

Program Schedule



PACIFIC ESTUARINE
RESEARCH SOCIETY

41st ANNUAL MEETING

Ocean Research College Academy, Everett, WA

March 1-4, 2018



Meeting Sponsors

Ocean Research College Academy

GeoEngineers

Port of Everett



41st Annual PERS Meeting

March 1-4, 2018

Everett, WA

Welcome from PERS!

This meeting marks the 41st annual meeting for PERS, and PERSians are fortunate to have such a great location for our meeting, with Everett, WA and Port Gardner Bay, as well as the surrounding area, offering many important and historical ties to coastal and estuarine ecosystems. It is fitting to have the meeting theme “Working Waterfronts” coincide with this location. The Everett waterfront, located on the Snohomish River delta, was first settled by native Americans of the Snohomish Tribe, who first inhabited the bay due to its rich resources and connection to the river. Westward expansion brought settlers to the area soon after, setting up homesteads and looking to turn the area’s natural resources into profit. Rapid business growth and the increasing need for goods made the citizens’ decision to create the Port of Everett in 1918. This year marks the Centennial of the Port of Everett, and since its inception the Port has served as a steward for Port Gardner Bay and the Snohomish River, managing its valuable social, economic, and environmental assets. Today, Port Gardner Bay and the Snohomish River are valuable natural resources that support our regional economy as well as the local flora and fauna. This has been accomplished by achieving a balance among the many stakeholders/users and applying a comprehensive approach to environmental management.

To emphasize this balance of development in the face of being responsible environmental stewards, the scientific program will focus on ecological and management issues that our essential nearshore environments face as population and commerce increase along these environments, thus truly bringing us together in conversations and presentations in which we are all vested. Themes that have emerged from your collective contributions include new paradigms for understanding carbon flow/sequestration in estuarine environments, emerging science on new anthropogenic contaminants of concern (marine microplastics), and effects of environmental, climatic, and anthropogenic stressors.

The format of the meeting is also meant to foster interaction, discussion and collaboration - with ample time for discussion during poster sessions and a large portion of the time set aside for group discussions following the “fast-talk” sessions. This spirit of engagement is meant to encourage all conference participants - from undergraduate students to seasoned veterans - to interact and address the important issues that are facing estuarine and coastal research and management.

Enjoy the conference!

Regards,

Jason Stutes, PERS President

Jude Apple, Past PERS President

Invited Speakers

Jon Houghton, PhD – Senior Principal Fisheries Biologist, Hart Crowser

Introductory Plenary on Working Waterfronts



Jon is presenting the conference theme plenary on working waterfronts showcasing example projects from the Port of Everett. Jon's experience in Puget Sound and the broader Pacific Northwest is long and varied with more than 40 years of research and consulting experience within the region. He has worked in coastal and riverine environments from Prudhoe Bay to the Columbia River. This experience has included baseline studies in remote areas, permitting (including NEPA), habitat restoration, and ESA and EFH compliance, and has involved substantial field research in freshwater, estuarine, and marine environments. He has also designed numerous habitat restoration and enhancement projects as mitigation for project impacts and as habitat restoration to aid in salmon recovery. He is also experienced in working within teams to develop optimum project designs that balance project requirements with good environmental stewardship.

James "Jim" Fourqurean, PhD – Florida International University

Chair Special Session on Blue Carbon



Jim is coming all the way from Florida to host a special session on Blue Carbon. He is the newest President Elect for our parent organization CERF. When not participating in official CERF business, he considers himself a marine and estuarine ecologist with a special interest in benthic plant communities, food webs, and nutrient biogeochemistry. He developed a love of seagrass ecosystems while doing his dissertation research in Florida Bay. He has specialized in the application of elemental and stable isotopic composition of organisms as indicators of ecosystem processes. He is an expert in carbon storage and fluxes in coastal ecosystems, and the importance of these ecosystems to climate regulation and mitigation. He has current research interests the Florida Keys, the Gulf of Mexico, in Mexico, Panama and Bermuda, the western Mediterranean and Australia.

