Dear Friends and Colleagues,

The Northwest Aquatic and Marine Educators (NAME) and the Alaska Center for Ocean Sciences Education Excellence (COSEE-AK) take great pleasure in welcoming you to the 2102 NMEA Conference, the first ever held in Alaska, land of the midnight sun. Alaska has 1/3 of the nation’s coastline, 60% of the commercial landings of the nation’s seafood, watersheds and Large Marine Ecosystems of local and global significance, and diverse and vital Native cultures.

Many people were instrumental in helping organize this conference. Two people – Nora Deans and the late Bill Hastie – provided the original inspiration. Our Conference Planning Committee included Anne Stewart, Jennifer Magnusson (Webmaster and Conference Program) and the following Conference Committee Chairs: Alan Rammer and Pam Parker (Auction), Marilyn Sigman and Laurie Morrow (Field Trips), Joy Tally and Shawn Rowe (Pre-Conference Workshops), Beth Trowbridge and the late Bill Hastie (Concurrent Sessions), Kurt Byers and Robin Dublin (Special Events), Fawn Custer and Gene Williamson (Exhibits), Sea Faire (Gene Williamson), Asia Beder and Linda Maxson (Volunteers). Together, we dedicate this conference to Bill for his lifelong enthusiastic commitment to NMEA, NAME and excellence in aquatic and marine education.

Our strand of Traditional Knowledge has attracted a wealth of presenters and participants from many regions of the U.S. and several foreign countries. Combined with the strands of Science and Technology, Science and Art, and Large Marine Ecosystems, you will have the opportunity to graze at a smorgasbord of more than 100 concurrent sessions and nearly 40 posters. Attendance this year was not limited by the perceived distance between your home and ours. Conference attendees and presenters represent an amazing depth and breadth of knowledge and skill. We encourage you to take as much time as you can to learn from one another while you are here.

The site for this event, the University of Alaska Anchorage (UAA), is surrounded by over 100 miles of trail and is in the shadow of the nearby Chugach Mountains and Chugach State Park (with over 500,000 acres of wilderness). As we go to print, there are reported sightings of black bears and moose on campus. Please enjoy these wild animals at a distance. At the edge of wilderness, UAA takes steps considers the natural environment and works toward a brighter future for generations to come by building green, landscaping green, adopting sustainable practices in food service, and recycling campus wide.

Our field trips will give you the opportunity to walk on a glacier, see Cook Inlet from an elevation of 2,300 feet, watch salmon spawning, or walk on Kachemak Bay beaches. Watch for Beluga whales, eagles, bears, sea otters and all the diversity that Southcentral Alaska has to offer.

Learn a lot, play a lot, and enjoy Alaska. We bet you’ll be back.

Marilyn Sigman & Robin Dublin, Co-Chairs, NMEA 2012

COSEE Alaska

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**GENERAL INFO**

**Registration**
Conference registration will be held in the Rasmuson Atrium
Sunday, 3:30 pm – 7:00 pm  
Monday, Tuesday, 8:00 am – 4:00 pm

**Information**
Staff will be at a table in Rasmuson Atrium during registration hours to answer questions. There will also be a message board at Registration.

**Meals**
Your conference registration allows you to sign in for lunch on Sunday and breakfast on Wednesday at the UAA Commons cafeteria. Your name tag will provide you entrance to the dinner reception on Sunday night, three breakfasts in the Wendy Williamson Atrium (Mon, Tues, Thurs) and three lunches in Cuddy (Mon, Tues, Thurs). If you registered before May 25, you will receive a banquet ticket with your name tag. If you did not choose full registration, some of your meals may not be included in your registration fee. Cafeteria meals can be purchased on site at any time during the conference period.

**Getting Around**
Events and sessions at the main University of Alaska Anchorage (UAA) are an easy 20-30-minute walk from dorm housing and the University Springfield Marriott Hotel. There will also be shuttle service from these two locations to breakfast in the Wendy Williamson Atrium, a shuttle return at the end of afternoon sessions, and a shuttle to the banquet. Buses or vans will also be available for transport to off-campus events and field trips. Public transportation to and from other Anchorage locations to the campus is available via http://www.muni.org/departments/transit/peoplemover/Pages/default.aspx.

**Important Notes**
Please wear your name badge while attending the conference. All guests of participants must have tickets to attend conference events and field trips. All campus buildings are non-smoking. Smoking is restricted to designated outdoor areas.
Jack Dalton
Professional Storyteller
The Creation Legend Of The Yup’ik People
Sunday, June 24
8:30 pm, Wendy Williamson Auditorium

Francis Wiese
Science Director, North Pacific Research Board
A-Ok: Alaska Ocean Knowledge In A Nutshell
Monday, June 25
8:30 - 9:15 am, Wendy Williamson Auditorium

Reid Brewer
Agent, Alaska Sea Grant Marine Advisory Program, Unalaska
Under Aleutian Seas: 8 Years Of Wildlife Research And Outreach At The End Of The World”
Tuesday, June 26
8:30 - 9:15 am, Wendy Williamson Auditorium

Julia Parrish
Professor, Ocean Fishery Sciences in the College of the Environment at the University of Washington
Global Change For Global Change: Citizen Science In The 21st Century
Tuesday, June 26
9:15 - 10:00 am, Wendy Williamson Auditorium

Nick Tanape, Sr.
Sugpiaq elder and lifelong subsistence hunter
The Bidarki Project: The History Of A Mollusc Through The Eyes Of Culture And Science
Thursday, June 28
8:30 - 9:15 am, Wendy Williamson Auditorium

Jana Harcharek
Director of İñupiaq Education, North Slope Borough School District
The İñupiaq Learning Framework: Blending Alaskan Native And Western Science Worldviews Into K-12 Education
Thursday, June 28
9:15 - 10:00 am, Wendy Williamson Auditorium
FEATURED SPEAKERS

Fran Ulmer: Keynote Speaker
Chair of the U.S. Arctic Research Commission
Ten Most Important Things To Know About The Arctic In 2012
Monday, June 25
8:30 - 9:15 am, Wendy Williamson Auditorium

Ray Troll: Stegner Lecture
Alaskan artist
Fish Worship And The Art Of Ray Troll Or How I Became A Scientific Surrealist
Tuesday, June 26
8:00 pm, Cuddy Hall

SCHEDULE AT A GLANCE

Saturday June 23

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am – 4:00 pm</td>
<td>Sea Grant Educators Network Meeting &amp; Field Trip</td>
<td>Alaska Sea Grant Conference Room</td>
</tr>
<tr>
<td>5:30 pm – 7:00 pm</td>
<td>NMEA Board Dinner (Board Members only)</td>
<td>Snow Goose Restaurant</td>
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</tbody>
</table>

Sunday June 24

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>9:00 am – 4:00 pm</td>
<td>NMEA Board Meeting</td>
<td>Commons Mtg. Room 107</td>
</tr>
<tr>
<td>9:00 am – 12:00 pm</td>
<td>Pre-conference Workshop: Connecting Communities through Quests</td>
<td>Rasmuson Hall 211</td>
</tr>
<tr>
<td>11:00 am – 7:00 pm</td>
<td>International Group Meeting</td>
<td>Commons Mtg. Room 106</td>
</tr>
<tr>
<td>11:30 am – 1:00 pm</td>
<td>Lunch (sign in for NMEA)</td>
<td>Commons Cafeteria</td>
</tr>
<tr>
<td>1:00 pm – 4:00 pm</td>
<td>Pre-conference Workshops: Growing Up Wild (RH 211) and Promoting Scientist/Educator Engagement (RH 316)</td>
<td>Rasmuson Hall</td>
</tr>
<tr>
<td>2:00 pm – 5:00 pm</td>
<td>NAME Board Meeting</td>
<td>East Dorm Lounge, 4th Floor</td>
</tr>
<tr>
<td>3:30 pm – 7:00 pm</td>
<td>Registration and Exhibits Set-up</td>
<td>Rasmuson Atrium</td>
</tr>
<tr>
<td>7:00 pm – 10:00 pm</td>
<td>Opening Reception and Welcome</td>
<td>WW Atrium &amp; Auditorium</td>
</tr>
<tr>
<td>8:00 pm</td>
<td>Jack Dalton presentation</td>
<td>Wendy Williamson Auditorium</td>
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Monday June 25

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>6:45 am – 8:00 am</td>
<td>Breakfast, Buddy Breakfast Committee Meetings: Grants (ESH 205), Publications (ESH 206)</td>
<td>Wendy Williamson Atrium</td>
</tr>
<tr>
<td>7:00 am – 8:15 am</td>
<td>Poster &amp; Exhibits Set-up</td>
<td>Cuddy Hall, Rasmuson Atrium</td>
</tr>
<tr>
<td>8:00 am – 4:00 pm</td>
<td>Registration &amp; Exhibits</td>
<td>Rasmuson Atrium</td>
</tr>
<tr>
<td>8:15 am – 10:00 am</td>
<td>Keynote—Fran Ulmer; Plenary—Francis Wiese</td>
<td>Wendy Williamson Auditorium</td>
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<tr>
<td>10:15 am – 11:00 am</td>
<td>Concurrent Session 1</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>11:15 am – 12:00 pm</td>
<td>Concurrent Session 2</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>12:15 pm – 1:15 pm</td>
<td>Lunch, Poster Sessions</td>
<td>Cuddy Hall</td>
</tr>
<tr>
<td>1:30 pm – 2:15 pm</td>
<td>Concurrent Session 3</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>2:30 pm – 3:15 pm</td>
<td>Concurrent Session 4</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>3:30 pm – 4:15 pm</td>
<td>Concurrent Session 5</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>5:00 pm – 6:30 pm</td>
<td>President's Circle Dinner</td>
<td>East Dorm Lounge</td>
</tr>
<tr>
<td>6:00 pm – 10:00 pm</td>
<td>Dinner Reception (Buses depart at 5:45 pm from the Commons)</td>
<td>Anchorage Museum</td>
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</tbody>
</table>
### Schedule at a Glance

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>Tuesday June 26</strong></td>
<td></td>
<td></td>
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<tr>
<td>6:45 am – 8:00 am</td>
<td>Breakfast</td>
<td>Wendy Williamson Atrium</td>
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<tr>
<td>8:00 am – 4:00 pm</td>
<td>Committee Meetings: Education Research (ESH 205), NSTA Liaison (ESH 206) Ocean Literacy Committee (RH211)</td>
<td>Rasmuson Atrium</td>
</tr>
<tr>
<td>8:15 am – 10:00 am</td>
<td>Plenary— Reid Brewer, Julia Parrish</td>
<td>Wendy Williamson Auditorium</td>
</tr>
<tr>
<td>10:15 am – 11:00 am</td>
<td>Concurrent Session 1</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>11:15 am – 12:00 pm</td>
<td>Concurrent Session 2</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>12:15 pm – 1:15 pm</td>
<td>Sack lunches and Chapter meetings</td>
<td>Cuddy Hall</td>
</tr>
<tr>
<td>1:30 pm – 2:15 pm</td>
<td>Concurrent Session 3</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>2:30 pm – 3:15 pm</td>
<td>Concurrent Session 4</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>3:30 pm – 4:15 pm</td>
<td>Concurrent Session 5</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>4:30 pm – 6:00 pm</td>
<td>Sea Faire</td>
<td>Rasmuson Atrium</td>
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<tr>
<td>6:30 pm – 10:00 pm</td>
<td>Banquet &amp; Auction, Tribute to Bill Hastie</td>
<td>Cuddy Hall</td>
</tr>
<tr>
<td>8:30 pm</td>
<td>Stegner Lecture—Ray Troll</td>
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<tr>
<td><strong>Wednesday June 27</strong></td>
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<tr>
<td>6:45 am – 8:00 am</td>
<td></td>
<td>Commons Cafeteria</td>
</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Field Trips: Buses depart at the following times from the Commons: Seward: 7:45 am Girdwood: 8:00 am and 11:30 am Hatchery (van): 8:30 am</td>
<td>Commons Front Entrance</td>
</tr>
<tr>
<td>5:30 pm – 6:30 pm</td>
<td>Coastal Trail Hike to Kincaid (Buses depart at 5:00 pm from the Commons)</td>
<td>Commons Front Entrance</td>
</tr>
<tr>
<td>6:30 pm – 9:30 pm</td>
<td>Seafood Barbecue (Buses depart at 6:00 pm from the Commons)</td>
<td>Kincaid Park</td>
</tr>
<tr>
<td><strong>Thursday June 28</strong></td>
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<td></td>
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<tr>
<td>6:45 am – 8:00 am</td>
<td></td>
<td>Wendy Williamson Atrium</td>
</tr>
<tr>
<td>8:15 am – 10:00 am</td>
<td>Plenary—Nick Tanape, Sr., Jana Harcharek</td>
<td>Wendy Williamson Auditorium</td>
</tr>
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<td>10:15 am – 11:00 am</td>
<td>Concurrent Session 1</td>
<td>Rasmuson/Eugene Short Halls</td>
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<td>11:15 am – 12:00 pm</td>
<td>Concurrent Session 2</td>
<td>Rasmuson/Eugene Short Halls</td>
</tr>
<tr>
<td>12:00 pm – 2:00 pm</td>
<td>Lunch, Awards Ceremony, Business Meeting</td>
<td>Cuddy Hall</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>Meeting of New Board</td>
<td>Rasmuson Classroom 111</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>Homer Field Trip departs</td>
<td>Commons Front Entrance</td>
</tr>
</tbody>
</table>

### Conference Themes

**Science and Art (SA):** Presentations involving the use of the arts, including visual arts, music, dance, film, and literature to frame learning experiences, celebrate the world of water and to promote ocean and aquatic literacy.

