ M,H,C,R,I,P

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

Are you looking for interesting ways to teach about grassbeds, marshes and beaches? If so, then the Grasses in Classes Program is for you! We would like to share with you our knowledge and the lesson plans/activities that we have developed; in the hope that you might start a similar program in your area. This unique program gives students meaningful hands-on experience that will provide investigative and problem-solving opportunities. Students learn horticultural and technical skills, and work along side conservation agency staff on restoration projects that will have direct impact on the health of coastal habitats.

### **Researchers' New Interest in Marine Education Dealing with the Sea Change**

Mr. Bruce Stewart, Birch Aquarium at Scripps, La Jolla, CA  
L/D ~ R,I,A

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

Federal funding agencies' requirements that scientific research projects have "broader impacts" and address education outreach have resulted in heightened interest by researchers in partnering with educators. Exhibit developers and educators at the Birch Aquarium at Scripps (BAS) have been inundated with potential partnerships in projects ranging from studies of thermal vents to models for global warming to acoustic sampling of fish populations in aquaculture settings. The surge of researchers' interest in partnering with informal science educators brings both a wealth of opportunity and a weight of responsibility. Find out how BAS is coping with the flood tide and discuss how informal science education institutions can seize the opportunity to forge meaningful relationships with the research community that can outlast the current funding impetus.

### **The Northwestern Hawaiian Islands Fisheries**

Ms. Sylvia Spalding, Western Pacific Fishery Management Council, Honolulu, HI  
D/L ~ G

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

While the Northwestern Hawaiian Islands (NWHI) are often described as "pristine" they have a long history of use- and sometimes abuse. Nonetheless, nature has proved resilient. Much of this vast space is all but untouched and - with management- species have recovered and the ecosystem remains "pristine". This session features two short videos on the NWHI fisheries from 1000AD to present. Cultural, user, management, scientific and consumer perspectives are explored. A short question and answer session follows. Handouts and copies of the videos will be made available.

### **Hands-on Field Experiences in America's Ocean and Great Lakes Treasures**

Ms. Claire Johnson, NOAA's National Marine Sanctuary Program, Santa Barbara, CA  
D/L ~ K,E,M,H,C,R,I,A,G

*2:00-2:45 pm; KaLama 107*

The system on thirteen National Marine Sanctuaries and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve will be introduced, along with various professional development field experiences that are available through NOAA's National Marine Sanctuary Program. Ranging from student sandy beach and rocky intertidal monitoring programs on the west coast to coral reef surveying in the Gulf of Mexico and Hawai'i, and from National Geographic Field Studies of marine sanctuaries to Tall Ship teacher immersion programs in the Great Lakes. All of these experiences bring the excitement of inquiry-based science into America's classrooms to achieve a higher level of ocean literacy.

### **Ocean Etiquette — Guidelines for Safe and Responsible Wildlife Viewing in the Marine Environment**

Michele Roest, Monterey Bay National Marine Sanctuary, San Simeon, CA  
Columbine Culberg, Ocean Etiquette Program, National Marine Sanctuary Program  
D/L ~ I,A,G

*2:00-2:45 pm; KaLama 108*

Nature and adventure travel represent the fastest growing segment of the tourism industry, with over 89 million marine recreationists in the U.S. alone. These statistics point to increased pressures on our marine environment, and the challenge of encouraging appreciation for marine wildlife without causing additional stress. The National Marine Sanctuary Program is addressing these concerns through a new program initiative with NOAA Fisheries called Ocean Etiquette. The goal of the National Marine Sanctuary Ocean Etiquette Program is to instill a stewardship ethic and provide guidance on the role we all share in protecting marine wildlife and habitats. This workshop provides an overview of the Ocean Etiquette Program, handouts and materials, and encourages students, naturalists, and people of all ages to get involved.

### **Shore-based Monitoring of Humpback Whales with 2000 Community Volunteers and Students**

Christine Brammer, Hawaiian Islands Humpback Whale National Marine Sanctuary, Honolulu, HI  
Justin Viezbicke, Jean Souza  
D/L ~ E,M,H,C,I,G

*2:00-2:45 pm; KaLama 109*

One of the most popular education activities in Hawaii is the annual Sanctuary Ocean Count- a shore based census of humpback whales and documentation of their behaviors in the breeding and calving grounds of the main Hawaiian Islands. This project, conducted three times a year by over 2000 community volunteers and students at over 60 shoreline sites on 4 islands, is a study in coordination and volunteerism. Learn the techniques used in monitoring the endangered humpback whales and the behind-the-scenes activities needed to successfully implement the project.

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### **NOAA for \$1,000 Please Alex**

Dr. Susan Baker, National Oceanic and Atmospheric Administration, Silver Spring, MD  
D/L ~ E,M,H,I

*2:00-2:45 pm; Kupa'a 204*

Working toward its education and outreach goals, the National Oceanic and Atmospheric Administration (NOAA) has developed a new game to teach and entertain students of all ages about oceanic and atmospheric issues. NOAA Jeopardy can be used both to educate and test student knowledge of marine biology, physical oceanography, remote sensing, weather, climate, and fisheries science, among other interesting topics. With exciting categories such as "Name the Animal" and "Remote Sensing," you'll want to find out more about this answer-question format game developed for K-5th, 6th-8th, and 9th-12th grades by NOAA scientists and education specialists.

### **Ocean Diversity Institute - A Model for Environmental & Multicultural Programming**

Ms. Lauren Rader, Project Oceanology, Groton, CT  
D/L ~ E,M,H,I,A,G

*2:00-2:45 pm; Lailima 101*

Have you ever been asked to teach multicultural principles in your science class? Have your students had difficulty making connections between different communities, their shared watershed and the marine environment? Try using the concept of diversity to promote positive environmental stewardship while reducing racial, ethnic, and economic isolation. Learn about Project Oceanology's Ocean Diversity Institute, dedicated to helping students build the teamwork, communication, and science skills necessary to be successful. Students from across racial and socio-economic backgrounds work together toward the common goal of collecting, analyzing, and presenting important oceanographic data on Long Island Sound. At the same time, they discuss and diagnose community-based stereotypes (ie. Urban vs rural; Caucasian vs African-American) and how their cultural diversity affects their views of the environment. This successful program can be used as a model by other organizations for developing similar types of programs. Learn techniques for integrating multicultural principles into your science agenda.

### **Launching a MARE Ocean Immersion Center**

Ms. Roberta Dean, Lawrence Hall of Science, University of California, Berkeley, Berkeley, CA  
P/R ~ E,M,I,A

*2:00-2:45 pm; Lailima 102*

Discover how you can create an Ocean Immersion Center with the UC Berkeley's Lawrence Hall of Science MARE Program. MARE engages staff, students, parents and the community in an interdisciplinary study of the ocean. Transportable tools include an award-winning curriculum, an exciting website complete with planning tools and resource databases, a comprehensive professional development model and summer leadership institute. Centers are currently in Texas, New Jersey, Oregon and in development at the Birch Aquarium at Scripps. This session will offer an overview of the MARE Program and website and a discussion on how you can bring marine science to your academic institution or informal science center.

