

# CONCURRENT SESSIONS



## TUESDAY SESSION A (11:00 AM – 11:45 AM)

### **1 - Reflective Storytelling as a Model for Environmental Education**

*Kay Shoemaker*, University of Alaska, Fairbanks

*Jennifer Howell*, University of Alaska, Anchorage

Get hands-on experience on how to create Reflective Storytelling programs with the author of "Exploring Ecology in Alaska: Reflective Storytelling as a Model of Environmental Education". This workshop will explore an activity that focuses on salmon ecology and watersheds. Each participant will enter into the story of the salmon's habitat, its life cycle, and the predators and human impact that challenges its survival. This environmental education model has had demonstrated success for over 50,000 outdoor school students and educators. Receive a lesson plan, story map, and other handouts on Reflective Storytelling and its ties to Traditional Ecological Knowledge. Come prepared to laugh, to learn, and to share in an adventure! (FSH 203)

### **2 - Beyond education... ACTIONS for Puget Sound**

*Cara Ianni*, NAME member

*Suzi Wong Swint*, Snohomish County Surface Water Management

Join us for an around-the-Sound tour of three projects addressing behaviors that affect the health of aquatic ecosystems: planting riparian trees, reducing residential pesticide use and releasing undersized crabs (when crabbing). Each program has conducted research on their target audience to first determine the best methods and messages, and then use the results to create, implement and test an outreach plan. We will share highlights from each program, including results of their audience research, example outreach materials, and tips for designing YOUR outreach programs to best motivate behavior change. (This presentation is 60 min.) (MAR 168)

### **3 - Laaqudax, the Northern Fur Seal: an integrated curriculum for Alaska schools**

*Lisa Hiruki-Raring*, NOAA Alaska Fisheries Science Center

*Pamela Goddard*, NOAA Alaska Fisheries Science Center

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 Unangan culture and history, and includes recent and historical research and conservation efforts in NOAA's management of the fur seal population. The six-lesson elementary school unit (K-6) includes hands-on activities ranging across science, math, reading, writing, geography, technology, and art. The eight-lesson middle school/high school unit (7-12) includes topics covered in the K-6 unit, as well as additional lessons that cover population dynamics, history, and civics. NOAA and Thalassa Education developed the curriculum in partnership with the Pribilof School District, the Aleut Community of St. Paul Island-Tribal Government, and the Central Bering Sea Fishermen's Association. (MAR 268)

## TUESDAY SESSION B (1:00 PM – 1:45 PM)

### **4 - Storm Water Pathways**

*Joy Tally*, South Slough NERR

*Jenna Kulluson*, Oregon Coast Education Program

Follow the path of your Storm Water! Presented by the Oregon Coast Education Program (OCEP) this presentation will connect you with OCEP resources through the exploration of the Storm-water Pathways topic guide. We will show you how to investigate watersheds through place-based field experiences, connect activities to Next Generation Science Standards, and generate ideas for student led stewardship projects. (MAR 168)

### **5 - Don't Drip and Drive - A social marketing campaign for a big pollution topic!**

*Heather Trim*, Futurewise

*Tiffany O'Dell*, Pierce County Public Works & Utilities

*Justine Ashombom*, Washington State Department of Ecology

*Mary Rabourn*, King County

Leaks of oil and other fluids from cars in the Puget Sound region run in stormwater into our waterways - and add up to the equivalent of an average of a tanker truck a day! How do you change the norm and motivate car owners to actually fix those leaks? The barriers are large – fixing leaks can be expensive, people are worried that auto shops might be trying to upsell them, and it is a hassle to get leaks fixed. Come find out how Don't Drip and Drive has tackled these thorny issues with creative messaging, financial incentives and cool new approaches. (MAR 268)

### **6 - So You Want Diversity?**

*Kimberly Sirena Gonzalez*, Seattle Aquarium

*Michelle Piñon*, Puget Soundkeeper Alliance

*Sapna Sopori*, IslandWood

Moderator: *Ron Harris-White*, Antioch

Many organizations are beginning to realize the value of diversity in the workplace. Some express frustrations finding and retaining candidates. Meet four marine and aquatic educators of color, and hear about their personal struggles in the world of conservation education. How can you help shift your program's culture so that it reflects the world at large? Bring your questions; there will be an opportunity for dialogue. (FSH 203)