**Science and Culture (SC):** Presentations that address culturally-responsive approaches to marine and aquatic science education, making it more relevant and meaningful to the learner. This strand will emphasize ‘Traditional knowledge’: the totality of experiential knowledge of the natural environment of a people, acquired over time, and passed from generation to generation such that it has become part of a people’s cultural identity. The sharing of perspectives, programs and collaborative strategies that embrace and support traditional knowledge and integrate that knowledge with western-science-based marine education and outreach were selected. In addition, presentations that promote career development for cultural and racial groups typically underrepresented in marine and aquatic sciences were included.

**Science and Technology (ST):** Presentations involving the use of educational technology to enhance learning and strategies to focus on marine technology in STEM (Science-Technology-Engineering-Mathematics) to enhance students’ understanding of marine and freshwater systems.

**Large Marine Ecosystem Science and Education (LME):** Alaska’s shores and rivers are part of three major marine ecosystems; the Arctic Ocean, Bering/Aleutian, and Gulf of Alaska. Presentations that have a marine ecosystem perspective and scale, including the associated freshwater systems, particularly those relevant to the Large Marine Ecosystem classifications developed by the United Nations and adopted by NOAA to implement the 2004 US Ocean Action Plan. Maps are available of the marine ecosystems and associated watersheds at [http://www.lme.noaa.gov/](http://www.lme.noaa.gov/).
Reflecting on Practice: Discussing Current Research On How People Learn

Lynn Tran, Research Specialist, Lawrence Hall of Science
Rita Bell, Director of Education, Monterey Bay Aquarium
Krislin Evans, Education Director, Birch Aquarium at Scripps
Sara Pelletier, Director, Marine Education Services, University of Texas Marine Science Institute
Lauren Rader, Chief Instructor, Project Oceanology

[ST] This session engages participants in a discussion on current research about how learning happens and how to support learning. The learning sciences offer insights and evidence on how learning occurs across multiple timeframes and settings. Participants talk about foundational ideas on learning, explore practical implications of current research, and share strategies for transforming practice. This session is an adaptation of a Research Discussion from the Reflecting on Practice professional learning program for informal science educators. [ESH104]
CONCURRENT SESSIONS

Holly Morin, Marine Research Associate, University of Rhode Island, Graduate School of Oceanography

[LM][E] Recent hurricane disasters illustrate the need for education about these large tropical cyclones. Hurricanes: Science and Society [http://www.hurricanescience.org] is a comprehensive resource on the science, impacts, and history of hurricanes. This hands-on workshop will engage participants in standards-based activities related to the science of hurricanes and recent research on the effects of climate change on hurricane intensity. Online resources and educator-developed activities will be shared. [RH110]

Alaska’s Environmental Literacy Plan (AKELP)
Kristen Romanoff, Wildlife Education Coordinator, Alaska Department of Fish & Game

[LM][E] Find out ways in which the Alaska Environmental Literacy Plan (AKELP) will support teaching and learning in STEMS (science, technology, engineering, math, social studies), enhance school grounds and create more sustainable communities. AKELP is a framework to guide PreK-12 schools in integrating environmental education, including outdoor learning as part of the school curricula with support from community partners. Learn more about the recently completed plan and how this effort will enhance teacher and student learning at your school. If visiting, join us to learn about the development of environmental literacy plans in your home state. [ES3H12]

Telling Our Stories Of Petroglyphs & Basket Weaving

Liz O’Connell, Producer, Director WonderVisions
Laura Nielsen, Social Media Curator, WonderVisions

[SA] FrontierScientists representative will present videos, web materials and describe collaboration with The Atiuiq Museum in a project titled Telling Our Stories. The Petroglyphs of Cape Aitlik and Basket Weavers videos are stories of traditional knowledge, historical perspective, and current practices told by the Atiuiq Museum scientists and basket weavers. The stories describe the Sugpiaq people, one of Alaska’s least known Native peoples, connection to their marine environment. Find videos on www.FrontierScientists.com. [ES3H20]

Establishing A Regional Education Collaboration To Engage Next Generation Of Leaders

Linda Robinson, Outreach Coordinator, Prince William Sound RCAC

[LM][E] In Alaska’s Chugach Forest Region and Prince William Sound, a diversity of public and private organizations are partnering to create field-based programs that combine outdoor adventures, participation in real research and monitoring projects, history and culture, and multi-media training as a means to engage our future leaders in the stewardship and conservation or Alaska’s public lands and natural resources. Representatives from some of these organizations will share resources and ideas for developing similar programs. [ES3H31]

MONDAY JUNE 25 11:55AM – 12:00PM

Project Dem Bones: Using Dead Critters To Attract High School Students To College Level Science

Shannon Atkinson, Professor, University of Alaska Fairbanks
Jim Pfeiffenberger, Education Coordinator, Kenai Fjords National Park

[SC] How do you get high school kids interested in marine science? Give them some dead critters, some scalpels, drills and glue, and let them go to town! Learn how hands-on marine mammal skeletal articulation projects can cross the curriculum, integrating math, art, social studies and science. This session will be part show & tell and part recipe for how to do an articulation project of you own with museum-quality results. [RH211]

Teaching Science Through Dance

Marita Kleissler, Education Specialist, Prince William Sound Science Center

[SC] Come experience science in motion! Learn how to create a science story through dance, using Labanotation, a system of analyzing and recording human movement. This session will teach you the tools needed to build dances about science. The water cycle will be explored in this session. Please wear comfortable clothing, as you will be building a science dance story! [SMH103]

Understanding STEM Principles And Common Core Literature For Elementary Teachers

Becky Cox, Associate Professor of Educational Studies, University of Tennessee at Martin

[ST] Elementary teachers of students in grades K-5 are expected to teach STEM Principles effectively. Additionally, Common Core Literature Standards are being required. How confident are you in meeting these expectations? Participants in this session will review the STEM areas and learn how to integrate strategies for effective STEM learning through hands-on, minds-on activities. Aquatic and marine themed literature from Common Core Standards literature will be shared. Receive lesson plans and activities. Door prizes given. Join us! [RH117]

Looking For A Way To Engage Your Students In The Study Of Climate Change And Ocean Acidification? Our Inquiry-Based Activities And Virtual Lab Are Made For You!

Pam Miller, Curriculum Coordinator, Hopkins Marine Station

[ST] To increase secondary school students’ awareness about ocean acidification (OA), we created two computer-based activities. The first activity is a virtual laboratory helping students understand what OA is while the second activity is an interactive talk by a scientist explaining the potential global impact of OA. Join us and learn how your students can play virtual scientists and discuss with a real one! [ESH104]

One World, One Ocean: Outcomes Of The Ocean For Life Program

Claire Fackler, Ocean for Life Program Director, NOAA Office of National Marine Sanctuaries

[SC] What happens when you take high school students from the Middle East region together with students from the US and challenge them to think outside the box about the ocean, themselves, and their world? How can you prove this program was effective? Ocean for Life empowers students to make a difference, but how do we know? Hear from program organizers about the evaluation process and results and get ideas for your own program evaluation. [ES3H206]

NOAA Scientists + Teachers = Science Fairs, Camps And Teachers In The Lab, Examples Of Stem Activities To Increase Scientific Literacy (Joint Presentation)

Bonita Nelson, Fisheries Research Biologist, NOAA Fisheries, Auke Bay Laboratories
Kathleen Galau, Science Teacher, Thunder Mountain High School
Lara Dzinz, Science Teacher, Juneau-Douglas High School

[LM][E] Learn about conducting a successful high school science fair including finding a mentor, project choice, score sheets, judging, core structure and construct successful displays for students and judges. Examples of how science fair positively influenced student’s lives and enhanced research will be explored.

The session focuses on inquiry based experiments and experiences developed jointly with NOAA scientists and teachers which have been successfully used with middle school and high school level students in marine classrooms and summer science camp settings. Activities include oil spill clean up, drogues, plankton tows, chart activities, and psp testing.

This presentation will discuss how we expanded the “Teacher in the Lab Program” into a curriculum designed to expose high school students to careers in science and maritime industries. While most extracurricular science activities are typically geared towards advanced students, our program focused on “at risk” freshmen. We
CONCURRENT SESSIONS

will review the methods we employed to engage students, provide examples of activities, and provide ideas on how to expand our methods beyond the marine environment. [RH110]

Plotting A Course To Optimize Literacy Pedagogy
Amy Gillan, Asst. Professor of Science Teacher Education, Saint Mary’s College at Notre Dame
Diana Payne, Asst. Professor and Education Coordinator, Connecticut SeaGrant
Meghan Marrero, President, New York State Marine Educators Association, Assoc. Professor of Secondary Education, Mercy College
Amanda Jaksha, Department of Teaching, Learning & Sociocultural Studies, University of Arizona

[LME] Moderated by NMEA President Diana Payne, this panel discussion of current research efforts will focus on the development of ocean sciences pedagogical content knowledge (PCK), the connection between the role students’ environmental identity plays in the development of ocean stewardship, attitudes and behaviors, and how the Great Lakes and Ocean Literacy principles can be extended to curricula devoted to isolated, inland lakes by capitalizing on the ‘flipped classroom’ concept. Input from other marine educators welcomed! [ESH212]

New Technologies For Reaching All Audiences: Science In A Sphere, Videoconferencing And iPad Apps!
Sarah Swain, Education Technology and Media Coordinator, Aquarium of the Pacific

[ST] The Aquarium of the Pacific has recently added several new technologies to further enhance our abilities to reach audiences. The recently produced Science on a Sphere program “A Rising Sea” helps to connect audiences with the impacts of climate change through the use of stunning visuals. Interactive videoconferencing has expanded our reach from Alaska to Florida! Additionally, a new interactive iPad app, “build a fish”, is connecting our guest experience from Aquarium to home. [ESH205]

Next Generation Science Standards And Ocean Literacy: Updates And Looking Ahead
Lynn Whitely, Education Director WIES and co-director COSEE-West, USC Wrigley Institute for Environmental Studies
Craig Strang, Associate Director, LHS and director COSEE-CA, Lawrence Hall of Science
Peter Tuddenham, (COE)
Diana Payne, UConn SG
Carmelina Livingston, NSF Einstein Educator Fellow

[ST] NMEA and COSEE are a “Critical Stakeholder” for the Next Generation Science Standards (NGSS), due for release in early 2013. Hear about and discuss our efforts on behalf of the Ocean Literacy Campaign and the role ocean sciences will play in the future of science education. A final public review of the NGSS will take place this fall, representing our last chance to ensure the efficacy of this 10 year effort by our community. [ESH315]

MONDAY JUNE 25 1:30PM - 2:15PM

A Salmon’s Sky View – Teaching The Salmon Life Cycle Through The Arts
Carol McDougall, Teacher, Arbutus Global Middle School, Greater Victoria School District