### **HAWAIIANS AND THE SEAE MALAMA PONO I KE KAI NANA MAI KEOLA (Take care of the sea for it brings you life)**

Mr. Dean Spencer, Waikiki Aquarium, Honolulu, HI  
D/L ~ E,M,H,C,I,A,G

*2:00-2:45 pm; Lailima 103*

This presentation will focus on the importance of the ocean and reefs to all aspects of early Hawaiian life from food-gathering to religion. Specific attention will be given to the importance of fish in the Hawaiian culture. Examples of fishermen's knowledge of the living places, diet, habits, and life cycle of target fish will be given. Aquaculture, conservation, recycling and laws governing the acquisition of fish and game laws will be explained. Other topics of interest to be covered include seaweed use as medicine, food, and in family religious ceremonies, and tools made from marine animals. Additionally, shark use for tools, weapons, and as family spiritual guardians will be discussed.

### **Tourism & Marine Conservation; Practical Realities Under Pressure**

Mr. Robert Wintner, The Snorkle Bob Foundation, Kihei, HI  
S,film ~ K,E,M,H,C

*2:00-2:45 pm; Lailima 107*

An overview of efforts toward marine habitat & species conservation, highlighting successes and obstacles. Coverage will include gill nets, Marine Preserve Areas, reef recovery from massive tourist love, aquarium collecting, hawksbill turtle recovery, and extinction as a function of political stalemate. The movie, "Hawksbill Babies Emerging from the Earth At Makena Beach", is 20 minutes of 40 turtles hatching and migrating to the sea. Narration is by Cheryl King, turtle biologist and Maui Director of the Hawksbill Recovery Project, and by Snorkle Bob. Original ukulele sound track, "Will You Be My Turtle Baby?" is by Wayne Perry, Kihei.

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### **Search for the Bonhomme Richard: Flagship of John Paul Jones**

Ms. Melissa Ryan, Ocean Technology Foundation, Groton, CT

Jenna Carlson

D/L ~ M,H,C,I,PG

*2:00-2:45 pm; Laulima 225*

One of the most fierce and famous naval battles of the American Revolution took place in 1779 between HMS Serapis and Bonhomme Richard. The latter ship was captained by John Paul Jones, often considered the Father of the U.S. Navy, whose legendary words, "I have not yet begun to fight!" are associated with this bloody battle. Bonhomme Richard finally defeated Serapis after a terrible three-hour battle at point blank range. The Ocean Technology Foundation and its partners are currently searching for the Bonhomme Richard off the coast of the U.K. in the North Sea. Join us to hear about this exciting expedition, and efforts to rekindle public appreciation and enthusiasm for this amazing event in American naval history.

### **Schoolyard AquaEcosystems A Partnership Linking Students, Environment**

Mrs. Angie L. Ashley, National Aquarium in Baltimore, Baltimore, MD

David Christopher; Adam Frederick, Maryland Sea Grant

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

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

The National Aquarium is partnering with Maryland Sea Grant to involve students not only in environmental education, but also restoration - students growing native plants and fish in a closed-loop system at their schools for Chesapeake Bay restoration projects. Through this program, environmental education and restoration are directly linked as students contribute to the restoration of wetlands while studying their importance to the estuarine ecosystem. Our workshop will summarize this program, which is set in the classroom and field. Participants will learn how they can transform the schoolyard into an outdoor laboratory where students can engage in real world experiments. We will also demonstrate some of our classroom activities centered on wetland restoration in the Bay and evaluation tools.

### **Signals of Spring**

Ms. Meghan Marrero, U.S. Satellite Laboratory, Tarrytown, NY

Glen Schuster, Director, Signals of Spring; Linda Knight, Houston Independent School District

L/D,L/HO ~ M,H,PG

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

NASA-funded Signals of Spring tracks dozens of animals online including a number of marine animals. A classroom program for students, which includes live, online professional development for teachers, the session will provide a classroom activity for teachers where connections between earth data imagery and animal movement are demonstrated. The investigations are grounded in middle and high school earth and life science content where students become "experts" in bathymetry, chlorophyll and sea surface imagery. The classroom program is standards-based with assessments. A focus is on conservation issues of endangered and threatened marine science, and student interaction with scientists and online analysis journals will be featured.

### **Learning to Sea- compassion and understanding**

Mr. Ziggy Livnat, For the Sea Productions, Kealahou, HI

D/L, P/R ~ E,M,H,C,IE,A,Z,M

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

Learn how you can use this incredible film in your classroom or at your aquarium facility! All participants will get a chance to win a free copy of this wonderful teaching tool! The purpose of this film is to inspire people to make a positive change in how we relate to our ocean environments. This award winning film is an underwater experience, which compares animal behaviors in the Caribbean and the Red Sea, separated by over 7,000 miles. The filmmaker shares his cross-global underwater experiences and shows the correlation of the marine inhabitants. Viewers of all ages share in the excitement of the aquatic realm and enjoy captivating footage never before seen. With amazing portraits of sea creatures, narration by Martin Sheen and an original score by Esta, the film creates compassion for preservation of our underwater oasis.

### **Restoration of Limu (sea algae) through Scientific Methodology and Traditional Knowledge**

Ms. Catherine Davenport, Maui Community College & Malama I ka 'Aina, Kahului, HI

Napua Barrows, Waihe'e School, Limu Restoration, & Fiber Farm; Derek Masaki, US Geological Survey

L/HO ~ K,E,M,H,C,R,I,A,PG,kupuna

*2:00-3:45 pm; Agriculture 104*

The following will be discussed through Power Point presentations and a lab/hands-on workshop.. Restoration of limu (sea algae) through scientific methodology and traditional knowledge. GPS tracking and waypoint. Indigenous management systems: the Ahupua'a, a system of sustainability. Traditional knowledge as a basis for experiments and interpretation of results. Conserving the ethnobotanical resources. Limu restoration through replanting of native limu and removal of invasive species. Community-based. Service-Learning. Lab/Hands-on Workshop to weave a limu lei for replanting. Power point presentations: 1) Overview of Limu Restoration (by Napua Barrows); 2) Family systems and familial patterns: Lore, Latin, and Linguistics (by Cathy Davenport); 3) Lore, Latin and Linguistics: A view from the stars into the sea (by Cathy Davenport.) This workshop will move to Laulima 101 after 3 pm to look at ArcView maps of the restoration site followed by an optional field trip to the site.

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### **How Do You Know If Your Program Is Successful? Assessment Basics**

Dr. Patricia Pokay, Eastern Michigan University, Northville, MI

Dana Sitzler, Alaska Sealife Center

D/L,L/HO ~ G,assessment

*2:00-3:45 pm; Hale 218*

Whether we're talking about grant proposals or ongoing educational programs, it is critical to be able to answer two very important questions. First, what outcomes do we want? and, second, how will we know if we are successful? Answers to these questions will not only help science educators plan effective programs but also demonstrate successful outcomes that are important in gaining future supporters, participants, and resources. This session will present participants with the basics of high quality assessment. Participants will practice applying the principles to their own programs and will leave with techniques to improve evaluation at their own sites.