## Tuesday Session C (2:00 pm – 2:45 pm)

### **7 - Ocean Education for a Crowded World**

*Lois Sherwood*, Port Townsend High School

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. (FSH 203)

## **8 - “I Want to Be A Marine Biologist When I Grow Up” – Prepare Your Students to Turn Childhood Dreams into College & Career Success**

*Christen Foehring*, College of the Environment, University of Washington

*Joe Kobayashi*, Marine Biology, University of Washington

"As the marine biology adviser at the University of Washington, my voicemail and email inbox filled daily with messages from eager students ages 5 to 75 asking the same question – how do I become a marine biologist when I grow up? In this session, we will share secrets for success from a college marine and environmental science advising perspective. We will address ways to support your students' interest in marine science and help them prepare to pursue a college degree in a related field.

Attendees will come away with an understanding of:

- Required and recommended preparation for high school students interested in pursuing a degree or career in marine science
- A “toolbox” of resources for helping your students explore marine science careers & opportunities (MAR 168)

## **9 - Blending Sociology and Environmental Science at a Community College**

*Woody Moses*, Highline College

*Dr. Darryl Brice*, Highline College

In this class Dr. Darryl Brice and Woody Moses co-teach a coordinated study combining Sociology and Environmental Science 101. The course explores the foundations and intricacies of the everyday world, forcing students to confront their preconceptions and deal with uncomfortable and controversial issues. (MAR 268)

## **Tuesday Session D (3:00 pm – 3:45 pm)**

### **10 - Open ROV Expeditions with the Environmental Science Center**

*Christine Froschl*, Environmental Science Center

*Laura James*, OpenROV Ambassador

*Tom Mickel*, Environmental Science Center

Seahurst Park is home to the largest shoreline restoration project in Puget Sound. It is the ESC's vision to see this significant achievement serve as a catalyst for future projects involving the local community. ESC is collaborating with Laura James and AVID students from Highline High School to build and utilize an OpenROV. This underwater robot will serve as a tool to monitor the amazing changes that occur to the nearshore environment when shoreline is restored. Engaging and empowering young minds in the Burien community will create future leaders in environmental stewardship. (FSH 203)

### **11 - Tours of UW Oceanography’s Seaglider Fabrication Center & ARGO Float Lab**

*Greg Brusseau*, ARGO Float Group, UW Oceanography

*Fritz Stahr*, Seaglider Fabrication Center, UW Oceanography

Oceanographers are able to gather continuous data about the ocean's temperature, salinity, and other characteristics at a variety of depths and locations around the world all without leaving the warm, dry comforts of their labs in Seattle! Despite what we might think, these scientists are not magical entities with superpowers that allow them to be in many places at once. In fact, they just have really cool toys! The Seaglider & ARGO Float teams at UW's School of Oceanography have built and deployed a fleet of high tech autonomous underwater vehicles (AUV's) which can collect ocean data from a vast range and then transmit the data via satellite back to eager researchers and students on land! Join us for a tour of the lab where these amazing Seagliders & ARGO Floats come to "life". Dive into an exploration of the intersection of engineering, technology, and ocean science! Learn how these tools are built, how they work, and what they teach us about (meet at FSH Lobby)

## **12 - Understanding the Multicultural Communities Perspective of Marine/Aquatic Resources When Sharing Critical Agency Messages**

*Alan Rammer*

In the late 80's, a new wave of immigrants from the Asian-Pacific Island (API) countries began arriving in the Pacific NW. At about the same time reports began coming into natural resource agency enforcement divisions about an increasing number of citations being given to members of these communities as well as increasing numbers of marine-related illnesses being reported from hospitals surrounding these same communities. In 1996, I began reaching out to 27 agencies serving these communities in the greater Puget Sound region to try and establish why this was happening. Only two agencies however were willing to work with me. Thus began a very difficult and extremely heart-warming journey over the next 13 years as I not only enlightened and empowered the six API communities I was serving but I also learned and became embraced by the communities I was partnering with in order to develop the award winning program that became known and recognized nationally as "Marine Resources For Future Generations". (MAR 268)

## **Thursday Session E (1:00 pm – 1:45pm)**

### **13 - Watershed to Whitecaps - An interactive field guide**

*John Williams, SEA-Media*

Come try out a prototype of a cutting edge field guide on mobile devices (smart phones and tablets) that you can use when you (or your students) go to the beach, or are in their boat, SCUBA diving, or whatever. It will incorporate things that books and laminated sheets can't do, like show behavior (via movies), show interactions within the ecosystem, connect to social media and citizen science projects, and link to a plethora of cultural interpretations such as tribal stories, art, poetry, etc. And, drumroll...., when you're on the beach looking at stuff and you want to know more, you don't have to be glued to your phone to read about it, it can read to you while you're looking at the real thing! (FSH 203)