[SA] Participants will explore learning science through the arts using the award winning non-fiction picture book, “A Salmon’s Sky View”. They will discover how this resource engages student learning. While working with the author/illustrator Carol McDougall, B. Ed., M.A., participants will see how students responded artistically to the life cycle of the salmon from the salmon’s perspective. Participants will have an opportunity to explore the art response using permanent ink and watercolor. [RH211]

Marine Science And Art – The Power Of Combining Words, Art And Photos
Nora L. Deans, North Pacific Research Board; Eric Cline, Terragraphica
Jaci Tomulonis, Monterey Bay Aquarium

[SA] In a time when the oceans are threatened on every front, art reminds us of our humanity, of our relationship and responsibility to the world. Science has trained me to see beauty in discovery. Nature has shown me that art is her sister,” writes phycologist Dr. Judith Connor in Jellies: Living Art. Her words inspire what we will explore in this session - the power of art to engage public audiences with ocean science. We will share how artists team with organizations like the North Pacific Research Board and Monterey Bay Aquarium to communicate and inspire about ocean science – from photographs of Alaska’s remote seas to exhibits about plastic debris to Andy Goldsworthy style sculptures you can do in your classroom. [RH111]

Hey @Julie and @Jim! Are you at the #beach #clean-up?: Leveraging Social Media For Marine Science Education
Julie Henry, Director, Conservation Enterprises Unlimited
Jim Wharton, Director of Conservation and Education, Seattle Aquarium

[ST] From hashtags and QR codes to check-ins and Google analytics, social media tools provide a rich opportunity for marine science educators. We’ll show you some practical tools and techniques that can be implemented on any scale at any organization with strategic time investment. We’ll also share the latest research and trends to follow in this ever-changing field. Whether you’re a new ‘friend’ or a seasoned #pro, we invite you along – live tweeting will be encouraged! [RH117]

Physical Science With A Marine Perspective: The Use Of Underwater Sound
Kathleen Vigness-Raposa, Senior Research Scientist, Marine Acoustics, Inc.

[ST] Explore how to teach physical science concepts using underwater sound to give your students a deeper understanding of science. This hands-on workshop will help educators incorporate the science of underwater sound, including sound movement and measurement, into their science programs. Sources and uses of sound, and potential impacts on marine life will also be discussed. On-line resources will be shared (http://www.dosits.org), including an audio gallery of underwater sounds. Participants will receive free CD-ROMs. [ESH203]

Learn Conservation Of The Past Embrace It In Your Future
Amy Gollenberg, Education Manager, Dolphin Quest Hawaii

(SC) As with many native cultures, we can learn from Hawaiians and their indigenous conservation practices. At Dolphin Quest Hawaii, we embrace our unique surroundings and inspire people every day in public and school programs by capitalizing on the awe our guests experience. We will share key strategies for educators to incorporate Polynesian lessons and conservation practices into their classrooms. [RH101]

National Ocean Sciences Bowl’s Regional Hurricane Bowl Diversity
Leah Gaines, Marine Education Specialist, University of Southern Mississippi’s Gulf Coast

[SC] A report on our collaboration with 5 high schools with a high percentage of underrepresented and underserved students from five different states in our region (MS, AL, LA, FL, TN). Participants took part in field trips and site visits to prepare for the Hurricane Bowl, a national science oceans quiz bowl competition. This session will look at the successes and needed improvements of the program, and its application in other areas of the country. [SMH103]
Collaborations: A Confluence Of Interests Can Keep Your Project/Organization Afloat!
Carol Leonard, H.S. Teacher, Retired, Board of Directors CWC, Inc. and FMSEA Historian

[LM] FMSEA Historian, multi-award winning educator and current not-for-profit director will share the story of Florida’s successful collaboration of an NMEA chapter and a state agency that keeps membership thriving while serving needs of the agency. Since 1997, our Aquatic Species Collection Workshop has attracted educators from all over Florida. Other long and short term projects will be highlighted. Bring your ideas and questions to this sharing session. [RH110]

Alaska’s Large Marine Ecosystems: Integrated Research, Integrated Outreach And Education
Robin Dublin, Executive Director, COSEE Alaska

[LM] Over the past two years, COSEE Alaska, the North Pacific Research Board, Alaska Ocean Observing System (AOOS), Arctic Research Consortium of the United States (ARCS), and Monterey Bay Aquarium and Research Institute (MBARI) developed ecosystem workshops designed to bring teachers and ocean researchers together to learn from one another and collaborate on educational activities. Our three workshops focused on the Bering Sea, the Gulf of Alaska and the Arctic Ocean. This workshop will present the workshop model, evaluation information from participants and highlight the resources including SEANET, developed through these “meetings of the minds.” [RH220]

The Impacts Of Coastal Climate Change In The Northeast: The STORMS Project For K-8 Students
Rachel Thompson, Education Associate, Island Institute

[ST] The STORMS project, funded by the National Science Foundation, worked closely with the un-bridged island and remote coastal community schools of Maine. The project’s focus on weather, storms, and climate is particularly relevant for these communities, for they are economically dependent on the ocean - fishing and seasonal tourism are their lifeblood. This presentation will share the project model, K-8 student work, and evaluation findings from this technology infused place-based STEM project. [ESH206]

Engaging Student And Public Audiences With Ocean Sciences Quiz
Kathleen Meehan Coop, NOSB Director, Consortium for Ocean Leadership

[LM] Participants will engage in a round table discussion on how the Ocean Sciences Quiz (OSQ), an online educational game, can be used to engage and educate users on marine science topics – from sample lessons and connections to science standards to best practices for using technology in both traditional and informal settings to create a cooperative and enjoyable learning environment. Participants will also play the OSQ – competing for fun prizes and bragging rights. [ESH315]

MONDAY JUNE 25 2:30PM - 3:15PM
Sea Unseen: An Exhibit, Book, Educational Poster And Video Of Photographs Taken With A Scanning Electron Microscope
Casey Raiston, Education Coordinator, NOAA’s Northwest Fisheries Science Center Carla Stehr, Retired NOAA Fisheries Biologist

[SA] The Scanning Electron Microscope is a state of the art technology that uses electrons to magnify images up to 300,000 times. This session will feature NOAA fisheries scientist and artist Carla Stehr’s photographs that have a 3-D appearance that is beautiful and informative. The “Sea Unseen” resources include highly-magnified images of fish scales, sensory cells, diatoms, marine worms and octopus suckers, among other intricate structures and sea creatures that cannot be seen by the naked eye. [RH211]
design process through interactive demos. Participants will also be exposed to the basic principles of classroom scale underwater technology design as exemplified by the Sea Perch ROV, a simple and inexpensive vehicle which students can build, modify, and operate. Includes a hands-on session to learn about building a Sea Perch ROV. [RH111]

Community Partnerships (Joint Presentation – Double Session: 2:30pm - 4:15pm)
Sharing Knowledge, Leveraging Resources: A Partnership Model
Allen Marquette, former Community Education Coordinator, Prince William Sound Science Center

[SC] Providing quality science programs on a weekly basis in remote communities is a challenge. The Prince William Sound Science Center community lecture series began with a total of 6 people attending. Last year over 1440 people attended 41 programs. By partnering with the U.S. Forest Service, Marine Advisory Program, Audubon Chapter, and Valdez Community College, we provide live presentations to Valdez and other communities in PWS. Discover how to provide science presentations in your community. [RH101]

Building An Ocean Science Learning Network: Fostering Collaborations With The Informal Science Community
Laura Diederick, Education Specialist/Informal Education Manager, Smithsonian Marine Station/COSEE Florida

[SC] A primary initiative of COSEE Florida is to create an active, statewide Ocean Science Learning Network through which ocean scientists can broadly disseminate their research. COSEE Florida has successfully fostered a number of mutually beneficial relationships outside its core group of partner organizations, resulting in opportunities for scientists to engage in educational outreach. This presentation will highlight the collaborations between ocean scientists and informal science facilities and discuss the strategies employed to achieve them. [RH101]

Building A Learning Experience: Supporting Teachers And Improving Field Trips
Nicole Scola, Supervisor of Teacher Services, New England Aquarium

[SC] The New England Aquarium has worked on improving the field trip experience for students, teachers, chaperones and Aquarium staff. Of the various approaches we’ve taken, preparing teachers has proven to be most successful. Through school partnerships, free admission program, and preparation workshops we have found strategies that help teachers enhance and expand their student’s knowledge and skills. We will share some of our challenges, approaches to overcome those challenges and evidence that it works. [RH101]

Connecting With The Past: Coastal Archeology In The Kenai Fjords
Jim Pfeiffenberger, Education Coordinator, Ocean Alaska Science and Learning Center

[SC] The Kenai Fjords, often viewed as an untouched wilderness, is actually a cultural landscape that had a thousand or more years of human occupation before Europeans arrived in Alaska. Learn about how this cultural past was investigated by the Smithsonian Arctic Studies Center in an innovative project that involved traditional knowledge and descendants of the ancient villagers who once inhabited the fjords. [ESH206]

Ocean Sciences Sequences Curriculum Materials For Grades 3-8
Catherine Halverson, Professional and Curriculum Developer, Lawrence Hall of Science, UC Berkeley
Craig Strong, Assoc. Director, Lawrence Hall of Science

(LME) Immerse yourself in inquiry-based activities from two NOAA funded, grade-specific curriculum materials designed to bring ocean sciences to life for grades 3-5, and to explore the connections between ocean, atmosphere, and climate change in grades 6-8. Lawrence Hall of Science and Rutgers University collaborated to develop these nationally field-tested materials, providing students with opportunities to learn standards-based science concepts, while practicing the skill of making evidence-based explanations. Participants receive copies of activities done in the session. [RH110]

Map, Maps Everywhere, How To Find Them And Why We Care (Joint Presentation)
Danielle Schmitt, Academic Lab Manager, Princeton University Jessie Kastler, Coordinator of Program Development, Gulf Coast Research Laboratory – Marine Education Center

[ST] Explore a variety of place-based information with audiences of any learning level using maps. Orient yourself to Alaska while learning the essential components of maps. Teach watershed concepts using USGS maps and change over time using Google Earth. Then move offshore to observe ocean distributions of chlorophyll and how they change seasonally. Participants will complete and receive an activity that encourages students to observe, question, explain and explore the processes that create observed patterns. [ESH203]

American’s Ocean Awareness And Literacy: A 2012 Update
Wei Ying Wong, Communications Project Coordinator, The Ocean Project

Bill Mott, Director, The Ocean Project

[SC] Since The Ocean Project’s 2008 large scale market research America, the Ocean, and Climate Change, we have continued to track American’s attitudes and values vis-a-vis the ocean, climate change, and related conservation issues. These monthly tracking data allow us to keep a pulse on public opinion, and yield important information about challenges and opportunities for motivating the public to take conservation action. We will discuss the implications of these findings for strategic communications that result in measurable outcomes. [ESH315]

MONDAY JUNE 25  3:30PM - 4:15PM

Ocean FEST Hands-On Workshop
Barbara Bruno, C-MORE Education Director, C-MORE

[SA] Ocean FEST is a fun, engaging program of hands-on activities that integrates current research to educate participants about marine science issues. Themes include climate change, sea level rise, coral reef ecosystems, marine microbes and marine science careers. This program works well in elementary and middle school classrooms, or as an informal family science event for all ages. All participants will be given free supplies to deliver Ocean FEST activities in their classroom or community. http://oceانfест.soest.hawaii.edu [RH211]

Using Art And Language To Engage Student Learning About The Alutiiq Culture
CJ Rea, Education Specialist, Kenai Fjords National Park

[SA] Have you ever pressed algae? Used an art show to help students look more closely at an aspect of science? Used art to explore native culture? Art is a wonderful and under used tool for reaching out to students who may not be responding to other methods of learning. Come to listen and share ideas about art and inclusivity. [SMH103]

Tsunamis: Mobile Apps, Exhibits And Outreach
Leon Geschwind, Education Technology Specialist, The Baldwin Group at NOAA Pacific Services Center