### **Invasive Species—On the Move and on the Web**

Ms. Helen Domske, New York Sea Grant- Great Lakes Program, Buffalo, NY

Robin G. Goettel, Illinois-Indiana Sea Grant College Program

C ~ M,H,I,A

*2:00-3:45 pm; Laulima 212*

Highlighting several award-winning web sites developed by the Great Lakes Sea Grant Network, presenters will provide an interactive web-based program on resources, classroom activities and information to use in your classroom. Aquatic invasive species offer students an interesting way to learn about biodiversity, ecological impacts, adaptations, and biology. Web sites utilizing sound science in a creative way can be used effectively for student research and classroom instruction. Learn how aquatic invasive species and web-based technology can fit into your classroom teaching or non-formal education programs as we explore innovative web sites. These sites offer opportunities for problem-based learning, critical thinking, and student assignments. You'll get some great ideas for stewardship projects that can be led by students in their communities.

### **Poorman's TV - Quality Video on a Shoestring Budget**

Mr. Chris Snyder, Dr. Shelia A. Brown & Dr. Sharon Walker, J.L. Scott Marine Education Center and Aquarium, Ocean Springs, MS

C ~ I,A,P,G

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

You can produce broadcast quality television and media productions on your standard desktop computer. Learn what equipment and software are necessary to turn your office into a media production facility for under \$8,000. In no time you'll begin producing quality outreach products. Current technology puts media production within every organization's budget. We can show you how inexpensive equipment can be used to produce the high quality, "Professional" results you thought you were unable to afford. Experience Scott Aquarium promotional videos, broadcast segments and educational documentaries shot with no budget, no studio, no professional training and in our spare time. If we can shoot it, you can too.

### **Education And Research: Testing Hypotheses (EARTH)**

Dr. George Matsumoto, Monterey Bay Aquarium Research Institute, Moss Landing, CA

Rita Bell, Monterey Bay Aquarium

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

*2:00-3:45 pm; Laulima 227*

The ability to collect data has not been matched by our ability to disseminate this information to the public or the educational community, and it is clear that we do not know yet how to use existing data efficiently. We envision EARTH as serving as a portal to this wealth of data— both archived and near real-time. EARTH will be a long-term framework upon which other datasets can be distributed (primarily the data coming in from various observatories, as they are developed). The EARTH website is at <http://www.mbari.org/education/EARTH>. This website and the teacher institutes focus on data distribution (near-real-time and archived) with supporting curricula development. During this workshop we will disseminate information about the observatory program and provide the curriculum and products (from earlier workshops) to educators.

### **Monitoring Bleaching with CoralWatch: Global Climate & Reef Health**

Ms. Kylie McPherson, CoralWatch, Vision Touch and Hearing Research Centre, University of Queensland, Brisbane, QLD, Australia

Sanrda Zicus, University of Queensland

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

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

Coral bleaching events have been documented with increasing frequency and severity over the past 30 years. The University of Queensland has developed a simple and non-invasive way to monitor coral bleaching and recovery – the CoralWatch Coral Health Chart. The Chart is based on the actual colours of bleached and healthy corals with each colour square corresponding to symbiont concentrations in the coral tissue. By comparing actual coral colors to the color chart, students, teachers and others can assess the health of their local reef and add to a global bleaching database. This workshop introduces the coral chart methodology, and puts the fieldwork into context through additional classroom activities that examine climatic processes and issues related to human resource use.

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### **Rivers to Reefs: How Watersheds Effect Our Oceans and Reefs and What You Can Do to Help Protect Them**

Ms. Cathy J. Sakas, NOAA's Gray's Reef National Marine Sanctuary, Savannah, GA  
D/L ~ M,H,I,G

*2:00-3:45 pm; Science 22A*

What really happens to that chlorine bleach your washing machine cleans your clothes with and then drains through its hoses and down your pipes? The problem of our disappearing reefs and depleted fish stocks may be closer to home than we once thought. Through the aid of video clips and hands-on activities the presenter will show how watersheds influence our oceans and reefs and how we can do our part to make a difference in restoring the health of our oceans and their inhabitants. Free materials will be given to attendees that include a manual of background information and hands-on activities as well as posters and DVD's.

### **Exploring Plate Tectonics**

Dr. Leslie Sautter, Project Oceanica, Charleston, SC  
L/HO ~ M,H,C,I

*2:00-5:00 pm; KaLama 103*

Using a variety of maps, puzzles and models, learn the basic concepts of Continental Drift, seafloor spreading, hot spots, subduction, and Thermal Convection. This fun, engaging and dynamic workshop (back by popular demand!) will provide many Standards-aligned activities that utilize easy-to-construct models, and methods for teaching introductory Plate Tectonics to a wide range of learning levels, from middle school to college. Review the use of a CD-ROM as an alternative to a textbook and "play" with the 3-D Plate Puzzle. A color seafloor map will be given to the first 10 participants.

### **Finding Hidden Treasures by Satellite**

Mr. David Nadeau, Hazel Wilson & Jenny Cook Dauphin Island Sea Lab, Dauphin Island, AL  
L/HO ~ G

*2:00-5:00 pm; KaLama 104A*

The Global Positioning System (GPS) is fast becoming part of our everyday lives. You will be introduced to this technology and its applications. Put a GPS receiver in your hand and get experience using this instrument. Hunt for treasures and see how you can use GPS to teach a variety of topics to your students. This will be a hands-on workshop that will include outdoor activities on campus.

### **Underwater Robots Invade NMEA**

Ms. Jill Zande, Marine Advanced Technology Education (MATE) Center/COSEE CA, Monterey, CA  
Deidre Sullivan, Tami Lunsford; Kate Thompson, NOAA National Marine Sanctuary Program  
L/HO ~ M,H,C,I,A

*2:00-5:00 pm; KaLama 204*

While robots on Mars have been captivating the headlines with images of the red planet, robots have been uncovering the mysteries of our own ocean planet for years. These underwater robots or ROVs help scientists and explorers to learn about national marine sanctuaries, discover the Titanic and other famous shipwrecks, and search for new life forms in "extreme" environments such as hydrothermal vents. Join the Marine Advanced Technology Education (MATE) Center and its partners COSEE California and the National Marine Sanctuary Program for a hands-on workshop where you'll learn the basics of ROV anatomy, receive curriculum materials aligned with standards, and work in teams to design and build your own ROV to explore the "depths" of our pool.

### **Navigating Change In The Hawaiian Isles**

Mr. Andy Collins, NOAA, Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, Honolulu, HI  
Ann Bell, US Fish & Wildlife Service;  
Tom Cummings, Bishop Museum;  
Maura O'Conner, Curriculum Development Consultant  
L/HO ~ E,M,I,A

*2:00-5:00 pm; Science 21A*

"Navigating Change" is a project focused on raising awareness, and ultimately motivating people to change their attitudes and behaviors to better care for the Hawaiian islands and ocean resources. The workshop will present the five part, standards based 4-5th grade curriculum developed to teach the values of Navigating Change. The curriculum features exciting activities, rich content aligned to Hawaii standards, powerful imagery and video. The curriculum is designed to change behaviors by creating an awareness of the ecological problems we face and by demonstrating how decisions we make in our daily lives can help resolve those problems.