### **14 - Seasonal Swings in Estuaries**

*Joy Tally, South Slough NERR*

Learn about the Estuaries 101 curriculum from the National Estuarine Research Reserve System. Designed for middle and high school students and teachers to explore both local and national estuaries,

this interactive, online curriculum brings the estuary to your classroom. This session will focus on the use of water quality to understand seasonal swings in the estuary and the importance of water quality to the organisms of the estuary. (FSH 107)

### **15 - Student engagement in authentic, boat-based research at the Ocean Research College Academy**

*Ardi Kveven*, Ocean Research College Academy

The Ocean Research College Academy is a magnet, running start program at Everett Community College utilizing high impact educational practices which include cohorts of students working collaboratively on capstone research projects. The cornerstone project we established is called the State of Possession Sound (SOPS), which involves 50 students annually monitoring the health of an estuary 30 miles north of Seattle. Students collect bio-geo-chemical data and then analyze and interpret this data. What started as a plan to integrate introduction to oceanography content with statistics coursework has evolved into a massive multi-year project, generating sharable data on topics including counts and distribution of marine mammals and seabirds, water-chemistry metrics, water-quality data, nutrient concentrations, levels and distribution of sediment and heavy metals, and river flow and tide interactions coupled with plankton sampling. The success of the SOPS project is evident through student evaluations as well as resulting publications, two direct National Science Foundation (NSF) grants, and a partnership NSF grant from the Community College Undergraduate Research Initiative (CCURI). (FSH 108)

## **Thursday Session F (2:00 pm – 2:45 pm)**

### **16 - Science, safety, and our shared aquatic resources: a new socio-ecological education program from Oregon State Marine Board**

*Sara Shaw-Roberts*, Oregon State Marine Board

What do educators, scientists, boaters, and students have in common? We all need healthy and usable waterways. A new K-12 curriculum integrates STEM concepts, Common Core and Next Generation Science Standards, and transdisciplinary learning to enrich student aquatic literacy. Concepts of boating and water safety are related to physics, math, engineering, ecology, and social studies for a broader understanding of how students can help improve water quality and responsibly enjoy their aquatic resources. Learn how you can implement these free lesson plans in your classroom, and try a few of them yourself! Participants will have the opportunity to test three hands-on activities suitable for multiple age groups: buoyancy and the physics of life jackets; engineering clean-up solutions for a simulated oil spill; and a “town hall meeting” between stakeholders to tackle a challenging river management issue. (FSH 203)

### **17 - Why is communicating about aquatic science often so difficult? Some lessons learned, best practices and the future of communications**

*Orlay Johnson*, NOAA-NWFSC and Seattle Aquarium

*Jim Wharton*, Seattle Aquarium

*Janice Mathisen*, Seattle Aquarium

*Heather Galindo*, COMPASS - University of Washington

*Eric Scigliano*, Washington Sea Grant

*Sally James, [seattlesciencewriter.com](http://seattlesciencewriter.com)*

*Casey Ralston, NOAA-NWFSC*

How do the many voices of NAME (teachers, scientists, journalists, interpreters - all of us) effectively communicate scientific info about the aquatic world? It should be easy, we have a vast array of communications tools from scientific journals to the latest online apps, yet often our message falls horribly flat or is just rejected. The answer to effective communications does not seem to be a simple one: A scientist sharing a new paper on Twitter can increase exposure among research colleagues, but does it ensure the data and conclusions end up in the hands of a classroom educators or students? How can a teacher effectively pass that information on to students if they don't get the information or it is poorly transmitted? This session will bring together speakers from education, academia, aquariums, marine centers, journalism, and government to discuss communication strategies that work and don't work, and how to measure whether these strategies are successful. Orly and Casey will moderate this session with 6 panel speakers discussing communication techniques. (This session is 90 min.) (FSH 107)