Stephanie Bennett, Management and Program Analyst, NOAA Pacific Services Center

[ST] NOAA Pacific Services, Bishop Museum, and the Pacific Tsunami Museum have developed a suite of educational programs, outreach, and exhibits to educate students and the public on tsunamis. The outputs include a tsunami awareness day event, exhibit kiosks (evacuation zones mobile application and survivor stories), safety booklets, and educational programs. We will discuss best practices and lessons learned, and provide insights on how to incorporate tsunami education in your local community. [RH117]
Alaska Seas And Rivers Curriculum Overview
Beth Trowbridge, Executive Director,
Center for Alaskan Coastal Studies
(LME) Learn about the newly revised Alaska specific web-based curriculum that was designed by teachers and scientist working together and incorporates best practices in teaching such as the use of science notebooks, assessment probes, field trips and integration with community resources. All lessons are aligned with state and national science standards as well as ocean literacy principles and culturally relevant standards. Hands on examples will be included. [ESH206]

Research-Educator Exchange Forum (REEF): Partnerships For Extending Marine Science Research To Different Audiences
E.V. Bell, Marine Education Specialist, SC Sea Grant/COSEE SE Meika Samuel, Director of Operations, South Carolina State Museum
(LME) Communicating marine science research to different audiences was the focus of the COSEE SE Research Educator Exchange Forum. Teams comprised of marine scientists, formal/informal educators and media specialists from NC, SC and GA discussed communication strategies and planned outreach events. One outreach event will be featured: “Science in Action – A Night at the Museum” was coordinated by University of South Carolina scientists, hosted at the SC State Museum, and served over 100 educators. [RH110]

Seabirds And Climate Change
Lisa Matlock, Education Specialist,
Alaska Maritime National Wildlife Refuge
(LME) For over 30 years, the Alaska Maritime National Wildlife Refuge has monitored the health and abundance of seabirds across Alaska’s coastline. This research was used to develop a secondary/college level educational unit that puts students in the place of seabird biologists learning how to count and monitor seabirds and how to analyze data. Participants in this session will gain understanding of Refuge field science methods and trend analysis during this interactive program. [RH220]

Live From The Ocean! Inspiring Audiences With Ship To Shore Programs
Sharon Cooper/Leslie Peart, Asst. Director and Director, Deep Earth Academy
Jennifer Magnusson, Onboard Education Officer, Deep Earth Academy
(ST) Have you ever wanted to connect your students, teacher groups, or visitors to exciting research at sea? We’ll show you how! Chat live with scientists onboard JOIDES Resolution Expedition 342 while they conduct deep-sea research near the site of the Titanic’s sinking. Learn how we use a variety of technologies to connect students, teachers, and the general public to ocean research, find out how to link with the JR throughout the year, and give us your feedback! [ESH203]

Student Exploration Activities Based On River-Fjord Dynamics In Southern Chile
Luis Pinto, Education and Public Outreach Coordinator,
Center for Oceanographic Research in the eastern South Pacific
(LME) Based on thematic research programs carried out by COPAS Sur-Austral, an oceanographic research center in the fjord region of Chile, local teachers and students are participating in a number of exploration activities on board ships. The program is seeking opportunities for collaboration with marine educators overseas. Current development of lesson plans is broadening the scope of ocean principles to estuarine and freshwater ecosystems. [ESH315]
Connect, Inspire And Teach Using Oral Storytelling

Cynthia Cudaback, PhD, Ocean and You

(SA) Oral storytelling can expand your students’ minds, touch their hearts and even teach science. More than reading, storytelling is the art of connecting with your audience. I shall share some of my stories, about love and loss, gritty truths of life at sea and the dangers of whistling for a wind. These same stories teach the science of evolution and the physics of the tides.

Please consider bringing a story or fragment to share and develop. I’ve studied with some of the best tellers in the country and am eager to share what I’ve learned. [RH316]

Integrating Art Into Deep Ocean Science

Sharon Cooper, Asst. Director, Deep Earth Academy,

Consortium for Ocean Leadership
Leslie Peart, Director, Deep Earth Academy,

Consortium for Ocean Leadership

(SA) Deep Earth Academy has integrated art and science in a number of ways over the past 8 years – utilizing berths on the scientific ocean drilling ship JOIDES Resolution for artists and computer animators, creating innovative videos and visual art products, and launching the J/oART contest – all to encourage new ways to look at deep ocean science, engage new audiences, and make that science more accessible. This session will explore these tools and products and provide opportunities to become involved! [ESH216]

Aquariums And Climate: A Case Study

Megan Ennes, Education Program Specialist,

North Carolina Aquarium at Fort Fisher

(ST) Learn how the North Carolina Aquarium at Fort Fisher is using an inflatable immersive theater, interactive exhibits, and youth groups to teach about climate change. This session will focus on aquarium teens’ efforts to teach about local climate issues. Watch their film and lean how to use this tool in your classroom. The film comes with a website that includes background information and a supplemental curriculum to help you teach your students about climate change. [ESH205]

Real Time Data To Teach STEM (Joint Presentation)

Wave Of The Future: Using Ocean And Coastal Data To Teach STEM

Pat Harcourt, COSEE West Program Manager, Wrigley Institute for Environmental Studies, University of Southern California
Dr. Rachel Kennison, Co-Director, COSEE-West, UCLA

(ST) Are you in the doldrums teaching math and science? Here’s a fresh breeze of ideas to show you where to find student-friendly satellite images and ocean data, and ways to use them to teach graphing skills and basic statistics. We’ll show how to interpret patterns and relationships between physical and chemical factors and harmful algal blooms, kelp distribution, and species ranges. We’ll supply resources and information for using real ocean data with students. [RH117]

Cool, Refreshing, And Packed Full Of STEM: Sea Breeze

Christopher Petrone, Marine Education Specialist,

Delaware Sea Grant/ U. of Delaware

(ST) What do you think of when you hear the term “sea breeze”? While seemingly not the most charismatic of coastal science topics, sea breezes have substantial implications for agriculture and tourism, two large drivers of our economy. Learn more about current research on this cool phenomenon, how sea breeze is affected by coastal urbanization, and how you can use the latest data to build students’ skills in interpreting graphs, evaluating real-time data, and critical thinking. [RH117]

Broader Impact Collaborations Made Easy – A New Tool

Mark Wiley, Asst. Director for Education, UNH CE/NH Sea Grant
Stephen Engstrom, Senior Aqaurist, Seacoast Science Center

(ST) NSF-funded research requires that researchers participate in “broader impact” activities. Such activities often involve collaborating with formal and informal educators. COSEE-Ocean Systems is developing an on-line tool to help both scientists and educators identify ways to make such collaborations easy and effective. This session will explore the tool and discuss its development, use, and future. [ESH206]

Harmful Toxins And Invasive Species In The Classroom (Joint Presentation)

Harmful Algal Toxins, Seafood Safety, And Marine Mammal Health: Bringing NOAA Science To The Middle School Classroom

Casey Ralston, Education Coordinator,

NOAA’s Northwest Fisheries Science Center
Christine Benita, Science Specialist, Jane Addams K-8, Seattle Public Schools

(SC) Fish and Shellfish are an important food for many Pacific Northwest tribes and coastal communities. Outbreaks of toxic algal blooms can release dangerous levels of the neurotoxin Domoic Acid which makes this seafood unsafe to eat. This session will introduce a series of new lesson plans that translate NOAA Harmful Algal Bloom Research for the 5th-8th grade classroom. Come learn about HAB’s, how algal toxins are measured, and how HAB toxins can impact wildlife and human health. [RH111]

Mitigating Perceived Barriers To Reducing The Potential For Schools As Pathways For Invasive Species

Wei Ying Wong, Communications Project Coordinator,

The Ocean Project

(SC) Live organisms have long had their place in the classroom as pets, teaching tools and experimental subjects, and in our study of 10 US states and Canadian provinces, the classroom was also a relevant and pervasive pathway for the introduction of invasive species. We will present findings from our US/Canada focus groups on the perceived barriers to reducing the potential for schools as pathways for invasive species, and examine the challenges and opportunities for overcoming them. [RH111]

Marine Science: A Foundations Course For All The Sciences

Thomas Greene, Adjunct Professor of Science,

Dept. of Physical Science, Kingsborough Community College

(LME) Teach marine science, a course in marine biology and oceanography containing subject matter in biology, chemistry, earth science and physics. Participants will receive a CD containing the syllabus, curriculum, lesson plans, labs and exams. [RH110]

Communicating Climate Change (Joint Presentation)

Laura Sturtz, Interpretive Operations Supervisor,

Kenai Fjords National Park
Jenna Giddens, Park Ranger, Kenai Fjords National Park
John Morris, Interpretation Program Manager, National Park Service

(LME) Does talking about climate change or oceanic issues make you break out in a cold sweat? If so, this session can help you become more comfortable and confident in bringing critical and sometimes controversial topics to your audiences. Learn: to understand your audiences’ point of view, techniques for discussing critical resource issues, and how to feel more comfortable when confronted by a skeptic.

Are you grappling with climate skeptics? Still finding climate change controversial? Learn the basics of climate science and strategies and techniques for successfully responding. This interactive session will engage participants with sample products and explore typical responses to climate change with associated examples of applied science and interpretive techniques. We will demonstrate methods for addressing misconceptions. Resources for those who desire to gain more background on climate change and its expected impacts will be provided. [RH211]

Marine Debris And Plastic Pollution

Kathy McElroy, Senior Education Specialist, Monterey Bay Aquarium
Jennifer Matlock, Monterey Bay Aquarium
Three Teacher Technology Experiences to highlight current research topics and the technologies used to study the ocean. Participants will learn about the successes and challenges of one TTE (The Courtship of EVA and BOB) and its implementation as citizen science activities in the classroom. [ESH205]

**Real Time Data To Teach Ocean Science**

Paulo Maurin, Education and Fellowship Coordinator, NOAA Coral Reef Conservation Program

Walk away with an overview of NOAA’s Data-in-the-Classroom NODE module on ocean acidification, with scalable set of lesson plans using real data, and an OA Ed DVD. Come learn the science of OA, how it affects coral reefs, and how to teach it effectively. Session will cover the lesson plans that combine near real-time data within a solid educational approach of increased student engagement, paired with demos and online simulations, culminating in student-driven research. [RH117]

**Professional Learning: Technology, Partnerships And Culture**

Lori Perkins, Interpretation Manager, Aquarium of the Pacific

David Bader, Education Director, Aquarium of the Pacific

The Aquarium of the Pacific has been building institutional capacity to interpret about complex ocean issues through technology, professional learning, and partnerships with climate scientists, social scientists, and other informal educators. Providing the highest quality science communication starts with an investment in staff. We present our multi-faceted approach to collaboration, challenges, and opportunities that have shifted the culture of the department into one of continued learning. [ESH206]

**Partnering To Create Marine Science Family Events**

Kate Leavitt, Marine Science Program Coordinator, Seacoast Science Center

Perrin Chick, Education Director, Seacoast Science Center

SC Why is it so hard to cultivate and sustain meaningful relationships with our hard-to-reach audiences? This NOAA-funded project takes a collaborative approach; marine education centers partner with community organizations to create fun, replicable marine science events designed with the help of partner families. We will share our innovative model, the keys to our success, and send you off with a strategy packet of templates to plan your own audience-informed World Oceans Day or other events. [RH111]

**Revamping The Introductory Lecture And Laboratory Curriculum For A New Undergraduate Marine Science Major At The University Of New England: Challenges And Rewards**

David Guay, Assoc. Lecturer, Dept. of Marine Sciences, University of New England

Leah Bymers, Asst. Lecturer, Dept. of Marine Sciences, University of New England

Transitioning to an undergraduate marine science major from a biology-based major requires significant curriculum revision. Our presentation focuses on the development of a full-year introductory curriculum in marine biology, with emphasis on ecology, evolution, cellular and molecular biology. We discuss using marine-themed lectures to explore biological and ecological principles, and present laboratory exercises we have developed. The challenges and benefits of using a marine-based first-year curriculum, and effects on recruiting students, are also discussed. [RH110]

**Learning About The Balance Of Climate Through Games**

Megan Moore, Visitor Programs Specialist, New England Aquarium

Teaching about climate in a concrete, interactive and fun way can be a tall order. Come play with new ways to teach about ecological footprints, carbon sinks and sources, ocean acidification, how our actions are connected to ocean animals, and more through a series of small-scale exhibit games. The New England Aquarium has been in a climate change collaborative with the National Aquarium in Baltimore and the Monterey Bay Aquarium through funding from NOAA. Our role has been to design activities focused on climate each year for three years. Our tool box of interactive exhibits focus on themes of balance, interconnections, and innovation. Participants will spend time playing with each interactive, learning more about...
CONCURRENT SESSIONS