### **NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION EDUCATION & TRAINING PROGRAM OPPORTUNITIES**

Ms. Nina Jackson, NOAA Satellite & Information Service, Silver Spring, MD  
S ~ H,C,R,I,G

*2:30-2:50 pm; Hale 219*

The National Oceanic and Atmospheric Administration (NOAA) conduct research and gather data about global oceans, atmosphere, space, and sun. NOAA recruits and retains professional, scientific and technical candidates in a variety of specialized occupations. The NOAA Satellites and Information Service is responsible for managing the nation's civil operational earth observing satellites. The agency provides opportunities to teachers and students to work with researchers to learn applications of remotely sensed data and to develop curricula which create both a stimulating and fruitful classroom experience.

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### **Calling All Educators Interested in Coral Reefs: An Example of a Very Successful Educators Workshop and the Resulting Pre-K through 12th Grade Lesson Plans**

Dr. Linda Walters, University of Central Florida, Orlando, FL  
S. Caffery, D. Escue; J. Grevert; M. Myrick-Lupo, Jefferson Middle School;  
T. Riedel, Carillon Elementary School; J.  
Roupp & P. Sacks, Winter Park High School  
S ~ E,M,H,C,I,A,P

*2:30-2:50 pm; Ka'a'ike 105A*

With funding from multiple sources, including Florida Sea Grant, Florida Institute of Oceanography, and the University of Central Florida, selected pre-K through 12th grade educators met with resource managers, outreach specialists, and scientists in the Florida Keys to better understand this unique reef ecosystem and learn what gaps exist in available, educational materials. As part of this workshop, all educators were provided with scuba training and spent half of each day diving. One dive to the Aquarius Underwater Habitat was sponsored by the National Undersea Research Center. Post-workshop, educators developed age-appropriate lesson plans on topics that most interested them. In our presentation, we will discuss how this workshop evolved and then focus on distributing and discussing our diverse lesson plans.

### **In the current age of 'accountability' in schools, how can you determine what state and national standards are being met by your fantastic curricula?**

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

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

With the No Child Left Behind Act firmly in place, accountability in education is not to be taken lightly. However, many engaging environmental curricula in existence have never been 'aligned' to state and national standards. In order to 'sell' more teachers on the idea of using these curricula, it is necessary for educators of all types to understand how to navigate state and national standards documents. In this presentation, K-12, formal or informal environmental educators will come to understand how these documents are organized and how to 'align' a curriculum. Fisheries Learning on the Web (project FLOW) lessons will be introduced and used as an example.

### **MARINE STUDIES KIWI STYLE : AN EXAMPLE OF AN INTEGRATED APPROACH TO MARINE EDUCATION FROM NEW ZEALAND.**

Mr. Keith Gregor, Bay of Plenty Polytechnic, Tauranga, , New Zealand  
S ~ G

*2:30-2:50 pm; KaLama 104B*

Marine Studies, Tauranga, New Zealand, a unique program that enables a broad range of students to participate in a full immersion, hands on degree program which measures its success by the number of graduates in relevant employment. The combination of academic rigor and practical skills which the students gain greatly facilitates collaborative staff and student research with important industry players. This has proved invaluable in the successful placement of graduates both locally and abroad. This paper will explore the learning environment of this unique marine education program in New Zealand with superb visuals. It will also examine the contributions of key industry collaborations, community marine watch packages and curriculum alignment initiatives in the success of the program and in raising general awareness of the plight of the marine environment.

### **Recruiting the Next Generation of Outdoor Educators**

Mrs. Margaret Olsen, SouthEast Center for Ocean Sciences Education Excellence, Darien, GA  
S ~ G

*3:00-3:20 pm; Hale 216*

To make the greatest impact on African-American participation in oceanography and the geosciences, it is most efficient to bring programs designed to recruit future oceanographers and geoscientists to neighborhoods, campuses, and communities where African-Americans are actually in the majority rather than the minority. The "Natural History Interpretation Training Program" sponsored by SouthEast COSEE, Savannah State University and Sapelo Island NERR did just that and impacted two generations of students in coastal Georgia in the process. In the first implementation of this program ten (mostly minority) science majors from Savannah State participated in an intensive week-long training program on coastal ecosystems, outdoor education, and regional internship/employment opportunities. The training session was followed by the planning and implementation of a two-day science camp for the youth of Sapelo Island, GA in which the undergraduates taught 15 children of Gullah/Geechee heritage aged 6 to 14 about the geology and ecology of their barrier island home. During this session we, will share a PowerPoint presentation of this exciting project!

## Concurrent Sessions ~ Friday, 15 July, 3:00-3:20 & 3:00-3:45 pm

### **Snapshot Report of a Curriculum Development Workshop on Island Ecosystems**

Dr. Darren Okimoto, University of Hawaii Sea Grant Extension Service, Pago Pago, American Samoa  
Netini Sene, American Samoa Department of Education  
S ~ K,E,M,H,C,I,G

*3:00-3:20 pm; Ka'a'ike 105A*

This snap shot report summarizes the results of an 11-month Aquaculture Internship Program at the American Samoa Community College (ASCC) that was designed to encourage Pacific islanders to pursue environmentally-related career fields such as aquaculture. Under the guidance of ASCC Sea Grant Extension staff, six marine science majors gained invaluable experience, knowledge, and new skills by assisting in the construction of tilapia aquaculture ponds for individual Samoan farmers and participating in education outreach projects designed to educate the public on sustainable and environmentally sound aquaculture practices. Overcoming cultural and environmental issues to help build and encourage family aquaculture farms, the interns became comfortable with knowledge that encouraged themselves to continue in marine and environmental fields. Funded by the NOAA EEP/MSI, the internship produced a trained and knowledgeable set of students who are able to assist Sea Grant with community outreach projects.

### **REEF EDUCATION AND LEARNING WITH AUSTRALIAN HIGH SCHOOL STUDENTS**

Mr. Carl M. Stepath, James Cook University, Cairns, Smithfield, QLD, Australia  
S ~ M,H,C,R,I,A,P,G

*3:00-3:20 pm; Ka'a'ike 105B*

This paper reports on a PhD research project investigating senior high school marine studies students learning about coral reef environments. The study took place in Queensland Australia, and explored relationships between awareness, attitudes and ecological agency skills of students trained in coral reef ecology and monitoring at sites along the Great Barrier Reef in 2002 and 2003. It was a research project examining the question of whether experiential marine education changed reported environmental knowledge, attitudes and ecological agency of student participants. This study provided baseline high school student information, and integrated theories from social, psychological and educational research, while using both quantitative and qualitative analysis techniques. Some key data findings are presented and implications for effective marine education strategies discussed.

### **Turtle Trails**

Ms. Patricia Raves, North Carolina Aquarium on Roanoke Island, Manteo, NC  
S ~ G

*3:00-3:20 pm; Science 11A*

The North Carolina Aquarium on Roanoke Island collaborates with local and state organizations to rehabilitate and release cold-stunned juvenile loggerhead sea turtles (*Caretta caretta*) stranded along the North Carolina coast. Until recently, post-release survival and behavior were unknown. Between 2003-2005 satellite transmitters were attached to 8 rehabilitated loggerheads before release. Can cold-stunned turtles successfully re-enter the wild? Do they follow the same paths as wild caught juvenile loggerheads? This is the first in-depth study involving post-release movements of cold stunned sea turtles. Track the movements of these turtles on line with your students. Find the answers to these questions and more in this informative snapshot.