Natalie Ban, PhD – University of Victoria

Associate Professor, Environmental Studies

PERS Banquet Speaker: "Breaking down disciplinary boundaries: opportunities and challenges in inter- and trans-disciplinary research"

Natalie will be our Banquet Plenary speaker presenting on the ethnoecology of our nearshores in the Pacific Northwest. Trained in geography, resource management and environmental studies, Natalie draws upon many disciplines from natural and social sciences in her work. Her research interests span ethnoecology, conservation biology, marine spatial planning, conservation planning and implementation, and evaluation and mapping of cumulative impacts, all mainly in marine and coastal systems. Natalie's current research focuses on identifying options for management and conservation of



biodiversity whilst respecting people's needs and uses of resources. Much of her research is carried out in partnership with local communities and First Nations in British Columbia, Canada. She will be sharing her experiences – lessons learned and challenges – in working with across and beyond academic disciplines, combining, where appropriate, natural sciences, social sciences, and local and Indigenous knowledge.

Venue Location and Parking

The meeting is being held within the ORCA meeting spaces at 1205 13th St, Suite #203 in Everett, WA. Conference attendees are welcome to park in the lot across from the flag pole on the North side of the building with the boatyard canopy or in the Waterfront Center Overflow gravel lot. Venue location can be found at this [link](#).

To reach us from I-5 Southbound

- Take Exit 198 and follow the highway south.
- Immediately after crossing the bridge as you enter Everett, take the right-hand exit to Marine View Drive.
- Follow Marine View Drive to the waterfront and turn right at 13th Street.
- Turn right on Craftsman Way. The building is on your immediate right as you turn.

To reach us from I-5 Northbound

- Take Exit 195 and turn left off the exit onto East Marine View Drive/East Grand.
- Continue just over three miles to the waterfront and turn right at 13th Street.
- Turn right on Craftsman Way. The building is on your immediate right as you turn.

WiFi and Internet Access

Wi-Fi access is available to all conference attendees. Connect to the EvCC wireless and use the login username: smgakveven and the Password "Orca2018".

Lunch and Dinner

There are several lunch and dinner venues close to the presentation venue. Here are some of our favorites:

Seas the Day Café: Downstairs, (no website)

Bluewater Distilling: Downstairs too,

<https://www.bluewaterdistilling.com/docs/BWODSummerMenu2017.pdf>

Scuttlebutt Brewery: 1205 Craftsman Way, <https://scuttlebuttbrewing.com/>

Lombardi's Italian Restaurant: 1620 W Marine View Dr, <http://www.lombardisitalian.com/everett-menu/>

Anthony's HomePort: 1726 W Marine View Dr, <https://www.anthonys.com/restaurants/detail/anthonys-homeport-everett>

Moontree Asian Tapas: 1728 W Marine View Dr #112, <http://www.moontreeasiantapas.com/>



Conference Schedule

Pacific Estuarine Research Society

March 1-4, 2018

Ocean Research College Academy

1205 Craftsman Way, Suite 203, Everett, WA 98201

Sponsored by Port of Everett, Ocean Research College Academy,
and GeoEngineers, Inc.



Thursday 3/1

5:30pm - 8:30pm	Opening social and mixer	Lombardi's Italian Restaurant 1620 W Marine View Dr. Everett, WA
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Friday 3/2

8:00-8:30	Registration, Check-in and Coffee	
8:30 - 9:00	Welcome <i>Jason Stutes, PERS President</i> <i>Lisa Lefeber, Port of Everett</i>	
9:00 – 9:30	Plenary Talk, Working Waterfronts Presenter: Jon Houghton	
9:30 – 10:30	Fast Talks Session #1: Regulatory and Management Issues Presenters: Williams, Ferraro, Schmitt, Vance, Durland, Perotti	
10:30 – 11:00	Break (with refreshments)	
11:00 - 11:45	Poster Session (preceded by lightning round of poster previews by presenters) Presenters: Nolan, Martin, Trejo, Blanchette, Bjornson, Coleman, Kelsey	
11:45 - 12:00	Morning Announcements	
12:00 - 1:30	Lunch (on your own)	
1:30 - 2:00	Plenary Talk, Blue Carbon: <i>How much is there and does it have any value in climate change mitigation?</i> Presenter: Jim Fourqurean	
2:00 - 3:15	Special Topic Session #1: Blue Carbon Presenters: Apple, Lutz, Prentice, Tran Additional Panelists: Rybczyk, Poppe, Bjornson	
3:15 - 3:45	Break (with refreshments)	
3:45 - 4:45	Fast Talks Session #2: Estuarine Dynamics Presenters: Partridge, Kveven, Johnson, Chung, Phillips	

