

# Program Schedule

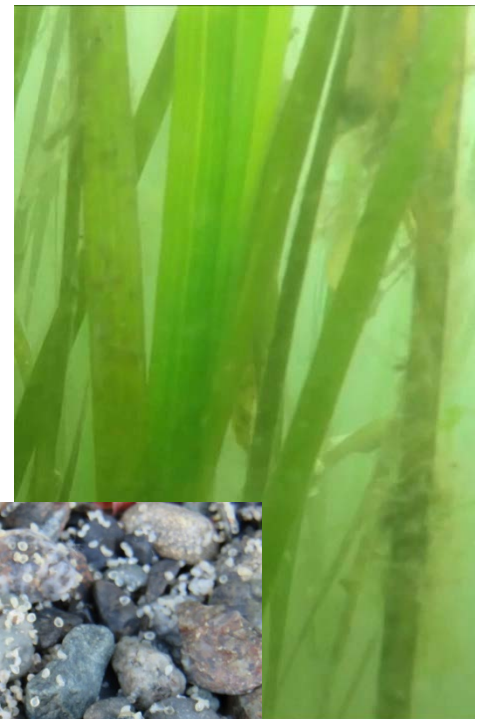


PACIFIC ESTUARINE  
RESEARCH SOCIETY

## 42<sup>nd</sup> ANNUAL MEETING

Fidalgo Bay Resort, Anacortes, WA

*April 25-27, 2019*





Big Thankyou to our  
Meeting Sponsors



SAMISH INDIAN NATION



## **42<sup>nd</sup> Annual PERS Meeting**

**April 25-27, 2018**

**Anacortes, WA**

### **Welcome from PERS!**

This meeting marks the 42<sup>nd</sup> annual meeting for PERS, and PERSians are fortunate to have such a great location for our meeting, with Anacortes, WA, Fidalgo Bay, and Padilla Bay in the background. Fidalgo Bay gets its name because it is adjacent to Fidalgo Island, which was named after the explorer Salvador Fidalgo who mapped the area in 1790. Similarly, the Spaniard José María Narváez explored and named Padilla Bay in 1791, calling it Seno Padillo, in honor of Juan Vicente de Güemes Padilla Horcasitas. It is fitting to have the meeting theme “Performing Science in Today’s Changing World” coincide with this location. Padilla Bay is home to the Padilla Bay National Estuarine Research Reserve where our own past president Jude Apple serves as research coordinator. This reserve is one of 29 estuarine reserves established across the nation for long-term research, education, and coastal stewardship. A central program within the reserve is the system wide monitoring program (SWMP) which collects data on water quality, weather conditions, and habitat in an effort to understand and track long-term changes in the Padilla Bay estuary. I wonder if how conditions present in the late 18<sup>th</sup> century at the time of the explorers would compare to what we see today.

Prior to exploration, the Fidalgo Island area was first settled by native Americans of the Samish and Swinomish Tribes, who first inhabited the bays due to its rich resources and connection to the sea. The Samish Indian Nation has graciously sponsored this meeting because of their historical close ties to estuaries. Tribal elders would often explain to young of the tribe, “When the tide goes out our table is set for dinner.” This speaks to a rich history and knowledge of the coasts that were their home.

To emphasize this reliance on shorelines and necessity in being responsible environmental stewards, the scientific program will focus on ecological and management issues that our nearshore environments face as population and commerce increase their utilization of these environments. This program attempts to bring 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.