### **International Invasives**

Mr. Greg Graeber, Dauphin Island Sea Lab, Dauphin Island, AL  
Joan Turner  
L/HO ~ E,M,H,I,A

*3:00-3:45 pm; Hale 217*

This is a presentation on international invasive species. It will include fun and interactive lessons and skits to use in your classroom which are applicable to all grade levels. Come and spread Invasive Species (knowledge) around the world!

### **Dynamic Beaches - They've got the moves!**

Mr. Brae Rafferty, Project Oceanology, Groton, CT  
L/HO ~ E,M,H,C,R

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

Beaches are not only a wonderful place to visit, but also a great study site. We will begin the discussion with a brief overview about what are beaches and dune structures and how they are formed. We will examine spatial and temporal dynamics that constantly reshape beaches. Project Oceanology will share field data collection techniques that engage the entire class with results that can be brought back to the classroom for follow-up analysis. Student activities include creating beach profiles, surveying vegetation and animals, quantifying sediment distribution both horizontally and vertically, and measuring long shore currents. Following field collection of data, the entire classroom becomes the site of data analysis. Handouts provided.\*\*Presentation length: 45 minutes in classroom, or if a natural beach is available within walking distance, 3 hour field session



## Concurrent Sessions ~ Friday, 15 July, 3:00-3:45 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

### **One Ocean Marine Forum - An Australian perspective**

Mr. Harry Breidahl, Marine Education Society of Australasia (MESA), Frankston, VIC, Australia

Jody Plecas

P/R ~ G

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

The One Ocean Marine Forum (OOMF) is an international marine education initiative planned to occur in Hawaii in July 2005. This project is the result of long-time associations between members of Marine Education Society of Australasia (MESA) and NMEA in North America. There have been many cross cultural visits over recent years exposing the challenges in knowledge and resource sharing. The Forum, which will be the first formal international meeting of marine educators, is seen as the next logical step in this process. Details can be found on the MESA web site at [www.mesa.edu.au/inter/oomf01.asp](http://www.mesa.edu.au/inter/oomf01.asp). Just what can we expect from a meeting such as this and what are the plans for a World Forum in New York in 2006?

### **Following the Mighty Humpback Whales of the Atlantic & Pacific**

Anne Smrcina, NOAA's Stellwagen Bank National Marine Sanctuary, Scituate, MA

D/L ~ G

**3:00-3:45 pm; KaLama 109**

Humpback whales are found worldwide, but nowhere as commonly as in the two national marine sanctuaries — a feeding ground at Stellwagen Bank and a breeding ground in Hawaii. Try your hand at tracking whales and learn more about their migrations and behaviors.

### **Catch 'em young!**

Mr. Bob Goff, Marinaqueen.com, Inc., Fern Park, FL

Coni Reeder, Monroe County School System, Key West, FL;

Mary Werner, Seminole County School System, Lake Mary, FL (ret);

Ryan Reeder, NADC, Key West, FL (ret)

D/L ~ E,M,I,A,homeschool

**3:00-3:45 pm; Kupa'a 204**

[www.captainbobsvoyages.com](http://www.captainbobsvoyages.com) is a science and social studies web resource designed to encourage children to investigate, respect, and care for the aquatic environment that surrounds them in almost every Florida direction. Our presentation will describe the process of developing such a web resource, and the ways it can be used in the classroom—or living room. The website includes teaching unit lesson plans for teachers, a Florida data base of photos, newspaper articles about science and social studies; and job shadowing of career opportunities with aquatic connections. Each section is FCAT (Florida Comprehensive Assessment Test) friendly and correlated to the Sunshine State Standards. The website is student friendly with a custom designed searchable data base.

### **Pigs In Paradise**

Ms. Malelega Tuiolosega, American Samoa Environmental Protection Agency, Pago Pago, American Samoa

Makeati Utufiti, ASEPA Education & Public Affairs Program

D/L ~ I,P,G

**3:00-3:45 pm; Laulima 103**

Pigs play a crucial role in any Samoan event, whether it be a wedding, funeral, building dedication, title investiture, etc. Due to this, many families in American Samoa own small piggeries in their backyards. These piggeries are illegal in that often times, they are too close to residential areas/structures, too close to surface waters and utilize illegal waste management practices. Leptospirosis is a disease that is caused by the bacteria leptospira and is commonly found in animal urine (pigs, dogs and rats). Last year, 6 cases of Leptospirosis were diagnosed at the LBJ Tropical Medical Center. Of the 6 cases, 2 resulted in death. This paper will discuss a brief history of Leptospirosis in American Samoa, a survey that was conducted last year by the CDC and ASEPA and the events that led up to this survey. It will also discuss ongoing public education activities in regards to water quality.

### **Bringing Hands-on Watershed Education into the Classroom: NOAA's Bay Watershed Education & Training Program**

Ms. Shannon Sprague, NOAA, Annapolis, MD

Seaberry Nachbar

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

**3:00-3:45 pm; Laulima 225**

NOAA's successful Bay Watershed Education and Training Program started in 2002 in the Chesapeake Bay and has expanded to Monterey Bay and the Hawaiian Islands. The program supports projects that bring hands-on watershed education into the classroom. This presentation will describe the B-WET program and highlight successful projects, with particular focus on the exciting Hawaii program. You will learn what funding may be available in your area for environmental education initiatives. Discussion will focus on strategies to bring environmental education into more classrooms.

## Concurrent Sessions ~ Friday, 15 July, 3:00-3:45 & 3:00-4:45 pm

### **Aquaculture in Action**

Mr. Adam Frederick, Maryland Sea Grant Extension, Baltimore, MD  
D/L ~ E,M,H,I

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

An initial step toward achieving the goal of using aquaculture as a “tool for teaching science” in Maryland was the development of a workshop and state-wide network to support successful aquaculture projects in the classroom. Since its start in 1998, 4 “Aquaculture in Action” workshops have been held in total. The result is a state-wide network of 43 teachers and environmental education centers involved in aquaculture of local species of fish. The presentation will focus on the development of the network, the successful workshop format, and how the web is being used as a data port for projects and an evaluation tool.

### **Using a Multidisciplinary Team Approach to Bring Ocean Sciences Content, Research, Teaching, and Learning to K-12 Communities**

Ms. Teresa Greely, College of Marine Science, University of South Florida, St. Petersburg, FL  
Heather Hill-Warner, Sande Ivey, Angela Lodge, Ashanti Pyrtle  
L/HO ~ E,M,H

*3:00-4:45 pm; Agriculture 104*

The GK-12 OCEANS Program Team from the College of Marine Science at the University of South Florida is offering a session that will model the team approach used in GK-12 training courses, professional development, and outreach education programs. Our team of marine scientists, social scientist, science educator and GK-12 graduate fellow will demonstrate activities and training strategies. These will include 1) Introducing Inquiry, 2) ocean research-based workshops for teachers, and 3) ocean science lessons developed for grades 3:00-10. Join us for a hands-on workshop that will provide you with ocean science lessons based on ocean research, inquiry activities, and community building exercises to help bring fun to the learning environment.