### **18 - Empowerment of Salishan Youth in Restoration of the First Creek Watershed**

*Joshua Christy, Junior Youth Empowerment Program*

The First Creek Watershed In Tacoma, Washington has been a focus of restoration efforts by local organizations, NGO's, and the city of Tacoma. The watershed is located next to a diverse, mixed income neighborhood known as Salishan. While there have been some efforts to engage this population in the restoration projects, results have been minimal. The potential for greater participation from this diverse population is clear. This poster describes a camp organized by the Junior Youth Spiritual Empowerment Program which was able to engage a diverse group of middle-school and high-school aged youth in caring for the watershed. (FSH 108)

## **Thursday Session G (3:00 pm – 3:45 pm)**

### **19 - Sea Lion CSI**

*Julie Tennis, Place-Based Education Consultant, Julie Tennis LLC*

"Sea Lion CSI" is a hands-on program highlighting the investigative aspect of the Marine Mammal Stranding Network. In this workshop, participants will work in small groups performing mock necropsies on 1/8-size sea lion models. Groups record their findings on data sheets and use that data to construct an explanation for their animal's cause of death. Each group presents their findings then uses a key to determine the most likely cause of death of each model. While actual necropsies are rarely so cut and dried, this Three-Dimensional Learning activity helps students understand some of the challenges faced by marine mammals in a coastal environment. (FSH 108)

### **20 - Can Music Be Considered an educational tool?**

*DouGlas Palenshus, WA Dept. of Ecology*

*Sharon Abreu, Irthling Arts-Based Environmental Education*

How lyrical content can become a key element to songs for environmental use. Presenters will demonstrate some examples of how the music in a song can support the lyric's ability to penetrate the conscious (and subconscious) mind. Short snippet-examples will be shared of songs that have important



lyrical content. Participants will be asked to spend 10 min. penning a couple of verses of non-pedantic, potential lyrics/poetic verse, ideally aimed at the affective (vs. cognitive) side of our comprehension. Afterwards, volunteers will be asked to offer a freewill sharing of their workshop products. The session will end with each of the two professional artists playing one tune selected from the snippet examples. (FSH 203)

## **Friday Session H (9:30 am – 10:15 am)**

### **21a - Aliens Amongst Us - Easy ways to interest kids in science, biology and evolution through the amazing life of Cephalopods.**

*Orlay Johnson*, NOAA NW Fisheries Science Center (Retired) & Seattle Aquarium Beach Naturalist

Ideas will be presented on way to introduce young hominids to an alien phylum who arrived on the scene about 400 million years ago and dominated the seas for the next 200 million years. Why did they never venture onto the land? We will provide info appropriate for teaching a wide range of age groups about squids, octopuses, cuttlefish, nautili and prehistoric forms of the phylum.

One way to introduce these aliens is by dissection of a market or Humboldt squid. What makes this particularly attractive is that these creatures are cheaply available at Asian markets, the dissection tools can be blunt, clean-up is easy, and it truly is an alien species whose evolution is both vastly different and remarkably similar to humans. (joint with Eugene D.) (FSH 203)

### **21b - Nudibranchs of the MaST Center: A Snapshot of Opisthobranchs in Puget Sound**

*Eugene Disney*, Marine Science and Technology (MaST) Center

Come and learn about one of the most charismatic niches of sea slugs that are found in great abundance all over the Sound. We at the Marine Science and Technology (MaST) Center have been following our internal species since October of 2013 and have been seeing some very interesting trends. This presentation will not only cover what a nudibranch is and why they are important, but also how one can use citizen science to acquire more data than you ever could alone. (FSH 203)

### **22 - Introduction to the National Network for Ocean and Climate Change Interpretation (NNOCCI)**

*Nicole Killebrew*, Seattle Aquarium

*Katie Hart*, Seattle Aquarium

A great challenge of our time is to raise hope among formal and informal science educators addressing complex topics like climate change and ocean acidification. We will introduce participants to strategic framing, a set of science-based tools to help educators initiate and facilitate conversations for understanding, hope and engagement around these local and global scale issues. (FSH 107)

### **23 - In Pursuit Of Forage Fish: Little Fish With Big Impact**

*Leihla Scharlau*, Mid Sound Fisheries Enhancement Group

Mid Sound Fisheries Enhancement Group has been conducting monthly forage fish spawning surveys at Carkeek Park in Seattle, WA under a grant from the American Fisheries Society WA-BC Chapter Small Projects grant program. Special Projects Coordinator, Leihla Scharlau, and a small group

of volunteers that graduated from the recent Citizen Action Training School program have been surveying the beach once a month searching for sandlance, surf smelt, and herring eggs using a new tidal elevation protocol developed by WA Department of Fish & Wildlife (WDFW). Come learn about this new protocol, what it takes to partner with WDFW to collect real data that is admissible in court, and how you can get involved surveying a beach of your own! There will be a hands on example of the sampling protocol with ideas of how it could be modified to teach students scientific data collection techniques from the real world. (FSH 108)