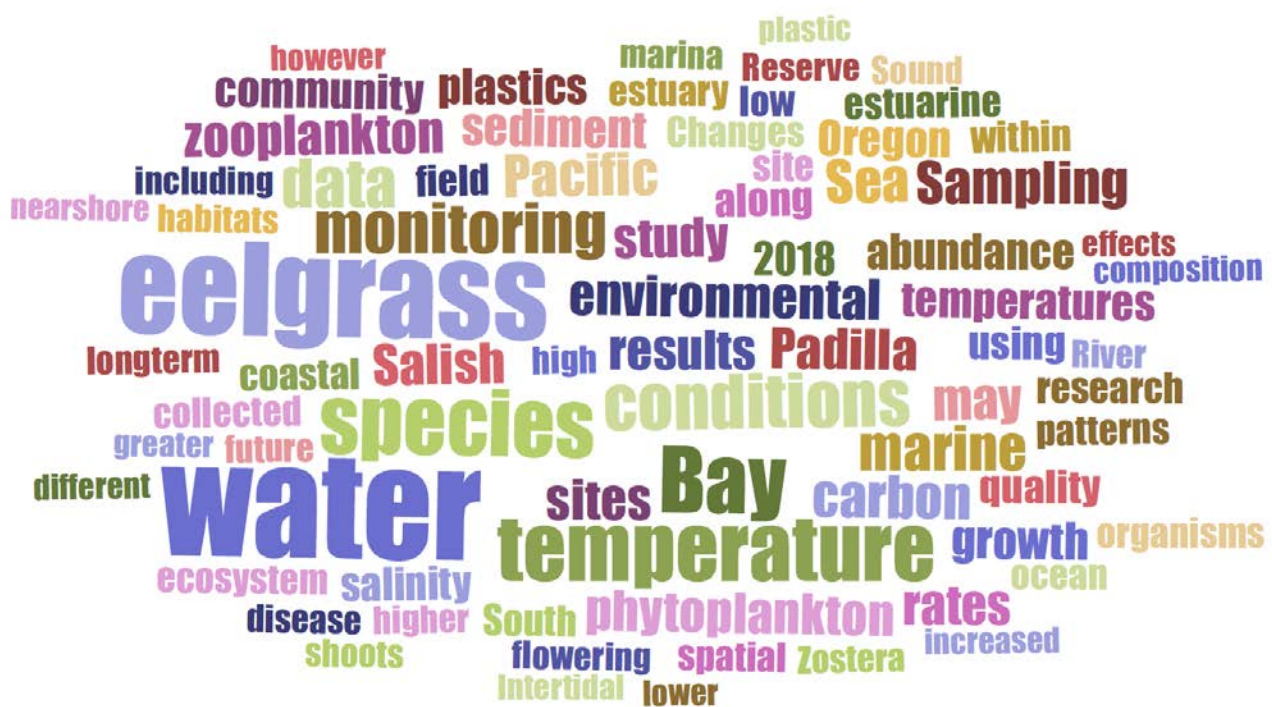
Enjoy the conference!

Regards,

Jason Stutes, PERS President

Jude Apple, Past PERS President

Elizabeth Perotti, Incoming PERS President



*Word cloud generated from the abstracts submitted.*

### **Conference Organizers**

Jason Stutes (PERS President)  
Jeannie Gilbert (PERS Treasurer)  
Adrienne Stutes (PERS Secretary)  
Jude Apple (PERS Past President)

### **Pacific Estuarine Research Society (PERS)**

PERS is a non-profit organization with a wide ranging membership from academic and research institutions, federal and state agencies, and commercial and nonprofit organizations. The purpose of the society is to bring together persons actively engaged in estuarine and coastal research and management on the Pacific Coast of North America for informal discussion and exchange of ideas for educational, research and management purposes. PERS recognizes that today's students are tomorrow's estuarine scientists and managers and seeks to support their active involvement in the annual meeting and beyond. The first PERS meeting was held in 1977 in Astoria, OR and was organized by a cadre of Pacific Coast estuarine scientists who formed the group as an Affiliate Society of the Estuarine Research Federation (ERF). PERS annual meetings are held up and down the Pacific Northwest coast, and generally rotate between British Columbia, Oregon and Washington.

### **Samish Nation Department of Natural Resources**

The mission of the Samish Department of Natural Resources is to preserve, protect and enhance culturally significant natural resources and habitats within Samish Traditional Territory for current and future generations.

## Venue Location and Parking



The meeting is being held at the Fidalgo Bay Resort convention building. The closest address to the parking lot of the conference building is 1111 Fidalgo Bay Rd, Anacortes, WA 98221, or use this [link](#).