4:45 - 5:00	Afternoon Announcements
5:00 - 6:00	PERS Business Meetings
6:00 – 9:00	PERS Banquet (Everett Yacht Club)
	Social Hour with Refreshments
	Guest Speaker: Natalie Ban, University of Victoria <i>“Breaking down disciplinary boundaries: opportunities and challenges in inter- and trans-disciplinary research”</i>

Saturday 3/3

8:00-8:30	Registration and Coffee
8:30 – 8:45	Opening and Announcements
8:45 – 9:45	Fast Talks Session #3 Habitat, Invertebrates, and Fish Presenters: Matsubu, Eisenlord, D’Andrea, Command, Kontou, Osborn
9:45 – 10:15	Break (with Refreshments)
10:15 – 11:45	Special Topic Session #2: Marine Microplastics Presenters: Houle, Spanjer, Masura, Baechler, Hodum Additional Panelists: Kelsey
11:45 - 12:15	Awards and Closing Remarks Jude Apple, Student Awards Jason Stutes, PERS President
12:15	Adjourn

Sign up for the following field trips at the Registration table by noon on Friday

Sunday 3/4	Field Trips and Other Activities	
9:00 - 12:00	Class on the Japanese art of Gyotaku (Fish Printing) with Bruce Koike.	ORCA Common
9:00 - 11:00	Jetty Island Guided Tour	Meet ORCA 1
9:00 - 11:00	Possession Sound Cruise	TBD

Thanks for joining us in Everett!

List of Presenters and Titles

(*indicates student presenter)

Friday Sessions

Session #1: Regulatory and Management Issues

<i>Gary Williams</i>	WORKING WITH THE SALT WEDGE DURING PIPELINE SCOUR PROTECTION PLACEMENT TO PROTECT EULACHON (<i>THALEICHTHYS PACIFICUS</i>) SPAWNING IN THE FRASER RIVER ESTUARY
<i>Steven Ferraro</i>	VALUE RIGIDITY TRAPS IN ESTUARINE HABITAT COMMUNITY ECOLOGY
<i>Jenni Schmitt</i>	COMMUNITY COLLABORATION: A LOCALLY-DRIVEN APPROACH TO ESTUARINE MANAGEMENT
<i>Mitch Vance</i>	COMMERCIAL CRABBING IN OREGON'S ESTUARIES: RECENT TRENDS AND CURRENT STATUS
<i>Ylva Durland</i>	SHELLFISH AND EELGRASS RESOURCES OF COOS BAY, OREGON, USA: THEN, NOW, AND IN THE FUTURE
<i>Elizabeth Perotti</i>	FROM BURROWS TO BLADES: USING UNMANNED AIRCRAFT SYSTEMS FOR ESTUARY MONITORING IN OREGON

Special Topic Session #1: Blue Carbon

<i>Jim Fourqurean</i>	BLUE CARBON: HOW MUCH IS THERE AND DOES IT HAVE ANY VALUE IN CLIMATE CHANGE MITIGATION?
<i>Jude Apple</i>	INSIGHTS INTO ECOSYSTEM SERVICES, RESTORATION POTENTIAL, AND CARBON MARKETS REVEALED BY A PNW BLUE CARBON INVENTORY
<i>Mira Lutz*</i>	CARBON BLUES: BLUE CARBON STOCK AND SEQUESTRATION RATES IN CENTRAL SALISH SEA EELGRASS MEADOW SEDIMENTS
<i>Carolyn Prentice*</i>	REDUCED WATER MOTION ENHANCES ORGANIC CARBON STOCKS IN TEMPERATE EELGRASS MEADOWS
<i>Tyler Tran*</i>	MITIGATING OCEAN ACIDIFICATION: TOWARDS A MODEL RELATING PCO ₂ , IRRADIANCE AND LEAF AREA INDEX OF <i>ZOSTERA MARINA</i> L. (EELGRASS) IN PADILLA BAY, WA