### **Integrating Whales Into Your Curriculum**

Patty Miller, Jerry Stowell & Alastair Hebard, Hawaiian Islands Humpback Whale National Marine Sanctuary, Kihei, HI  
L/HO~E.M

*3:00-4:45 pm; Hale 219*

Come join us for an interactive, make-it-take-it presentation on humpback whales. You will be participating in a variety of activities that teach across the curriculum. Activities include humpback whale lessons in science, social studies, math, writing, art, and music.

### **The Effectiveness of Sequential, Experiential, Age-Appropriate Aquatic Education for Youth**

Ms. Terry Gibb, Macomb County MSU Extension, Clinton Township, MI  
Steve Stewart, Michigan Sea Grant  
D/L ~ E,M,H

*3:00-4:45 pm; Ka'a'ike 108*

Water quality education is a priority for MSU Extension, in part due to the fact that 29 miles of our county's border are Lake St. Clair (the Heart of the Great Lakes) and over half of a local river watershed drains through the county into Lake St. Clair. This has resulted in the development of five age appropriate, hands-on programs. These programs correlate to Michigan Standards and Benchmarks for each grade level and can and do lead to behavior changes by students at home and at school. This program will give an overview of the content of each program, provide hands-on demonstration activities, correlate each program to grade standards and benchmarks and discuss how to adapt materials for program expansion.

### **DISCOVERY IN THE DEEP, as presented Nov. 8, 2004 at the Geological Society of America Annual Meeting, Denver, Colorado, November 8, 2004.**

Mrs. Margaret Tower, Foreman High School, a Chicago Public School, Glenview, IL  
Film ~ K,E,M,H,C,I,A,G

*3:00-4:45 pm; Ka'a'ike 109*

My classes are in their third year of exploring the Pacific Ocean with the University of Delaware Graduate School of Marine Studies aquanauts in Alvin, a submersible from Woods Hole, MA. We have traveled through conference calls, satellites, and the internet, two and one-half miles below the surface of the Pacific Ocean to study hydrovents. Life on earth originated in hydrovents with elements that originally came from planetary formation in space. Our general science disabled learners investigate the earth in this way. Like Albert Einstein, they have difficulty reading and writing. We have a three year science requirement for all who wish to graduate from a Chicago Public School.

### **Seagrass...It's Alive!**

Mrs. Mary Tagliareni, Florida Keys National Marine Sanctuary, Key Largo, FL  
D/L,L/HO ~ K,E,I,A

*3:00-4:45 pm; KaLama 107*

Seagrass beds are “alive” and play a critical role in the health of the oceans. These underwater marine flowering plants grow worldwide, except Antarctica. Though they are both ecologically and economically important they are not as “sexy” as other marine habitats such as coral reefs and are often overlooked and under appreciated. Come learn seagrass biology, why seagrasses are important both ecologically and economically, and ways to take these messages back to K-3 students. Hands-on activities that have been aligned with the National Science Standards will be conducted during the session and take-home materials will be provided.

## Concurrent Sessions ~ Friday, 15 July, 3:00-4:45 pm

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### **The Top Ten Things Informal Science Educators Need to Know When Designing Exhibits for Success: “What Research and Collective Experience Say “David Letterman Style”!**

Ms. Stacia Fletcher, Monterey Bay National Marine Sanctuary, Santa Cruz, CA  
L/D,P/R ~ I,A

*3:00-4:45 pm; KaLama 108*

Whether you're contemplating your next changing exhibit, creating a new education center, simply want to know more about successful exhibit design, or just need some great information to justify your summer trip to Hawaii then this presentation is for you! The session will include an overview of the latest trends in exhibit design, a venue to share “this worked and this flopped” stories with colleagues, and opportunities to earn chocolate or a secret prize you'll be sure to want to “exhibit” back home. Hope to see you there!

### **Online Learning to Online Community to Ocean Literacy**

Mr. Peter Tuddenham, College of Exploration, Potomac Falls, VA  
D/L,C,L/HO ~ K,E,M,H,C,R,I,A,P,G

*3:00-4:45 pm; Kupa'a 203*

The College of Exploration will share its experiences developing and offering online learning programs on ocean topics over the past seven years. Various programs will be highlighted demonstrating different approaches to learning, community, and presentation. Programs facilitated in over the past 12 months to further our understanding of ocean literacy will be described and demonstrated. Plans for possible online degree programs will be presented. A review of the ASLO Summer conference 2005 will also be shared.

### **Tapping into Marine Science with MARE: In Class and Online**

Ms. Katrina Hart, Lawrence Hall of Science, Berkeley, CA  
Roberta Dean  
L/HO ~ K,E,M

*3:00-4:45 pm; Lailima 102*

Discover MARE (Marine Activities, Resources & Education), from the Lawrence Hall of Science at UC Berkeley. This K-8 whole school marine science program immerses your whole school—teachers, students and families—in the study and celebration of the ocean. MARE's K-8 habitat-based curriculum series provides hands-on inquiry-based activities appropriate for all students, including English language learners. This workshop will include an overview of the program, hands-on activities from the MARE curriculum and an opportunity to surf our online support database. Come join us to find out how to bring an Ocean Immersion event to your school. Participants will receive copies of the activities used in the session.

### **Smithsonian's Ocean Science Initiative: A Collaboration between the National Museum of Natural History (NMNH) and the National Oceanic and Atmospheric Administration (NOAA)**

Ms. Sharon Cooper, Smithsonian - National Museum of Natural History, Washington, DC  
Carrie McDougall & Joanne Flanders, NOAA  
D/L,L/HO ~ R,I,A,P,G

*3:00-4:45 pm; Lailima 107*

This session will present the Smithsonian National Museum of Natural History's Ocean Science Initiative, which includes an Ocean Web Portal, a Center for Ocean Science, and its centerpiece - what will become the nation's largest permanent Ocean Hall exhibit. NMNH is the most visited natural history museum in the world. Its dynamic team and unparalleled collections, in combination with NOAA's knowledge and expertise in ocean science, creates an environment that allows for development of a unique exhibit and supporting programs. The session will focus on the partnership, the Hall, its development process, and evolving education/outreach plans. We will include discussion of the results of the Ocean Hall Education and Outreach Summit which took place February 14-15, 2005 in DC.

### **Man, Kayak and the Whale A Harmonious Way of Life**

Mr. Richard Roshon, Hawaii Whales R US, Lahaina, Maui, HI  
D/L ~ E,M,H,C,R,I,A,P,G

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

A multi-media production. Through slides and video (which Climent themselves) I am able to place my audience in the cockpit of my kayak, while North Pacific Whales lie by my side. My presentation is a human-interest program which focuses on the many experiences over the past 30 years that I have had from an ocean kayak. From Tiger Sharks, Great White Sharks to Spinner Dolphins and North Pacific Humpback Whales. My program will leave my audience in awe as to the wonders of nature. More information as to my life's work can be found on my web site: [www.hawaiwhalesrus.com](http://www.hawaiwhalesrus.com)

## Concurrent Sessions ~ Friday, 15 July, 3:30-3:50 & 4:00-4:20 pm

### **Aquaculture Internship Program Builds Local Capacity in American Samoa**

Dr. Darren Okimoto, University of Hawaii Sea Grant Extension Service, Pago Pago, AS, American Samoa  
S ~ H,C,I,G

*3:30-3:50 pm; Ka'a'ike 105A*

This snap shot report summarizes the results of an 11-month Aquaculture Internship Program at the American Samoa Community College (ASCC) that was designed to encourage Pacific islanders to pursue environmentally-related career fields such as aquaculture. Under the guidance of ASCC Sea Grant Extension staff, six marine science majors gained invaluable experience, knowledge, and new skills by assisting in the construction of tilapia aquaculture ponds for individual Samoan farmers and participating in education outreach projects designed to educate the public on sustainable and environmentally sound aquaculture practices. Overcoming cultural and environmental issues to help build and encourage family aquaculture farms, the interns became comfortable with knowledge that encouraged themselves to continue in marine and environmental fields. Funded by the NOAA EEP/MSI, the internship produced a trained and knowledgeable set of students who are able to assist Sea Grant with community outreach projects.