### To reach us from I-5 Southbound

- Follow I-5 S to WA-20. Take exit 230 toward Burlington/Anacortes/WA-20.
- Continue on WA-20 W. Drive 18 miles to Fidalgo Bay Rd.
- Turn right on Fidalgo Bay Rd. Drive approximately 1 mile till Weaverling Rd.
- Turn right on Weaverling Rd and follow road around right hand curve and conference building will be ahead on left.

### To reach us from I-5 Northbound

- Follow I-5 N to WA-20 W/Avon Cutoff in Burlington. Take exit 230 from I-5 N.
- Continue on WA-20 W. Drive 18 miles to Fidalgo Bay Rd.
- Turn right on Fidalgo Bay Rd. Drive approximately 1 mile till Weaverling Rd.
- Turn right on Weaverling Rd and follow road around right hand curve and conference building will be ahead on left.

### To reach us from Anacortes Ferry Terminal

- Exit ferry to WA-20 heading south and then east into downtown Anacortes for approximately 3.7 miles until you reach Commercial Ave.
- Turn right on Commercial Ave and travel 1.2 miles until 34<sup>th</sup> St.
- Turn left on 34<sup>th</sup> St and travel 0.4 miles till V Ave.
- Turn right on V Ave and then immediately turn left onto 35<sup>th</sup> St. This will turn into Fidalgo Bay Rd.
- Follow Fidalgo Bay Rd for approximately 1 mile till Weaverling Rd.
- Turn left on Weaverling Rd and follow road around right hand curve and conference building will be ahead on left.

Special Networking Workshop:

# Building the Estuary Science Workforce of Tomorrow

Estuary and nearshore science is changing fast. **Join us for this work session that will facilitate a dialogue between students and early career professionals and employers.** Your voices will inform the national conversation on maritime workforce development in this changing landscape. Students will hear from experienced professionals about necessary skills and emerging trends in the field. Professionals will share their experience, workforce needs, and learn how to tap and cultivate the next generation of talent. Proceedings of the session will be published and shared with PERS members, CERF leadership, academic programs and the Oregon Governor's Maritime Sector Workforce Taskforce



Date: Friday April 26, 2019

Time: 12:00-1:45pm





## Conference Schedule

Pacific Estuarine Research Society

April 25-27, 2019

Fidalgo Bay Resort Convention Center

1111 Fidalgo Bay Rd, Anacortes, WA 98221

*Sponsored by WA Sea Grant, Samish Indian Nation,  
Turner Designs, GeoEngineers*



### Thursday 4/25

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5:30pm - 8:30pm	Opening social and mixer	Rockfish Grill/Taproom 320 Commercial Ave Anacortes, WA
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### Friday 4/26

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8:00-8:30	<b>Registration, Check-in and Coffee</b>	
8:30 - 9:15	Welcome <i>Jason Stutes, PERS President</i> <i>Chairman Tom Wooten, Samish Indian Nation</i> <i>Todd Woodard, Samish Indian Nation</i>	
9:15 – 10:00	<b>Plenary Talk, Puget Sound Initiative; Fidalgo Bay</b> Presenter: Sandra Caldwell & Arianne Fernandez, WA Dept. of Ecology	
10:00 - 10:30	Break (with refreshments)	
10:30 – 11:45	<b>Fast Talks Session #1: Habitat Degradation and Invasions</b> Presenters: Lawlor, Olsen, Yamada, Coleman	
11:45 - 12:00	<b>Morning Announcements</b> General House Keeping	
12:00 - 1:45	<b>Working lunch</b> (provided)	
12:30 – 1:45	<b>Networking Session: Building the Estuary Science Workforce of Tomorrow</b> Lisa M. Blank, Oregon Coastal STEM Hub Director Cinamon Moffett, Hatfield Marine Science Center	
1:45 – 3:00	<b>Fast Talks Session #2: Monitoring Baselines and Fluxes</b> Presenter: Apple, Burnett, Rigby, Weihoefer	
3:00 – 3:45	<b>Poster Session #1 (preceded by lightning round of poster previews by presenters)</b> Presenters: Matthews, Connelly, Mulligan, Baechler, Piasecki, Smith, Thalman, Houle	