TUESDAY JUNE 26  1:30PM - 2:15PM

Preserve Biodiversity And Stop Aquatic Invaders
Helen Domske, Sr. Extension Educator, New York Sea Grant
Robin Goettel, Assoc. Director for Education, Illinois-Indiana Sea Grant Program

(LME) Aquatic invasive species (AIS) pose a serious threat to ecosystem biodiversity. Education about the biology, spread, impacts, and control of AIS plays a key role in ecosystem protection. This workshop will provide hands-on experiences using many instructional modes and activities. You’ll receive two CDs of curricular materials, games and sample action plans, and gain insight into developing your own classroom AIS action plan. Project funded through a Great Lakes Restoration Initiative grant. [ESH203]

Science And Policy: Helping Students Make The Connection
Melissa Brodner, NOSB Program Specialist, Consortium for Ocean Leadership
Dan Albrecht-Mallinger, NOSB Program Assistant, Consortium for Ocean Leadership

(LME) The session will begin with a brief presentation on the Science Expert Briefing, a new element in the National Ocean Science Bowl (NOSB) Finals Competition – focusing on the format, structure and lessons learned. The session then will transition to a round table discussion on how this type of exercise can be included in formal and informal education programs to help students gain a more comprehensive understanding of the interconnection of science and policy. [RH315]

Just Say No! (To Antimicrobials) – Microbiology Themed Education
Joshua Huskey, Microbiology Student, University of Tennessee

(SA) The most abundant and unique life on earth is found when you look under a microscope. This program ranges in topics from simple geometric shapes in diatoms to complex metabolic pathways and niches of Archaea that thrive around hydrothermal vents. Also, it introduces students to the world of microbiology, an ever expanding and research driven field of study. [RH16]

Sharks, Shores And A Whole Lot More!
Summer Rohe, Marine Education Specialist, USM Gulf Coast Research Laboratory Marine Education Center

(SA) Dive into the waters of the MS Gulf Coast, the Barrier Islands, and get up close and personal with the oceans top predators! Learn more about the experiential learning opportunities available at USM’s Gulf Coast Research Laboratory Marine Education Center! [ESH216]

Diving Into Marine Education: The University Of Hawai’i Marine Option Program’s Scuba Diving Field Schools
Jeff Kuwabara, Coordinator, University of Hawai’i at Manoa Marine Option Program (MOP)

(ST) Each summer the University of Hawai’i Marine Option Program (MOP) holds two scuba-based field schools targeting undergraduates interested in applying scuba to their studies. Quantitative Underwater Surveying Techniques (QUEST) teaches methods of monitoring coral reefs, while Maritime Archaeology Surveying Techniques (MAST) applies scuba to submerged cultural resources. This presentation gives a colorful overview of these projects and discusses how an immersive experience can springboard students toward aquatic careers. [ESH212]

Virtual Field Trips As A Scientific Tool
Darin Trobaugh, Education Specialist, Alaska SeaLife Center
Laurie Morrow, Sr. Education Manager, Alaska SeaLife Center

(ST) The Alaska SeaLife Center will showcase two virtual field trips highlighting recent research studying walrus and sea ice organisms in the Bering Sea and Arctic regions. These virtual field trips present scientific research in a manner that is exciting to students and accessible to the general public. We will discuss the value of virtual field trips as potential outreach for researchers and as online learning tools for classroom educators. [RH211]

The “Nature” Of Oral Histories
Jennifer Buchanan, Education Coordinator, MS DMR
Grand Bay National Estuarine Research Reserve

(SC) Recently, we began collecting oral histories from community elders to connect our community members to our Reserve and to help document historical land-use changes. In this presentation, I will demonstrate how we use the information we gather through our interviews not only in our interpretive center for educational purposes but also in the restoration of our adjacent wetlands and wildlands. I will conduct mini-breakout interview sessions to demonstrate techniques. [ESH206]

Where Culture And Science Meet: Sharing Experiences From Stewardship Camps (Joint Presentation)
Michael Opheim, Environmental Coordinator, Seldovia Village Tribe
Bree Murphy, Program Specialist, NOAA National Estuarine Research Reserves

(SC) Join the Seldovia Village Tribe in learning how they have engaged Elders, hunters, environmental educators, scientists, and other local experts into their Science and Culture camps. Hear their strategies used to make learning at the convergence of science and culture a success in their community. Results of a collaborative research project aimed to better understanding this learning environment will also be shared, as well as perspectives on conducting collaborative research in the camp setting. [RH111]

Teach Marine Biology To HS National Biology Standards
Mark Friedman, Chair, Animo HS Science Department
Rachel Kennison, COSEE-West Co-Director

(LME) A complete course for high school students incorporating “ocean Literacy” objectives & covering all state & national Biology Standards. Consider this exciting proposal: a comprehensive biology course focusing on marine life to teach all the biology standards! Why not teach Marine Biology in high school? Use marine biology as a hook to engage your students and have them excel on the state biology exam. Developed by Los Angeles area high school teachers who currently teach Biology and Marine Biology with support from COSEE-West. Lesson plans, labs, activities, games, puzzles, web interactives, movies with thought questions, webquests, etc. Many resources available in Spanish for ELL. Non-copyrighted components available on the COSEE-West website. A Powerpoint showing the places and context for these camps followed by several successful interactive camp activities. [RH111]

A Perfect Fit: Aligning The Principles Of Ocean Literacy With The Common Core State Standards
Eileen Biegel, Curriculum Integration Specialist, Duval County Public Schools, Spring Park Elementary

(LME) Learn how the Common Core State Standards easily align with the Essential Principles of Ocean Literacy. Using the National Marine Sanctuaries as a foundation, I will present how teachers can rise to the challenge of meeting the standards while integrating the Essential Principles of Ocean Literacy into the curriculum. A variety of content area teaching strategies, classroom activities, resources and ideas to implement in your classroom will be presented. [RH211]
**TUESDAY**

**Steller Science: Integrating Marine Technology And Research In The Classroom**
Lisa Mulcahy, Education and Outreach Specialist, Consultant to Oregon State University, MarEPOsa
Dr. Markus Horning, Associate Professor, Oregon State University, Marine Mammal Institute

(ST) Engage students with exciting research on endangered Steller sea lions and the remote monitoring technology used to study them. We will introduce a STEM curriculum for 6th-12th grades aligned to Ocean Literacy Principles and Science Content Standards. Participants use hands-on activities from the lessons to understand marine technology, physical science principles, and engineering. Lesson plans, links to downloadable curriculum, and web resources will be provided. [ESH203]

**Productive Plankton**
Stephanie Serra, Marine Educator I, Dauphin Island Sea Lab
Joan Turner, Marine Educator III, Dauphin Island Sea Lab

(LME) Plankton is very important and frequently the smallest inhabitants of our Earth’s waters. Plankton is one of the biggest influences to all life on Earth from health and beauty (Did you brush your teeth this morning?), life and death (Bottom of the Oceanic Food Chain), and even economic impacts (Did you ride in a car today?). Our hands-on activity will focus on Jellies feeding. Have you ever tried to snag a tiny morsel with tentacles? [RH315]

**The Art Of The Ocean – Diving Our Blue Planet**
Jacqui Stanley, Teaching Artist/Marine Educator, Young Audiences of Houston

(SA) By studying marine science through art, students become invested in the ocean as they learn about the marine environment through their creative interpretations. The unit begins with a lesson on shape as students draw themselves as SCUBA divers. During the unit, students, as diver explorers, study different parts of the ocean, and learn about how different cultures use art to tell stories about ocean creatures and habitats and how we are all connected. Lesson plans and ideas will be provided. [RH316]

**Impacts Of Pharmaceuticals On The Ecosystem (Joint Presentation)**
Terri Hallesy, Education Specialist, Illinois-Indiana Sea Grant, University of Illinois
Robin Goettel, Assoc. Director of Education, Illinois-Indiana Sea Grant, University of Illinois

(LME) Medicine usage is increasing on a yearly basis. With this comes concern regarding unwanted medicines’ impact on aquatic organisms and human health. Improper medicine disposal poses poisoning risks to children, the elderly, pets, and can lead to drug/identity theft. Engage in activities to teach youth and adults to become watershed stewards. Receive a CD containing  two curriculum guides filled with engaging activities and a toolkit on how to get a community collection program started. [ESH216]

Marli Martz, Coastal Outreach Specialist, Pennsylvania Sea Grant
Helen Domske, Sr. Extension Specialist, New York Sea Grant

(LME) Coastal ocean waters and the Great Lakes have been impacted by chemicals from pharmaceuticals and personal care products. The impacts range from harming fish and other aquatic wildlife, to negative impacts on human health. Learn how to deal with this emerging issue from GL Sea Grant educators involved in a successful USEPA funded project. Receive a jumpdrive full of curricula and information on how to get this message out to students and other stakeholders. [ESH216]

**El Niño Explained: Using NOAA Data To Explore Climatic Changes**
Michiko Martin, Communications, Outreach & Education Chief, NOAA National Marine Sanctuaries

(ST) NOAA has observing systems that monitor oceanic, atmospheric and terrestrial parameters. These data offer broad opportunities to teach dynamic Earth processes and engage students in understanding the impact of environmental events that occur on regional or global geographic scales. This session introduces participants to a robust global climate change education module. Learn how to access NOAA data in your classroom through this inquiry-based digital lab that students love. Free activity book! [ESH212]

**Virtual Resources To Promote Ocean Acidification Awareness**
Pam Miller, Curriculum Coordinator, Hopkins Marine Station

(ST) To increase secondary school students’ awareness about ocean acidification (OA), we created two computer-based activities. The first activity is a virtual laboratory helping students understand what OA is while the second activity is an interactive talk by a scientist explaining the potential global impact of OA. Join us and learn how you can get a community collection program started. [RH317]

**Seeds Of Science/Roots Of Reading: Integrating Aquatic Science And Literacy At The Elementary Level**
Catherine Halversen, Professional and Curriculum Developer, Lawrence Hall of Science, UC Berkley
Craig Strang, Assoc. Director, Lawrence Hall of Science

(LME) Learn about the integrated science and literacy program from the Lawrence Hall of Science, designed for the 21st-century classroom. Experience an integrated approach to addressing science and literacy standards simultaneously using hands-on activities, student readers, discourse and writing, supporting findings that students learn more science when inquiry is supported by reading and writing. This workshop features Shoreline Science (grades 2-3) and Aquatic Ecosystems (grades 4-5). Participants receive materials to use in their classrooms. [ESH206]

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**CONCURRENT SESSIONS**

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CONCURRENT SESSIONS

Laqquadaz, The Northern Fur Seal: An Integrated Curriculum For Alaska Schools
Lisa Hiruki-Raring, Education Coordinator,
Alaska Fisheries Science Center, NOAA Fisheries
Pamela Goddard, Education consultant,
Thalassa Education and Outreach

(The) The northern fur seal is critical to the culture and history of the Unangan/Unangas (Aleut people), as well as to the history of Alaska. This curriculum integrates northern fur seal natural history with the fur seal’s role in Unangam culture and history, and includes recent and historical research and conservation efforts in NOAA’s management of the fur seal population. The six-lesson unit includes hands-on activities ranging across science, math, reading, writing, geography, technology and art. [RH111]

Spanning The Hawaiian Archipelago: Place-Based Science Education (Joint Presentation)
Carlie Wiener, Outreach & Research Specialist,
Hawaii Institute of Marine Biology

(LME) This session will showcase a continuing education course that has been running for the past five years targeting community participation in hands-on, place-based marine science. Theme classes are derived from on-going research efforts in the large marine protected area, Papahanaumokuakea Marine National Monument, AKA the Northwestern Hawaiian Islands. Examination of how research is broken down into digestible and participatory classes for those of all ages and backgrounds will be explored. [RH110]

Spanning The Hawaiian Archipelago: High School Scientific Inquiry Based On Authentic Research Programs
Malia Rivera, Associate Specialist,
Hawaii’i Institute of Marine Biology, University of Hawaii

(LME) This presentation describes several recently developed High School scientific inquiry laboratory lessons that largely capitalize on authentic research programs relating to the Hawaii Institute of Marine Biology’s work in the Northwestern Hawaiian Islands. Content focuses on ocean acidification, marine bioacoustics, fish larval development, and water quality effects on urchin fertilization. Students develop and test original hypotheses, and collect samples and data in the field and in the lab, all within a unique university research setting. [RH110]

Carbon Culture: Strategies For Empowerment And Climate Action
Wade Janzen, Coordinator of Curriculum Programs,
Vancouver Aquarium

(LME) The Climate Change Journey is designed to bridge gaps in our current approaches to climate education. A game-based approach helps participants identify indirect emission sources. Blending math, geography and social sciences, this approach discusses what climate science alone cannot – cultural values and consumption. This workshop provides direct-action education for formal and informal settings. Attendees will depart with a comprehensive toolkit containing game-play, hands-on activities and other age-appropriate instructional strategies for junior and senior levels. [RH211]

Marine Science: The Dynamic Ocean – A New High School STEM Offering
Meghan Marrero, Assoc. Professor of Secondary Education,
Mercy College
Glen Schuster, President, U.S. Satellite Laboratory, Inc.