## **Friday Session I (10:30 am – 11:15 am)**

### **24a - How quiet is the ocean?**

*Dr. Bill Hanshumaker, Oregon Sea Grant, Oregon State University/Hatfield Marine Science Center*

Ocean noise comes from many natural and manmade sources: wind, wave, ice, earthquakes, whales, ship props, oil exploration and military testing are some examples. But how quiet is the deep ocean? Last winter we deployed a hydrophone in the Marianas Trench to the depth of 10,904 meters. Join us to "hear" the results of this and previous hydrophone deployments. (20 min., joint with Lucia Harrison) (FSH 107)

### **24b - Nisqually Delta Restoration Puzzle**

*Lucia Harrison, Evergreen State College*

Artist Lucia Harrison will share the Nisqually Delta Restoration Puzzle she created to visualize the removal of agricultural dikes to restore a healthy productive estuary. The project is innovative because it combines art and science. (20 min., joint with Bill H.) (FSH 107)

### **25 - An Introduction to the River Mile**

*Janice Elvidge, NPS Lake Roosevelt National Recreation Area*

The River Mile is a participant driven approach to learning, researching and exploring the watershed health of the Columbia River. "This session is an introduction "The River Mile" which is a network of K-12th grade educators, students, resource managers, scientists and environmental educators in the Columbia River Watershed sharing what they know and learn about the Columbia River Watershed and share best practices, lessons learned, examples of participation, links to resources and collect real world scientific data. Students and teachers become intimately familiar with their mile by spending time in the field inventorying, monitoring, and investigating site discoveries. The River Mile will be open to the entire watershed by 2016 for the National Park Service Centennial. Professional development will be offered between now and then for people to join the network.

<http://www.nps.gov/laro/forteachers/laro-river-mile.htm> (FSH 108)

### **26 - Simple ocean acidification demos you can do (almost) anywhere with (almost) no budget**

*Meg Chadsey, WA Sea Grant*

When speaking to general audiences about ocean acidification (OA), demonstrations, activities and metaphors can really help you get your take-home points across. In this presentation, Meg Chadsey, Washington Sea Grant's Ocean Acidification Specialist and liaison to NOAA Pacific Marine Environmental Laboratory, will lead us through her interactive 'OA 101' presentation, pausing throughout to explain how the activities she uses illustrate key points about the chemistry, oceanography



and biological impacts of ocean acidification. The best thing about Meg's activities is that they don't require a lab bench or fancy equipment, and you can source almost all of the materials from your own kitchen. After this webinar, you'll be ready to take your own OA show on the road! (FSH 203)

## **Friday Session J (11:30 am – 12:15 pm)**

### **27 - Washington's Maritime Workforce Initiative: Challenges and Opportunities for Educators**

*Penny Dalton*, WA Sea Grant

*Ann Avary*, Center of Excellence for Marine Manufacturing and Technology

*Betsy Davis*, Northwest School of Wooden Boat Building

*Debbie Granger*, Working Waterfront Coalition of Whatcom County

Washington's maritime sector is healthy and growing, offering almost 60,000 high paying jobs in a range of occupations from boat building to fishing to military service. Because a well-trained workforce is critical to Washington's future, educators and industry leaders have established an initiative to collaboratively explore innovative, relevant programs for meeting future employment needs. Among the issues are – increasing awareness of maritime occupations and job opportunities; strengthening career pathways to those occupations; developing needed curricula and programs including teacher training; and building connections between educators and marine industries. The panel will discuss challenges, initiatives and success stories to prepare for changing workforce needs. (FSH 107)

### **28 - CoastWatch-Volunteers of All Ages Involved in Citizen Science**

*Fawn Custer*, Coastwatch - Oregon Shores

Help your students earn their service hours and learn to be good stewards of our ocean. Give your volunteers the opportunity to get more involved with valuable research while visiting their favorite beach. These opportunities are not just for Oregonians. In this session, participants will learn of the numerous opportunities for stewardship and citizen science throughout the northwest. (FSH 108)