3:45 - 4:20 **Fast Talks Session #3: Monitoring Baselines and Fluxes (cont)**  
Presenters: Johnston, Rollwagen-Bollens

4:20 - 4:30 **Afternoon Announcements**

4:30 - 5:15 **PERS Business Meeting**

6:00 – 9:00 **PERS Banquet** (Fidalgo Bay Resort Convention Center)

Social Hour with Refreshments

**Guest Speaker: Mason Schrutes, PERS Safety Officer**

*“Alaska Ecotones and Ecology: A safety perspective”*

## **Saturday 4/27**

8:30 – 9:00 **Registration and Coffee**

9:00 – 9:15 **Opening and Announcements**

9:15 – 10:00 **Poster Session #2 (preceded by lightning round of poster previews by presenters)**  
Presenters: Heinicke, Wood, Prentice, Bohlmann, Bjornson, Eisenlord, Houle

10:00 – 10:20 **Special Topic: Brackish Marsh Recession in Fraser River Estuary**  
Presenter: Balke

10:20 – 11:30 **Fast Talks Session #4 Habitat, Invertebrates, and Fish**  
Presenters: Shull, Tran, Helms, Schmitt, Yeates

11:30 – 12:00 **Awards and Closing Remarks**  
Jude Apple, Student Awards  
Jason Stutes, PERS President

**12:15 Adjourn**



*Thanks for joining us in Everett!*

**List of Presenters and Titles**

*(\*indicates student presenter)*

**Friday Sessions**

**Fast Talks Session #1: Habitat Degradation and Invasion**

- Jake Lawlor\** EFFECTS OF INTERACTING CLIMATE STRESSORS ON OLYMPIA OYSTER LARVAL GROWTH RATE AND DURATION
- Amy Olsen* QUANTIFYING MICROPLASTIC DEBRIS IN ELLIOTT BAY UNDER THE SEATTLE AQUARIUM PIER 59
- Sylvia Behrens Yamada* OCEAN CONDITIONS PREDICT THE SUCCESS OF THE INVASIVE EUROPEAN GREEN CRAB
- Natalie Coleman\** ACID IN THE INTERTIDAL: POSSIBLE BENEFITS OF OCEAN ACIDIFICATION TO SEA ANEMONE-ALGAL SYMBIOSIS

**Fast Talks Session #2: Monitoring Baselines and Fluxes**

- Jude Apple* SHORT-TERM VARIABILITY AND LONG-TERM TRENDS IN WATER QUALITY AND METEOROLOGICAL CONDITIONS IN PADILLA BAY NATIONAL ESTUARINE RESEARCH RESERVE
- Nicole Burnett* CHANGING PATTERNS IN THE ZOOPLANKTON COMMUNITY IN THE PADILLA BAY NATIONAL ESTUARINE RESEARCH RESERVE
- Emma Rigby\** SEDIMENTARY BIOGEOCHEMISTRY OF THE SALISH SEA: A SPATIAL ANALYSIS OF SPRINGTIME BENTHIC FLUXES OF NUTRIENTS, DISSOLVED OXYGEN, DIC AND ALKALINITY
- Christine L. Weilhoefer\** THE EFFECT OF IN SITU WARMING ON PLANT DIVERSITY AND SOIL CO<sub>2</sub> EFFLUX IN A COASTAL OREGON WETLAND

**Fast Talks Session #3: Monitoring Baselines and Fluxes (cont.)**

- Robert K. Johnston* EFFECTIVELY MANAGING WATER QUALITY GOALS FOR COASTAL AND ESTUARINE ECOSYSTEMS: AMBIENT MONITORING IN SINCLAIR AND DYES INLETS IN THE PUGET SOUND, WA, USA
- Gretchen Rollwagen-Bollens* ENGAGING HIGH SCHOOL STUDENTS AS COLLABORATORS IN ECOLOGICAL INVESTIGATION OF THE COLUMBIA RIVER ESTUARY: LESSONS FROM A TRANSDISCIPLINARY UNIVERSITY-HIGH SCHOOL PARTNERSHIP