Session #2: Estuarine Dynamics

<i>Valerie Partridge</i>	ARE THINGS GETTING BETTER OR WORSE? MAYBE.
<i>Ardi Kveven</i>	STUDENT RESEARCH ON THE STATE OF POSSESSION SOUND AT THE OCEAN RESEARCH COLLEGE ACADEMY
<i>Joshua Johnson*</i>	THE IMPACT OF WATER COLUMN MIXING IN A SALT WEDGE ESTUARY
<i>Collin Chung*</i>	EL NIÑO SOUTHERN OSCILLATION AND pH IN THE POSSESSION SOUND
<i>Ingrid Phillips*</i>	SEASONAL VARIATION IN CHLOROPHYLL AND DISSOLVED OXYGEN IN POSSESSION SOUND

Saturday Sessions

Session #3: Habitat, Invertebrates, and Fish

- William Matsubu** IS THE ESTUARY HALF EMPTY OR HALF FULL? JUVENILE STEELHEAD FORAGING BEHAVIOR AND PREY ASSEMBLAGE IN AN INTERMITTENT ESTUARY
- Morgan Eisenlord** TIPPING THE BALANCE: IMPACT OF SEAGRASS WASTING DISEASE IN A CHANGING OCEAN
- Anthony D'Andrea* SHELLFISH COMMUNITY PATTERNS IN THE NATIVE AND NON-NATIVE EELGRASS HABITATS OF NETARTS BAY, OREGON, USA
- Rylan Command** THE EFFECT OF ANGULAR ORIENTATION ON MORTALITY AND BURROWING BEHAVIOUR IN THE PACIFIC GEODUCK CLAM, *PANOPEA GENEROSA* (GOULD, 1850)
- Sophia Kontou* THE DIFFERING EFFECTS OF LOW SALINITY ON FEEDING RATES OF INVASIVE *CARCINUS MAENAS* AND NATIVE *CANCER PRODUCTUS*
- Katherine Osborn** THE BIG, THE MAD, AND THE TEN: FISH COMMUNITIES IN THREE NORTH CALIFORNIA ESTUARIES

Special Topic Session #: Marine Microplastics

- Katie Houle* MICROPLASTIC POLLUTION IN REGIONAL WATERS
- Andrew Spanjer* ADVANCING MICROPLASTIC ANALYSIS AT THE U.S. GEOLOGICAL SURVEY MICROPLASTIC LABORATORY
- Julie Masura* SPATIAL AND TEMPORAL DISTRIBUTION OF MICROPLASTICS IN SURFACE WATERS OF PUGET SOUND
- Britta Baechler** MICROPLASTIC CONCENTRATIONS IN OREGON'S PACIFIC OYSTERS AND PACIFIC RAZOR CLAMS
- Peter Hodum* MICROPLASTICS IN SALISH SEA MARINE FOOD WEBS

List of Poster Presenters and Titles

(*indicates student presenter)

Friday Poster Session

<i>Kelly Martin*</i>	CAPTURING AN EMERGING INVASION: STATUS OF EUROPEAN GREEN CRAB IN WASHINGTON'S SALISH SEA
<i>Shauna Bjornson</i>	INVESTIGATING THE CARBON FLUX OF A COASTAL EELGRASS ECOSYSTEM, PADILLA BAY, WASHINGTON
<i>Sean Nolan*</i>	DIVERSE TAXA OF ZOOPLANKTON INHABIT HYPOXIC WATERS IN A TEMPERATE LAKE
<i>Jessica Blanchette</i>	A HEALTHIER PUGET SOUND: RESTORING CRITICAL HABITAT BY TRANSPLANTING EELGRASS (<i>ZOSTERA MARINA</i>)
<i>Alexandra Trejo*</i>	SMALL CLAMS MAKING A BIG DIFFERENCE: ROCHEFORTIA TUMIDA OBSCURE JUVENILE BIVALVES SURVEY RESULTS IN THE GULF ISLANDS
<i>Natalie Coleman*</i>	THE EFFECTS OF OCEAN ACIDIFICATION ON SEA ANEMONE-ALGAL SYMBIOSIS IN INTERTIDAL COMMUNITIES OF THE SALISH SEA
<i>Jessica Kelsey*</i>	EXPLORATION OF MICROPLASTICS IN THE LOWER PUYALLUP RIVER WATERSHED