(St) Track marine animals as you use the ocean as an integrating context for teaching STEM. Learn about a new textbook/curriculum package for high school that uses animals tracked by satellite as the hook. Meet state standards and teach ocean literacy fundamental concepts through this unique program that introduces students to ocean technologies, careers in the ocean sciences, etc. Participants will engage in a sample activity and learn how to get review copies of the text. [ESH203]

NOAA Office Of Ocean Exploration And Research And Informal Education Partners: Working Together To Enhance Ocean Science Literacy
Susan Haynes, NOAA OER Education Program Manager,
NOAA Office of Ocean Exploration and Research
Melissa Ryan, Lead Program Instructor, NOAA OER,
NOAA Office of Ocean Exploration and Research

(LME) The NOAA Office of Ocean Exploration and Research began developing partnerships with informal education centers 10 years ago to enhance ocean science literacy through professional development targeted to educators. To date, formal agreements exist with 14 partners located throughout the country. This session presents the partnership model and takes a look at the “return on investment” when Federal entities partner with NGOs and join together to enhance ocean science literacy. [RH315]

TUESDAY JUNE 26 3:30PM - 4:15PM
Ocean Discovery By A Community
Jacqui Stanley, Teaching Artist/Marine Educator,
Young Audiences of Houston

(SA) Ocean Discovery Day at the Flower Garden Banks National Marine Sanctuary invited the public to create their own interpretation of the sanctuary. A large template was created and then divided into 162 numbered 8” square grids. Visitors chose the square they wanted to paint and they were provided with reference materials to add appropriate marine life. A fabulous community mural emerged. Jacqui will present how the mural was created, and ideas for more education of our National Marine Sanctuaries. [RH316]

No Walls Needed: Education Activities For The Outdoors
Chris Breazeale, Asst. Director of Education and Outreach,
Institute of Marine Mammal Studies

(LME) The Institute for Marine Mammal Studies – Center for Marine Education and Research (IMMS-CMER) is the premier educational facility on the MS Gulf Coast. The IMMS education team has created many fun and exciting activities for students, without the need of a classroom or a building. These outdoor activities will motivate your students to be involved. Educators will participate in a number of activities designed to teach students valuable content while giving them much needed exercise. Lesson plans will be provided and participants are welcome to share! [ESH216]

Summer Science In New England: Using A COML Platform To Engineer
Carole McCauley, Outreach Program Coordinator,
Northeastern University Marine Science Center
Lauren Radar, Chief Instructor, Project Oceanography

(ST) Entering its third year, the “Summer Science in New England” project provides a scientist/educator-guided experience for teens, supports and trains informal educators to incorporate citizen science and ocean literacy principles with teens, and offers opportunity for participants to share findings at an annual Teen Summit. Components of the project include 1) establishing a community of practice, 2) contributing to the Ocean Biogeographic Information System, 3) increasing ocean literacy, and 4) supporting peer-to-peer information exchange. [ESH212]

Coral App: Mobile App, Tablets & Twitter To Teach Fishery Minimum Sizes
Paulo Maurin, Education and Fellowship Coordinator,
NOAA Coral Reef Conservation Program

(ST) Come play with technology! This interactive, hands-on session will use NOAA’s new Coral App (from the Coral Reef Conservation Program) to learn about the importance of minimum sizes in fishery management. Participants will role-play fishermen, marine biologists and park rangers using the Coral App, tablets & Twitter to measure, ID, determine and verify minimum sizes for select commercially important marine organisms. [RH117]
Linking Generations Through Their Fisheries Heritage
Rebecca Reuter, Communications Specialist, NOAA Fisheries Alaska Fisheries Science Center

Amber Hines, Social Scientist, NOAA Fisheries Alaska Fisheries Science Center

[SC] Participating in fisheries is a shared heritage throughout communities in the Pacific NW and Alaska. This heritage is being lost on the younger generation, as there are no mechanisms or infrastructure to facilitate the transfer of knowledge and traditions from the older generations. This presentation will discuss the Voices for the Fisheries project, a place-based educational program started by NOAA Fisheries. Come and learn strategies to reconnect youth with their community’s heritage. [ESH206]

Extreme Ocean Life: Microbes Beneath The Sea Floor
Pat Harcourt, COSEE West Program Manager, Wrigley Institute for Environmental Studies, University of Southern California
Mark Friedman, Biology and Marine Science Teacher, Animo Leadership Charter High School

[ST] Ocean scientists are starting to explore extreme environments, and they are finding life in amazing places - even deep in the sediments and rocks of the sea floor! We will introduce microbes that are expanding our understanding of where life can exist, and share activities for teaching about the scale of microbes, tracking their evolution, and the exciting story of how they were discovered. We'll distribute resources to help your students meet the “intraterrestrials.” [RH111]

Exploring The Nearshore: Educating The Next Generation
Tania Spurkland, Researcher, Retired Teacher, School of Fisheries and Ocean Sciences, UAF

[LME] Develop marine stewardship through exploration and discovery by establishing an annual hands-on biodiversity nearshore monitoring program at your school using NaGISA protocols. Students will inventory species of four rocky intertidal zones (-1m, low, middle, high) and become familiar with the dominant inhabitants, vertical zonation and how to quantify diversity and abundance. The potential loss of biodiversity due to climate change and human activities has spurred the need for this monitoring, which evaluates ecosystem health. [RH110]

Our Watery Fingerprints: Teaching About How Humans Impact The Oceans
J. Padgett Kelly, Professor of Biology, Middle Tennessee State University

[LME] Our world population of 7 billion and growing has affected our ocean ecosystems in many ways from overfishing and pollution to acidification and climate change. In this hands-on/minds-on workshop, engage in interdisciplinary activities to explore global population trends and human interactions with our blue planet over the past 500 years and the future challenges for sustainable marine stewardship. Receive activity scripts and background reading on CD-ROM. [RH211]

Marine Debris & Me: Tracking Your Garbage Footprint
Rebecca Mathias, Marine Education Specialist, University of Southern Mississippi’s Gulf Coast
Beth Jones, Summer Rohe, Educational Programs Manager, Marine Education, University of Southern Mississippi’s Gulf Coast

[LME] This presentation will provide accurate information on the dangers of marine debris, repercussions of pollution and the ways they can be prevented. We will take a look at how to track your garbage footprint and what you can do to minimize your environmental impact. This includes classroom activities and an introduction to the Mississippi Marine Debris Removal & Prevention Project. [ESH203]

Enhancing Visititation Options In A Wildlife Rehabilitation Facility
Adam Ratner, Visitor Programs Coordinator, The Marine Mammal Center

[LME] Animal viewing is very powerful, but without proper exhibits or visitor engagement options guests may not leave with a truly comprehensive visit. At The Marine Mammal Center in Sausalito, CA, a marine mammal hospital, four options for visitors were designed. They include a docent-led tour program, 60% of tours led by volunteers, an audio tour, discovery classroom activities, and self-guided visit, all supported by volunteer interpretative docents. [RH315]

THURSDAY JUNE 28 10:15AM - 11:00AM

"Just, one word..." An Artist Educator’s Performance Lecture On Marine Plastic
Karen Ristuben, Interdisciplinary Artist/Educator, Ristuben Studio

[SA] Addressing the issue of marine plastic pollution from an artist/educator’s perspective, I offer a different way to represent and communicate the hard scientific data currently the focus of many marine scientists, toxicologists, epidemiologists, and policy-makers. This project deals with our use, over-use, and disposal of plastics, their toxicity, and their effects on our public health. Highlighting the issue of marine plastic pollution and its impact on ocean ecosystems including the marine food chain, I use a multi-media performance/lecture format, using original and archival video and photography, presenting the facts and data in an aesthetically compelling format. The import and power of the message is made accessible to a wide audience, as I include a personal perspective including my voyage in July 2011 through the North Pacific Gyre with Algalita Marine Research Foundation. [ESH205]

The Unknown Ocean: Exploring Inner Space
Romy Pizziconi, National Network Assistant, Centers for Ocean Sciences Education Excellence
Paula Keener, Director, Education Programs, Office of Ocean Exploration, National Oceanic and Atmospheric Administration (NOAA)

[ST] The University of Rhode Island Inner Space Center is developing new software, hardware, and content using video footage from ocean exploration cruises to address Ocean Literacy Principle #7: “The Ocean is Largely Unexplored”. Prototype interactive touch screens use state of the art technology, enabling students, educators, and the public to become engaged in ocean exploration. Participants will have the opportunity to preview new educational videos and make discuss connections for use in formal and informal science education. [RH316]

Video Conferencing
(Join Presentation – Double Session: 10:15am - 12:00pm)

Bridging The Distance: Ocean Exploration By Videoconference
Laurie Morrow, Sr. Education Manager, Alaska SeaLife Center
Darin Trobaugh, Distance Learning Coordinator, Alaska SeaLife Center

[ST] The Alaska SeaLife Center describes the evolution of their distance learning program since 2005. With their partners GCI SchoolAccess and the Center for Interactive Learning & Collaboration (CILC), the ASLC describes meeting with classrooms in Alaska, across the country, and internationally. The audience is encouraged to discuss the benefits and challenges of delivering quality marine science content by videoconference. The focus will be on collaboration, discussion, and problem-solving. [RH117]

Implementing A Videoconference: What Works And What Doesn’t!
Sharon Walker, Director of Education and Outreach, Institute for Marine Mammals Studies – Center for Marine Education and Research
Lee Yokel, Environmental Education Coordinator, Gulf of Mexico Alliance – Dauphin Island Sea Lab

[ST] The Dos and Don’ts in Implementing Deepwater Horizon Oil Spill Videoconferences: This session will discuss linking 10 locations across four states, involving 200 formal/information educators, recruiting scientists, providing instructional skills, and conducting evaluations. The goal of this NOAA-SE-funded program was to provide enhanced content knowledge that could be delivered in the classroom. Session attendees will participate in an oil-spill activity. [RH117]
Bringing Glacier Bay Into Your Classroom
Steve Schaller, Supervisory Park Ranger – Education, Glacier Bay National Park & Preserve

(ST) Glacier Bay is a dynamic landscape featuring retreating glaciers and the story of life reclaiming newly exposed land and ocean habitats. Though a dream destination for many people it is difficult to visit with your students. Using videoconferences, video segments, and interactive lesson plans, this session will reveal lively ways to connect your students to the beauty and magnificent resources of Glacier Bay. Activities will be demonstrated that can be easily duplicated in the classroom. [RH117]

Barriers To Student Participation In At-Sea Internships
Tami Lunsford, Internship Coordinator, MATE Center

(ST) What is preventing some students from applying to marine science and technology programs? How can we encourage their participation? The MATE Center conducted a national study to examine the barriers to participation in at-sea technical internships. We will share the results of the study and the strategies implemented to remove identified barriers to participation and increase diversity. Modifications include FAQs for families and videos depicting life on a research vessel. [RH111]

Blending Traditional Knowledge
(Joint Presentation – Double Session: 10:15am - 12:00pm)
Marilyn Sigman, Asst. Professor and Program Manager, University of Alaska/Sea Grant & COSEE Alaska
Judy Lermus, Associate Specialist, The Hawai‘i Institute of Marine Biology, University of Hawai‘i at Manoa & COSEE Hawai‘i