### **Project-Based Learning in Marine Science**

Dr. Erin Baumgartner, Curriculum Research & Development Group, Honolulu, HI  
S ~ M,H

*3:30-3:50 pm; Ka'a'ike 105B*

Authentic scientific research experiences are powerful learning tools. Although the content knowledge acquired is very specific to the project in which the students are engaged, depth of understanding is increased. Following participation in research projects, students are empowered by the realization that they are capable of doing science and are better equipped to acquire additional knowledge themselves. This session will describe the process of developing and conducting a standards-linked, project-based unit in marine science.

### **Incorporation of undergraduate and K-12 students into an assessment study of a salt marsh: Can students collect data as well as a scientist?**

Dr. Mary Carla Curran, Savannah State University, Savannah, GA  
Tara Fogleman, Savannah State University & Thunderbolt Elementary Marine Science Academy  
S ~ E,M,H,C,R,I,A,P,G

*3:30-3:50 pm; Science IIA*

Students from Savannah State University have been evaluating the marsh grass *Spartina alterniflora* for two years. The purpose of the study was to enable students to collect data that could potentially provide insight into the causes of a recent dieback event. Furthermore, we sought to train elementary and high school students with basic marsh-assessment skills to test whether their data were as accurate as those of a scientist. Students were provided with training before being taken into the field to monitor plant height and density. In general, the dieback area is recovering, but plants have not yet reached their normal height or density. We believe that students can obtain credible results if given appropriate training.

### **2004 Environmental Education Teacher Institute: "Environmental Education in the Albemarle-Pamlico Sounds Region of North Carolina"**

Mrs. Joan Giordano, Albemarle-Pamlico National Estuary Program, Washington, NC  
Mark Townley, Lee County High School & Environmental Education Fund  
S ~ E,M,I,media coordinators

*4:00-4:20 pm; Ka'a'ike 105A*

Come hear about a week-long teacher training institute held sound-side at the Trinity Center in Salter Path, NC where 25 middle-school teachers and school media coordinators were provided with curriculum training in earth/environmental sciences featuring hands-on activities, site visits, and specific content to support inquiry, experiential, and research-based instruction on estuaries and water resources.

### **YOU can publish your classroom activities!**

Dr. Mare Timmons, University of Georgia, Savannah, GA  
S ~ K,E,M,H,C,I,A,P,G

*4:00-4:20 pm; Ka'a'ike 105B*

Many of you have fabulous classroom activities that you have developed that should be shared amongst other educators! Publishing your unique ideas and activities assists others who need fresh material. Learn how easy it is to publish in science education journals!

### **Development of TV programme for the marine science education**

Mr. Masakazu Goto, National Institute for educational policy research of Japan, Meguro, Tokyo, Japan  
S ~ E,M,H,R,I,G

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

I developed some TV programmes for the marine education for children at the ages of 10 to 15 years old with the national educational broadcasting association. These TV programmes were broadcasted all over Japan. They are very interesting and have been used by many elementary and secondary teachers for their science lessons all over Japan. I developed some curriculum by using one of these TV programs and practiced it and evaluated the quality of the TV programme and my practice. I also made use of them for in-service teacher's training for novice science teachers in Japan. These TV programmes are evaluated very good for children and teacher's education. I will have a presentation about TV programme, my educational practice with them and assessment of them.

## Concurrent Sessions ~ Friday, 15 July, 4:00-4:20 & 4:00-4:45 pm

**SESSION FORMAT(S):** L/HO = Lab/Hands-on; F=Field; C=Computer Workshop; D/L=Demonstration/Lecture;  
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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

### **ESP: More than a Hunch.It works!Integrating Field Research and On-line Data into High School Classrooms**

Ms. Nadine Bloch, NOAA, Silver Spring, MD  
S ~ M,H,C,R,I,A,G

*4:00-4:20 pm; Laulima 225*

In this session we will present integrated field and classroom lessons developed for NOAA's pilot Emerging Scientists Program (ESP). Handouts of the standards aligned lesson plans will be provided. The 2004-5 ESP pilot projects integrate field collection with classroom analysis and on-line data use to expand environmental literacy, expose students to ocean and other science career options, and facilitate systems-based learning. Teachers carry out in-field sampling and research projects developed and directed by their students. In the classroom, students sorted and processed the samples and conducted analysis of the data collected in the field.

### **Using Performance Art in Environmental Education**

Doug "Dirt" Greenfield, "Airy" Larry Graff, "Solar" Steve VanZandt, "Marine" Mark Nolan, *Banana Slug String Band*, Santa Cruz, CA  
L/HO ~ K,E,M,H,C,I,A,G

*4:00-4:45 pm; Hale 216*

The Banana Slug String Band is committed to educational entertainment for children and families through interactive music and performance. We are dedicated to fostering positive attitudes about the environment, providing accurate information about natural history and science, promoting music appreciation, building self esteem in children, honoring creativity, supporting the arts in education and sparking in people a joyful sense of wonder. Through the production of tapes, CD's, videos, songbooks, picture books, curriculum, activity guides, teacher workshops and concerts, we hope to make these values accessible to an increasingly wider audience. We endorse and support collaboration with other individuals and organizations that promote the well being of children, family and the environment. We believe that music is a powerful instrument for honoring diversity while uniting people for the common good.

### **Discovery of Sound in the Sea**

Ms. Jill Johnen & Gail Scowcroft, University of Rhode Island Office of Marine Programs, Narragansett, RI  
D/L ~ E,M,H,C,R,I,A,PG

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

Discovery of Sound in the Sea is a popular Internet and CD-ROM classroom resource. It provides an easy-to-understand overview of underwater acoustics and has an extensive gallery of sounds that fill the world's oceans. With this resource, discover why people and marine animals rely on sound to sense their surroundings, to communicate, and to navigate. Watch video interviews with prominent marine scientists and learn about the tools used to study sound in the sea. An expanded section focuses on the effects of human-made sounds on marine life. In this workshop, participants will discover how to use this resource in their classrooms through interactive activities. They will also be introduced to the suite of PowerPoint presentations available on the free CD-ROM.