## Saturday Sessions

### Special Session #1: Fraser River Estuary

*Eric Balke* RESEARCH INTO THE CAUSE OF BRACKISH MARSH RECESSION IN THE FRASER RIVER ESTUARY

### Fast Talks Session #4: Habitat, Invertebrates, and Fish

*Suzanne Shull* DEVELOPING SEMI-AUTOMATED BASELINE AND CHANGE DETECTION MAPS OF NEARSHORE VEGETATION IN THE PADILLA BAY NATIONAL ESTUARINE RESEARCH RESERVE

*Tyler Tran\** VARIATION IN RESPONSE TO LIGHT REDUCTION BY EELGRASS (*ZOSTERA MARINA*) FROM DIFFERENT SITES IN THE SOUTHERN SALISH SEA

*Ali Helms* EELGRASS DECLINES IN THE SOUTH SLOUGH ESTUARY, COOS BAY, OR

*Jenni Schmitt* ASSESSING THE DISTRIBUTION OF LAMPREY SPECIES ALONG THE SOUTHERN OREGON COAST

*Alice Yeates* NEW TECHNOLOGY FOR OLD CHALLENGES – DEVELOPING EDNA METHODS TO MONITOR FISH ASSEMBLAGES IN ESTUARINE SYSTEMS

## List of Poster Presenters and Titles

(\*indicates student presenter)

### Friday Poster Session #1

<i>Erin Matthews</i>	METHODS FOR MONITORING MARINE PHYTOPLANKTON PADILLA BAY, WASHINGTON
<i>Kristin Connelly*</i>	SPATIAL AND TEMPORAL VARIABILITY IN ZOOPLANKTON COMMUNITY DYNAMICS IN THE COLUMBIA RIVER ESTUARY
<i>Danielle D. Mulligan*</i>	ESTUARINE CONDITIONS MAY INFLUENCE SEASONAL ALGAL BLOOMS IN LIBERTY BAY
<i>Britta Baechler*</i>	MICROPLASTIC CONCENTRATIONS IN TWO OREGON BIVALVE SPECIES: SPATIAL, TEMPORAL, AND SPECIES VARIABILITY
<i>Jason Piasecki*</i>	SEABIRD FORAGING ECOLOGY AS AN INDICATOR OF MARINE PLASTICS DISTRIBUTION ON THE OREGON COAST
<i>Tasha Smith*</i>	WHAT ENVIRONMENTAL FACTORS AFFECT THE MORTALITY AND GROWTH OF HATCHERY-RAISED JUVENILE OLYMPIA OYSTERS?
<i>Hillary L. Thalmann *</i>	THERMAL EFFECTS ON PRE-RECRUIT PACIFIC COD PHENOLOGY, GROWTH, AND FORAGING IN GULF OF ALASKA NURSERY HABITATS
<i>Katie Houle</i>	SOUTH PUGET SOUND BIOBLITZ: NEARSHORE INVERTEBRATES

### Saturday Poster Session #2

<i>Samantha Heinicke*</i>	THE PHENOLOGY OF FLOWERING IN ZOSTERA MARINA VARIES IN THE SOUTHERN SALISH SEA
<i>Skylar Wood*</i>	ASSESSING THE PERFORMANCE OF EELGRASS (ZOSTERA MARINA) FROM 6 SITES IN THE SOUTHERN SALISH SEA TO ELEVATED TEMPERATURES
<i>Carolyn Prentice</i>	A SYNTHESIS OF "BLUE CARBON" STOCKS AND ACCUMULATION RATES IN EELGRASS (ZOSTERA MARINA) MEADOWS ALONG THE NORTHWEST COAST OF NORTH AMERICA
<i>Heath Bohlmann</i>	MONITORING TEMPERATURES IN INTERTIDAL EELGRASS BEDS: METHODS DISCUSSION
<i>Shauna Bjornson</i>	INVESTIGATING PLANT MORPHOLOGY AND PRIMARY PRODUCTION RATES OF ZOSTERA MARINA IN PADILLA BAY, WASHINGTON
<i>Morgan E. Eisenlord*</i>	EELGRASS WASTING DISEASE TRANSMISSION AND VIRULENCE IN A WARMING OCEAN