(SC) A two-session panel discussion will explore the ways in which educators have been successful in combining traditional and western knowledge and traditional ways of knowing in approaches to coastal and watershed education in terms of science content and process and other disciplines. Panel members will provide specific examples and describe the challenges they faced, successes, and lessons learned. Panel: Ray Barnhardt, Michael Brubaker, Liz Kumabe, Jana Harcharek. [RH211]

The Smithsonian: Can A Museum Go Viral?
Trish Mace, NMNH/COSEE Ocean Educator, Smithsonian Institution

(ST) The Smithsonian’s National Museum of Natural History partners with NOAA, COSEE and others to bring ocean science and education to a broad national, and even international, audience. Technology is providing ways to both enhance on-site and off-site visitor experiences and learning. Hear what we are learning as we venture into the digital world of websites, blogs, webinars, apps, virtual reality and tweet-ups. On-line resources will be shared. [ESH214]

Science And Stewardship in Coastal Alaska
Jenni Medley, School Program Coordinator, Center for Alaskan Coastal Studies

(LME) Through hands-on, placed based marine and forest ecology programs, CACS provides students and visitors with the opportunity to immerse themselves in real life science exploration. This presentation highlights the educational benefits of residential environmental education programs for increasing science and math concept awareness and skills and increasing environmental stewardship practices. Includes hands-on activities from our Alaska Coastal Ecology curriculum. [ESH206]

NOAA Scientists In Residence At The Exploratorium: Development And Evaluation Of Explorer-Scientist Collaborations
Michelle Mileham, Graduate Research Assistant, Oregon State University
Anne Richardson, Manager, Field Trip Explainers, Exploratorium

(ST) A NOAA scientist-in-residence program at the Exploratorium was evaluated to determine impacts on front-line staff, visitors, and scientists themselves. A model for hosting scientists at a museum was developed to include a one-week residency that helped scientists understand the ocean followed by a two-week residency during which scientists interacted with visitors. Data was collected using interviews, observations, and surveys. Evaluation results will be discussed, including how iPads were used as a mediating tool. [RH315]

Marine Education Practices In Europe: Sharing Goodies
Evy Copejans, Education Expert, Flanders Marine Institute

(LME) Join the European Marine Science Education Association (EMSEA) on a voyage across the Atlantic, to the North Sea and the Mediterranean. The route goes along some of the treasures in marine education on the European continent. As Europe has a rich cultural diversity, so does it have different ways of educating about the sea. We will look at useful teacher resources, inspiring activities, projects and upcoming conferences. Participants receive materials for their classrooms. [ESH209]

Eyes On The Ocean: Resources For Educators From The Integrated Ocean Observing System
Molly McCammon, Executive Director, Alaska Ocean Observing System

(ST) Incorporating ocean data into your curriculum can bring real-world authenticity and excitement to your classroom or learning center. In this presentation three educators from our regional associations of our national Integrated Ocean Observing Systems (IOOS) will share a framework for teaching with data. We will also demonstrate particular data products of interest to educators from regional observing systems in Alaska, the mid Atlantic and the Pacific Northwest. [RH110]

THURSDAY JUNE 28

Detecting Undersea Earthquakes And Volcanic Eruptions
William Hanshumaker, Public Marine Science Specialist, Hatfield Marine Science Center – Oregon State University

(ST) During October 2011, I participated in a voyage off the Pacific Northwest coast onboard the RV Wecoma. We deployed 25 underwater seismometers as part a larger array comprising the Cascadia Initiative (CI). CI is an onshore/offshore seismic and geodetic experiment that will measure changes in this portion the earth’s crust. The presentation will begin with a review of existing technologies for measuring underwater volcanics and then address such questions as tectonic plate deformation and megathrust earthquakes. [RH101]

Creating A National-Scale Art & Ocean Literacy “Living” Project
Kate Leavitt, Marine Science Program Coordinator, Seacoast Science Center
Perrin Chich, Education Director, Seacoast Science Center

(SA) Are you interested in an innovative arts & marine science immersion project for your students? We will share our successful integrated art, science, and writing model, created to enrich and deepen our science center’s outreach programming. Then we’ll get our creative juices flowing as we try our hands at creating our own masterpieces. Finally let’s share needs and interests to brainstorm this project’s evolution to include social media, distance education and bi-coastal participation. [RH316]

Engaging Teens In Service Learning
Lauren Tyler, Director of Youth Education, The Florida Aquarium
Debbi Stone, Vice President of Education, The Florida aquarium

(ST) The Florida Aquarium received a coastal resiliency and climate change grant from the Gulf of Mexico Alliance. “Student Teachers: Teens Teaching Tweens About the Coast,” focused on training high school students to deliver a coastal wetlands program to middle school students. Leveraging our partnership with a University of South Florida NSF funded grant, student videos are shared on the Coastal Areas Climate Change Education Partnership website. The planning, implementation and the results will be shared. [RH111]
Yolla (Short-Tailed Shearwater) – Cultural Perspectives Towards Fostering Stewardship

Graeme Burgan, Education Ranger, Phillip Island Nature Parks

(SC) This presentation explores human interactions with Short-tailed Shearwaters by Aboriginal communities and European settlers. Contemporary society is working towards reconciling traditional associations with wildlife protection. A collaborative arts project is bringing together Aboriginal and non-Aboriginal communities to explore the circle of life of Yolla and opportunities for cultural regeneration. The outcomes will build the sense of stewardship for protecting Shearwaters and deepen cultural knowledge. Participants will have opportunities to creatively express their perspectives on stewardship. [ESH214]

Come Explore NOAA Education Resources

Stephanie Bennette, Management and Program Analyst, The Baldwin Group at NOAA Pacific Services Center
Leon Geschwind, Education Technology Specialist, NOAA Pacific Services Center

(LME) Come explore NOAA educational resources that adapt existing science, data and technology at NOAA into cohesive, grade-level sets of science instruction materials. Culturally appropriate and technology-rich lessons include scientist case studies, videos, podcasts, online interactives, e-magazines, and virtual globes. This suite of educational materials for grades 3-12 serve to provide content-rich and hands-on learning activities using the best of NOAA science, products and services. [ESH206]

National Marine Sanctuaries – A Wealth Of Resources

Kate Thompson, Education Specialist, Office of National Marine Sanctuaries
Michiko Martin, Communications, Outreach & Education Division Chief, Office of National Marine Sanctuaries

(LME) NOAA’s National Marine Sanctuaries protect over 150,000 square miles of America’s ocean and Great Lakes encompassed in fourteen marine protected areas. A key component for every sanctuary is educating students and the public about each of these special places. Hear about the wealth of free resources available for your use. Highlights include online lesson plans, live programming broadcast into your classroom using telepresence, international student programs, free high-resolution photographs, teacher workshops, and more. [RH315]

Marine Debris Education And Outreach In Alaska

Dianna Parker, Communications and Outreach Specialist, NOAA Marine Debris Program

(LME) The NOAA Marine Debris Program regularly conducts educational outreach to help kids and the general public understand the marine debris problem. The Gulf of Alaska is a major priority for our program, especially now that tsunami debris from Japan may impact the area. Our session presentation would focus on 1) how we communicate marine debris science in Alaska and 2) what we’re doing to try to change behavior. We may have draft curriculum to present for feedback. [ESH209]

Data in the Classroom: Demonic or Divine

Melanie Reding, Education Coordinator, Jacques Cousteau National Estuarine Research Reserve

(ST) Whether you feel daunted or dazzled at the idea of using data in your classroom; research shows real-time data (RTD) can be a powerful tool in connecting students with real-world science, improving inquiry skills, and understanding estuarine and ocean environments. Come explore easy to use curriculum activities and online interfaces that put real & near real-time data into exciting and compelling contexts that are relevant to our lives and the “real world”. Interactive & Doorprizes! [RH110]

In Loving Memory: Bill Hastie (November 6, 1943 - May 3, 2012)

Marine education lost a great supporter recently, when our friend Bill Hastie passed away after a courageous battle with prostate cancer. Bill will be greatly missed!

Bill was a pillar of NMEA for more than three decades; he was always an inclusive, welcoming purveyor of good spirit, fun, laughter and camaraderie. His warm, compassionate fun-loving personality was balanced by a competent hard-working productive professionalism that embodied the best of NMEA.

Bill was passionate about his love for all things aquatic. He was an avid sailor, fly fisherman and a prominent leader in formal and informal teacher workshops, symposiums and watershed education. Bill was the living, breathing example of the NMEA mission statement; “To make known the world of water, both fresh and salt.” Throughout his career, he continued to make connections between the fresh and salt water environments. He was a leader in watershed education that begins at the mountain tops, and ends in the open ocean. He actively promoted stewardship through his educational programs; he was a firm believer that everyone needs to know their “ecological address” (what watershed did they live in…and what actions could they take within their watershed to improve and protect it).

Bill was a major influence in teaching at all levels. He was an outstanding high school teacher before moving to the state level as aquatic education specialist with the Oregon Department of Fish and Wildlife (ODFW). Working with the “hooks and bullets” crowd (as he would call it), he actively supported increased ocean and water literacy with these outdoor folks long before it became a popular phrase. He held countless workshops for teachers through such programs as Project WET; Project Wild; Water, Water Everywhere, and Creeks and Kids. In many cases he helped create the curricula, served as reviewer and/or adapted to fit the local scene.

Everyone who met Bill will never forget him: his very positive outlook on life, his dedication and passion about making known the world of water, and his belief that we can make a difference in this world today.
COSEE Alaska is a consortium committed to bringing ocean scientists and educators together to learn and teach about Alaska’s people, oceans and climate change. We are funded in part by the National Science Foundation.

In addition to our web site, workshops, presentations, the Ocean Science Fair, and other program components, COSEE Alaska hosts SEANET, an interactive resource for teachers and scientists. As a participant in NMEA 2012, we will add you to our listserv, and will invite you to join this on-line resource via email.
Conference Exhibitors

The following exhibitors will be available from 8:00am - 4:00pm on Monday and Tuesday in the Rasmuson Atrium.

Alaska Center for Ocean Sciences Education Excellence (COSEE AK)
Alaska Ocean Observing System (AOOS)
UAF Sea Grant/MAP
UAF Center for Cross-cultural Studies
Alaska Department of Fish & Game
Aquatic Eco-Systems, Inc
Artist Boat
Bureau of Ocean Energy Management (U.S. Department of the Interior)
Carolina Curriculum
Center for Alaskan Coastal Studies
Consortium for Ocean Leadership—National Ocean Sciences Bowl
Current Publishing Company
The Florida Aquarium—Climate Change Community Outreach Initiative
Gulf Coast Research Lab Marine Education Center
Marine Advanced Technology Education (MATE) Center
Northwest Aquatic and Marine Educators (NAME)
National Geographic Education
National Marine Educators Association (NMEA)
NOAA Education
North Pacific Research Board (NPRB)
NPS-Ocean Alaska Sci. Learning Ctr.
Prince William Sound Regional Citizens Advisary Council
Prince William Sound Science Center
USC Sea Grant
WA Sea Grant
Washed Ashore

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Totem Ocean Trailer Express (TOTE)
National Geographic Education
One Ocean
Cook Inlet Regional Citizens Advisory Council (CIRCAC)
Alaska Airlines
At-sea Processors Association

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Photo: Jim
Marine Education Award

This award is given for outstanding work in any aspect of marine education at the local or national level. This can be awarded to a member or non-member of NMEA. The recipient receives a one-year NMEA membership.

Past Recipients:
- 1989 Eugene Kaplan
- 1990 ?
- 1991 Gary Hafner (CA)
- 1992 Laurie Dumdie (WA) and Mary Cerullo (MN)
- 1993 Captain Dave Mattingly
- 1994 no one nominated
- 1995 Pam Stryker (TX)
- 1996 Anita Freudenthal (NY)
- 1997 James Kolb (WA)
- 1998 Veronique Robigou (WA)
- 1999 Sharon H. Walker (MS)
- 2000 Fanya Paouris (SC)
- 2001 Ann Reid (NH)
- 2002 Leslie R. Sautter (SC)
- 2003 Margaret Davidson (SC)
- 2004 Linda G. Livolsi (CT)
- 2005 Craig Strang (CA)
- 2006 Katrina Barrett (CT)
- 2007 Gary Kreamer (DE)
- 2008 JoAnne Powell (NC)
- 2009 Lou Siegel (NY)
- 2010 Harry Breidhal (Australia)
- 2011 Barb Bruno (HI)

President’s Award

This award is given by the current President of NMEA. The President selects recipients based on outstanding contributions to NMEA and/or marine education that he/she considers worthy. The recipient receives a one-year NMEA membership.