### **NOAA's Discovery Center (<http://oceanservice.noaa.gov/education>): Inquiry-based Online Resources for Teaching Ocean & Earth Sciences.**

Mr. Bruce Moravchik, NOAA National Ocean Service, Silver Spring, MD  
Wendy E. Sera  
D/L ~ M,H,C,R,I,A,PG

*4:00-4:45 pm; KaLama 109*

NOAA's "Discovery Center" Kits, Stories and Classroom will expand your students' knowledge in ocean and earth sciences. Discovery Kits describe scientific principles underlying NOAA's activities. Kits contain a multimedia tutorial, a roadmap to data resources, and inquiry-based lesson plans that link information from the tutorials with data from the roadmaps. Discovery Stories present multimedia case studies from research conducted by NOAA scientists. They include interactive quizzes, exercises with data, and interviews that explore how scientists think. The Discovery Classroom is a collection of inquiry-based lesson plans based on the major thematic areas of NOAA's National Ocean Service. All lessons emphasize hands-on activities using data, and are correlated to National Science Education Standards and the AAAS Benchmarks for Science Literacy.

### **All Aboard U.S. Argonautica: Oceanography in the Classroom**

Mrs. Annie Richardson, NASA/Jet Propulsion Laboratory, Pasadena, CA  
D/L ~ K,E,M,H,I,A,P

*4:00-4:45 pm; Laulima 103*

In France the French Space Agency has been sponsoring Argonautica, a hands-on, K-12 oceanography education program since 2002. The program goals are to provide an understanding of the role played by satellites in improving our knowledge of the oceans and protection of the marine environment. The Argonautica concept involves learning, doing, and sharing. Participants learn from scientists and engineers, design and construct buoys, track drifting buoys and marine animals with the aid of satellites, and gather at conferences to share the results of their work with their peers. NASA/JPL is instituting Argonautica in the United States and is soliciting participation of NMEA members. Come hear more about Argonautica and learn how your organization can be a part of this program.

## Concurrent Sessions ~ Friday, 15 July, 4:00-4:45 & 4:30-4:50 pm

### **Translating marine science research into fun, educational activities.**

Ms. Deborah McArthur, Northwest Fisheries Science Center, Seattle, WA  
L/HO ~ K,E,M,H,C,R,I,A,P

*4:00-4:45 pm; Lailima 107*

The Northwest Fisheries Science Center (NWFSC) is the lead for the west coast in Oceans and Human Health (OHH) for NOAA. We are developing an educational strategy to translate OHH research to educators in the Northwest. We will highlight the dynamic and exciting aspects of the scientific method process, incorporating student-centered, inquiry-based, multiple intelligence and multi-sensory learning techniques. During the workshop we will model some of these methods and present a framework for translating the research from the field and labs into different educational opportunities.

### **Detecting Phytoplankton Blooms from Buoys and Space**

Ms. Amy Cline, University of New Hampshire, Durham, NH  
D/L,C,L/HO ~ E,M,H,C,I

*4:00-4:45 pm; Lailima 212*

Whether you live on the coast or deep in the watershed, phytoplankton are a perfect medium to learn about the ocean. This workshop will introduce participants to the Earth Exploration Toolbook (EET) Chapter titled “When is Dinner Served? Predicting Ocean Phytoplankton Blooms.” This workshop will demonstrate how to access and use real-time oceanographic data to enable students to analyze seasonal phytoplankton blooms, in order to guess when the timing of next years phytoplankton bloom in the Gulf of Maine may take place. Participants will learn how to access buoy and satellite data for the Gulf of Maine and will be given web resources to explore other regions. Classroom materials will be distributed. To learn more about EET, visit <http://serc.carleton.edu/eet/>.

### **Making Science Less Scary: An Overview of Public Presentations**

Ms. Ruth Schneider, North Carolina Aquarium at Fort Fisher, Kure Beach, NC  
D/L ~ I,A,G

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

Get an overview of activities and demonstrations used by the North Carolina Aquarium at Ft. Fisher to help visitors understand “scary” science topics. Participants observe samples of popular aquarium programs that cover topics as diverse as cnidarian reproduction and the nitrogen cycle. Activities can be modified for school age students and public groups. Handouts are provided.

### **“Farming the Seas”**

Film ~ E,M,H,C,R,I,A,P,G

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

Fish farming has become the fastest-growing food-production industry in the world and several approaches are being developed, some of which are generating considerable controversy and debate. “Farming the Seas” explores what’s at stake for us all as the aquaculture industry spreads across the globe. Stunning visuals and compelling interviews from around the world highlight ground-breaking efforts by scientists, communities and industry to develop viable, sustainable operations. Rivkah Beth Medow, Co-Producer with Habitat Media, coordinated the creation and development of a companion Sustainable Fisheries and Aquaculture Resource Pack for Habitat Media’s PBS Marine Fisheries Series. Short- and full-length versions of both “Farming the Seas” and “Empty Oceans, Empty Nets” will be available.

### **What’s on the Bottom?**

Ms. Cathy J. Sakas, NOAA’s Gray’s Reef National Marine Sanctuary, Savannah, GA  
D/L ~ M,H,I,G

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

Take a walk across the ocean floor with presenter Cathy Sakas to learn what’s on the bottom. Visit a seamount, a vent, a trench, an abyssal plain and more. With the help of images from ocean floor features, the presenter will take an imaginary walk from coastal Georgia all the way over to Morocco on the west coast of Africa. Each feature has a story and was explored through various technologies. Participants will receive a poster, a description of hands-on activities and other free materials. So come on and take a walk on the deep side!

### **Protecting Hawaii’s Blue Water - Sierra Club’s Blue Water Campaign**

Ms. Carey Morishige, Blue Water Campaign, Sierra Club Hawaii Chapter, Honolulu, HI  
S ~ E,M,H,C,I,A,G

*4:30-4:50 pm; Ka’ā’ike 105A*

In January 2004, the Hawai’i Chapter of the Sierra Club launched their Blue Water Campaign with the goal of helping to keep Hawai’i’s waters clean and healthy by giving residents across the state a way to become actively involved in its protection. The campaign works mainly through outreach and education, teaching residents about various water quality issues in Hawai’i, the importance of our marine resources, the effects of water pollution on those resources, and how they can get involved. The campaign also works in cooperation with federal, state and county agencies to provide more trained “eyes and ears” in the community watching for pollution incidents and to help in gathering information on various environmental complaints.

Concurrent Sessions ~ Friday, 15 July, 4:30-4:50 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

**Ocean Interactions - Connecting scientists, educators and students in learning about oceanic and atmospheric science**

Dr. Genevieve Healy, University of Colorado, Boulder, CO

Susan Buhr, University of Colorado; Dr. Jeff Hare, NOAA

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

4:30-4:50 pm; Ka'a'ike 105B

This ship-to shore interactive project increases ocean science education opportunities for land-locked students and educators in the Interior West and beyond. Each year a teacher is selected to participate on a research cruise and communicate their experience to classrooms throughout the country. The program consists of ship-based scientist/teacher/classroom partnerships that occur throughout the length of the research cruise. Schools throughout the country can participate by asking questions via the website to the teacher and scientists at sea.

**Supporting Place-Based Marine Educators**

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

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

4:30-4:50 pm; Lailima 225

The National Marine Protected Areas Center supports place-based educators through the development of a variety of outreach and educational materials. This session will introduce these materials, including the Information Exchange for Marine Educators, a monthly newsletter providing information about educational materials and programs, funding resources, and professional development. Additional materials and programs from the MPA Center will be reviewed. Posters and background materials will be distributed.