Past Recipients:
- 1984 Jim Hannaham (DC)
- 1985 Fleda Jackson and Sue Gammisch (VA)
- 1986 Rosanne Fortner (OH)
- 1987 Jim O’Connor and Lundie Spence (NC)
- 1988 Karen Aspinwall (MD) and Gail Miller
- 1989 Jim Lanier (NC) and Vic Mayer (OH)
- 1990 Rick Tinnin (TX) and Millie Graham (GA)
- 1991 Sharon Walker (MS) and Quinton White (FL)
- 1992 Mary Masterson (NJ) and Wendy Allen (SC)
- 1993 James I Jones and Robert J. Shephard
- 1994 Mary Masterson (NJ)
- 1995 Robyn Dobyns (TN)
- 1996 Diane Sweeney (CA)
- 1997 Vikki Spruill (DC)
- 1998 Bruce Carlston (NJ) and Sarah Schoedinger (DC)
- 1999 Alliance of Marine Mammal Parks and Aquariums
- 2000 Kathleen Heidenreich (WA), Pam Stryker (TX), Virginia De Silva, and Lee Anne Campbell
- 2001 Paul and Lydia (Taby) Keener
- 2002 Johnette Bosarge (MS) and Vicki Osis (OR)
- 2003 John Trowbridge (LA)
- 2004 NSTA (National Science Teachers Association) and The BRIDGE
- 2005 Linda Hagelin (CA)
- 2006 College of Exploration (VA) and Susan Snyder (OH/FL)
- 2007 Howard “Mickey” Weiss (CT)
- 2008 Peggy Hamner (CA)
- 2009 Catherine Halverson (CA) and W. Donald Hudson, Jr. (ME)
- 2010 Frances Lee Larkin (VA), Rick Tinnin (TX), Mike Lewis, Dr. and Mrs. A. B. Frederick (MD)
- 2011 Johnette Bosarge (MS)
James Centorino Award
This award was named in the memory of Jim Centorino, an inspirational and passionate marine educator who taught at Salem State College, co-founded the Massachusetts Marine Educators and later the National Marine Education Association. It is given for distinguished performance in marine education by professionals who are not classroom teachers. Only NMEA members are eligible. Participation in NMEA is an important consideration. The Awards Committee considers a candidate’s major contributions, including outstanding leadership, programs developed, and participation in marine education organizations, over a five year period. The recipient receives a one-year NMEA membership.

Past Recipients:
1984 Cynthia Hancock (FL)
1985 Jeff Sandler & Deb Hall (MN)
1986 Lindy Millman (DE)
1987 Inka Milewski (NB, Canada)
1988 Rob Moir (MA)
1989 Vicki Clark (VA)
1990 Barbara Klemm (HI)
1991 Cynthia Stong (OH)
1992 Bruce Stewart (CA) and Lee Lawrence (VA)
1993 Bill Hastie (OR)
1994 Terri L. Kirby (NC)
1995 Sharon H. Walker (MS)
1996 Sharon Meeker (NH)
1997 Michael Spranger (WA) and Megan Jones (HI)
1998 Andy Wood (NC)
1999 Sarah V. Mitchell (GA)
2000 John Dindo (AL)
2001 Gloria Snively (BC, Canada)
2002 Hugo Freudenthal (NY)
2003 Valerie Chase (MD)
2004 J. Adam Frederick (MD)
2005 Thaxter Tewksberry (CT)
2006 Janice McDonnell (NJ)
2007 Rick Tinnin (TX)
2008 Maryellen Timmons (“Mare”) (GA)
2009 Sylvia Spalding (“Mare”) (HI)

Outstanding Teacher Award
This award is given for effective and innovative classroom teaching at any level. Only NMEA members are eligible. Participation in NMEA is an important consideration. The Awards Committee considers a candidate’s classroom environment, innovative materials and activities used and/or developed, integration of marine topics into various subject areas, and evidence of superior performance by the candidate’s students. The recipient receives a one-year NMEA membership.

Past Recipients:
1984 Susan Leach (Snyder) (OH)
1985 Harriett Donofrio (DE)
1986 Ann Coopersmith (HI), Michael Stevenson (CA), and Mary Masterson (NJ)
1987 Otis William Lee (AL)
1988 Gene Williamson (OR)
1989 Jack Crowley (MA)
1990 Vincentina Cassaro (NJ)
1991 Ron Nilsen (WA)
1992 Neal Maine (OR)
1993 Margaret Olsen (GA)
1994 George “The Sandman” Duane (MA)
1995 Amy Quillen (DE)
1996 Dana Mitchell (MN)
1997 Cindy Renkas (SC)
1998 Debora Mosher (VA)
1999 Julie S. Cliff (SC)
2000 Mary Alice Cain (LA)
2001 Padgett Kelly (TN)
2002 Susan Wertz (WA)
2003 Patricia Cahill Williams (OR)
2004 Amy Holt Cline (NH)
2005 Catherine Foote Silver (NH)
2006 Margery Misenheimer (NC)
2007 Mellie Lewis (MD)
2008 Martin Keeley (Cayman Islands)
2009 Charlene Mauro
2010 Beth Jewell (VA)
Honorary Membership

Honorary membership is the highest recognition that NMEA offers and is reserved for those individuals who have demonstrated a distinguished career in teaching, research or service in marine education. The nominee should also be known nationally in the field and be a model professional.

This nomination requires completion of a nomination form and letters of recommendation from at least three active NMEA members. After receiving these materials, The Honorary Member Selection Committee, chaired by the NMEA Past-President, presents its recommendations to the NMEA Board for consideration. Upon endorsement by the majority of the Board, the successful nominee shall be declared an Honorary Member. The recipient receives a lifetime membership in NMEA.

Recipients:
1977 Thayer Shafer (RI)
1979 Hal and Libby Goodwin (MD)
1980 Will Hon (NC)
1983 Ronald Linsky (CA)
1987 Prentice Stout (RI)
1993 Millie Graham (GA)
1996 Jeff and Deb Sandler (ME) and Sylvia Earle (CA)
2004 Sharon Meeker (NH)
2005 Ann (Frannie) Coopersmith (HI)
2006 Lundie Spence (SC)
2007 Sharon Walker (MS)
2010 Rick Tinnin (TX)
year unknown: Capt. Irving Johnson
year unknown: Frank Shephard (MA)
2012: Bill Hastie (OR)

NMEA Presidents

Each year, a new NMEA member takes the reigns as president, guiding the organization along with the board of directors so that each person gets the most benefit from their NMEA membership.

Past Presidents:
1976-77 Arie Korporaal
1977-78 Warren (Renny) Little (MA)
1978-79 John McMahon (HI/WA)
1979-80 Bob Abrams (NY)
1980-81 Jim Schweitzer (LA)
1981-82 James Lanier (VA)
1982-83 Prentice K. Stout (RI)
1983-84 Lundie Spence (NC)
1984-85 Jeff Sandler (ME)
1985-86 Art West (MD)
1986-87 Mildred (Millie) W. Graham (GA)
1987-88 Rick Tinnin (TX)
1988-89 Rosanne Fortner (OH)
1989-90 Valerie Chase (MD)
1990-91 Vicki Osis (OR)
1991-92 James V. O’Connor (DC)
1992-93 Sharon Walker (MS)
1993-94 John Dindo (AL)
1994-95 Nora Deans (CA)
1995-96 Mike Spranger (WA)
1996-97 Maureen Wilmot (DC)
1997-98 Bill Hastie (OR)
1998-99 Joy L. Wolf (CA)
1999-00 Rob Moir (MA)
2000-01 Paula Keener-Chavis (SC)
2001-02 Vicki Clark (VA)
2002-03 Wendy Allen (SC)
2003-04 Jean May Brett (LA)
2004-05 Rita Bell (CA)
2005-06 Sarah Schoedinger (MD/NC)
2006-07 Thaxter Tewksbury (CT)
2007-08 Lynn Whitley (CA)
2008-09 Eric Simms (CA)
2009-2010 J. Adam Frederick (MD)
2010-2011 Justine Glynn (ME)
2011-2012 Diana Payne (CT)
NMEA Conferences

Each year, one NMEA Chapter works hard to host a conference that provides valuable and relevant speakers and resources on marine education, as well as showcasing the best the region has to offer. Here are the themes and hosts through the years.

Past Conferences:
1976 Pacific Grove, California—No Theme
1977 Newark, Delaware—Marine Awareness: Educating for the Future
1978 Olympia, Washington—No Theme
1979 Milwaukee, Wisconsin—The Great Lakes: Our Fourth Coastline
1980 Salem Massachusetts—Our Coast: Heritage, Conflict and Challenge
1981 Galveston, Texas—Toward the Coastal Frontier
1982 La Jolla, California—Oceanomics: Riding the Wave of the Future
1983 South Portland, Maine—Sights and Sounds of the Sea
1984 Victoria, British Columbia—The Pacific Northwest: From Canoe to Submersible
1985 Williamsburg, Virginia—The Chesapeake: Prologue to the Future
1986 Cleveland, Ohio—Those Magnificent Sweetwater Seas
1987 Kingston, Rhode Island—The Magic of the Northeast
1988 Santa Cruz, California—New Waves in Marine Education: Keeping up with Ocean Discoveries
1989 Miami, Florida—Florida’s Fragile Paradise
1990 Hilo & Kona—Hawaii Islands in the Sea
1991 New Brunswick, New Jersey—Garden by the Sea
1992 Portland & Newport, Oregon—Seines to Satellites: Taming Technology
1993 New Orleans, Louisiana—Where the River Meets the Sea
1994 Knoxville, Tennessee—Science and Public Policy
1995 San Diego, California—Oceans Without Borders
1996 Durham, New Hampshire—Making Connections: Global Lessons From the Gulf of Maine
1998 Humacao, Puerto Rico—An Island Journey in Ecological Diversity
1999 Charleston, South Carolina—Exploring Our Coastal Heritage: A Voyage Through Cultures, Lands, and Seas
2000 Long Beach, California—Wave of the Future
2001 Victoria, British Columbia—A Water Odyssey: Understanding Our Sense of Place
2002 New London, Connecticut—The Race to Hell Gate: Estuaries to the Abyss
2003 Wilmington, North Carolina—Taking Marine Education by Storm
2004 St. Petersburg, Florida—Bridge the Gulf: Marine Science in the Sunshine
2005 Maui, Hawaii—Na ʻ a ʻ i Ke Kumu, Na ʻ a ʻ i Ke Kai (translated: Look to the Source, Look to the Sea)
2007 Portland, Maine—Downeast 2007....Ideas, Innovations, and Inspirations
2008 Savannah, Georgia—One World, One Water
2009 Monterey, California—One World Conserving One Ocean
2010 Gatlinburg, Tennessee—From the Mountains to the Sea
2011 Boston, Massachusetts—Cape to Cape: In the Hub of Marine Education

Please take a moment to help us make your NMEA conference experience better. Complete our online survey and share your thoughts about this year’s conference:
BOEM is proud to be a co-sponsor of the National Marine Educators Association Conference, 2012.
Sea the Gulf
Join the Roux

NMEA
Mobile • Alabama • 2013
July 22 – July 26
1. Cuddy Hall – Lunches, Poster Session, Banquet
2. Rasmuson Hall – Registration, Exhibits, Concurrent Sessions
3. Wendy Williamson Auditorium – Keynote & Plenaries
4. Eugene Short Hall – Concurrent Sessions
5. Sally Monserud Hall – Conc. Sessions
6. Fed Ex/UPS/mailing area

Free parking for conference participants in these main campus lots on June 24-28. A $25 pass will be available for purchase at all parking kiosks for parking in the dorm area and on other dates.

University of Anchorage
Campus Maps

1. Commons
2. North Hall
3. West Hall
4. East Hall
5. Spring Hill Suites