77th Annual Shellfish Conference and Tradeshow

Brought to you by the Pacific Coast Shellfish Growers Association (PCSGA) and the National Shellfisheries Association - Pacific Coast Section (NSA-PCS)

Seaside Civic & Convention Center, Seaside, OR

Monday, Sept 18

September 19-21, 2023

Schedule at a Glance



* subject to change. Room assignments will be provided closer to the conference date.

| | | | | | wonday, Sept 10 | | | | | | | |
|-------------|--------------------------|--|-----------|----------------------------|--|------------|---|--|--|--|--|--|
| 8:30 a.m. | | Golf Tournament - Gearhart Golf Links (www.gearhartgolflinks.com) | | | | | | | | | | |
| 9:00 a.m. | | Pickleball Tournament - Sunset Empire Park and Recreation District (1140 Broadway St, Seaside, OR 97138) | | | | | | | | | | |
| 1:00 p.m. | . Riverside A & B | PCSGA Board Meeting | | | | | | | | | | |
| 4:00 p.m. | | BREAK | | | | | | | | | | |
| 4:30 p.m. | Riverside A & B | PCSGA Annual General Member Meeting | | | | | | | | | | |
| | | Tues, Sept 19 | | | | | | | | | | |
| 9:00 a.m. | Pacific Room | Welcome | | | | | | | | | | |
| 9:15 a.m. | Pacific Room | John Lentz Featured Speaker: Aquaculture Apprenticeship Program Carissa Maurin (Gulf of Maine Research Institute) | | | | | | | | | | |
| 10:30 a.m. | | BREAK | | | | | | | | | | |
| 11:00a a.m. | Pacific Room | Working Toward Social License to Operate Emily Whitmore (Maine Aquaculture Innovation Center) | | | | | | | | | | |
| 12.00 p.m. | Pacific Room | | | | ON Featuring a special presentation by the authors of 'Heave | n on the H | alf Shell' | | | | | |
| | | Session 1 -Riverside B | | | Session 2 - Necanicum East and West | | | Session 3 - Riverside A | | | | |
| 2:00 p.m. | | Response of eastern oysters (Crassostrea virginica) and soft shell clams (Mya arenaria) repeated hypoxia durring heatwaves Jasmine Talevi* (Dalhousie University), Shelby Clarke, Michael Coffin, Luc Comeau, Takashi Sakamaki and Ramon Filgueira | 2:00 p.m. | Social License Workshop | Social License Workshop Moderated by Emily Whitmore and Anne Langston (Maine Aquaculture Innivation Center) | 2:00 p.m. | Genetics, Genomics, and Broodstock | Genetic Variation in Growth of Pacific Oysters is Primarily Non- Additive Dennis Hedgecock (University of Southern California), Xiaoshen Yin | | | | |
| 2:15 p.m. | Ocean Conditions | Exploring adaptation and plasticity to ocean warming in blue mussels (Mytilus edulis) from Atlantic Canada Shelby B. Clarke* (Dalhousie University) , Tiago Hori, Luc Comeau, and Ramon Filgueira | 2:15 p.m. | | | 2:15 p.m. | | Development of an Alternative Sterility Method for Shellfish Aquaculture: Identification of Candidate Genes Involved in Germ Cell Specification Mackenzie Gavery (NOAA Fisheries - NW Fisheries Science Center), Lauren Saunders, Lauren Vandepas, Brent Vadopalas, Adam Luckenbach, Cole Trapnell, Steven Roberts | | | | |
| 2:30 p.m. | | Examining the impacts of elevated, variable pCO2 on larval Pacific razor clams (Siliqua patula) in Alaska Marina Alcantar* (University of Alaska Fairbanks) , Jeff Hetrick, Jacqueline Ramsay, and Amanda Kelley | 2:30 p.m. | | | 2:30 p.m. | | Shellfish stress and chromosome copies: performance of diploid and triploid oysters under temperature, pH, and dissolved oxygen stress Craig Norrie (University of Washington) | | | | |
| 2:45 p.m. | | Environmental Priming for Ocean Acidification: Potential hatchery practices to build resilience for clam aquaculture in the Puget Sound Larken Root (Univeristy of Washington/NOAA), Mackenzie Gavery, Ryan Crim | 2:45 p.m. | | | 2:45 p.m. | | Sex determination in Pacific oysters (Crassostrea gigas): Translating basic science into more efficient oyster production Bernarda Calla (USDA-ARS), Neil Thompson | | | | |
| 3:00 p.m. | | | | | BREAK | | | | | | | |
| 3:15 p.m. | p.m. Ocean Conditions | Potential of the macroalgae dulse (Devaleraea mollis) to mitigate effects of ocean acidification on larval Pacific oysters (Magallana gigas) in land-based co-culture Leah Wessler' (University of British Columbia), Dr. Andrea Frommel, Dr. Jennifer Clark | 3:15 p.m. | Social Media workshop | | 3:15 p.m. | . Genetics, Genomics, and Broodstock | Coupling in vitro challenge and transcriptomics to investigate mechanisms of eastern oyster apoptotic response to the intracellular parasite Perkinsus marinus Erin M. Witkop (University of Rhode Island), Dina P. Proestou, Gary Wikfors, Kathryn Markey-Lundgren, Mary Sullivan, Marta Gomez-Chiarri. | | | | |
| 3:30 p.m. | | Recovery from an atmospheric heatwave in Midori and Miyagi strains of the Pacific oyster Hollis Jones* (University of California, Davis), Cassidy Cooper, Anne Todgham | 3:30 p.m. | | Social Media workshop Moderated by Cora Hirashiki (Fat Moon | 3:30 p.m. | | Experimental assesment of POGS YC2023 to OsHV-1 microvar Neil Thompson (USDA- Pacific Shellfish Research Unit), Marni Rem- McGeachy, Will Schoeneck, Darren DeSilva, Nasif Sarowar | | | | |
| 3:45 p.m. | | Triploid Pacific oysters exhibit stress response dysregulation and elevated mortality following heatwaves Matthew George (University of Washington), Olivia Cattau, Mollie A. Middleton, Delaney Lawson, Brent Vadopalas, Mackenzie Gavery, Steven Roberts | 3:45 p.m. | | Creative) | 3:45 p.m. | | Center for Aquaculture Technology Canada (CATC) developed OsHV challenge model to assess family resistance in controlled laboratory condition. Nasif Sarowar (The Center for Aquaculture Technologies) | | | | |

Tradeshow Reception and NSA Fundraiser

4:00 p.m.



4:00 p.m.

4:30 p.m.

Environmental effects on biological characteristics of Pacific oyster Crassostrea gigas cultured in the Seto Inland Sea, Japan, from 1990 to 2022 **Yumeng Pang (University of Washington)**, Tsuneo Ono, Takehiro Tanaka

4:00 p.m.

| Session 1 - Riverside A | | | Session 2 - Riverside B | | | Session 3 - Pacific Room | | |
|-------------------------|----------------------------|---|-------------------------|---|--|--------------------------|--|---|
| 8:30 a.m. | | | 8:30 a.m. | | Fourieramental Cardos of Despites (FCOD) Devision Undets and | | | |
| 8:45 a.m. | | NAHMS: A trusted data oyster with a clam-like formula and statistical mussel helping to meet information needs! Diana Short (USDA APHIS VS NAHMS) | 8:45 a.m. | | Environmental Codes of Pracitice (ECOP) Revision Update and Feedback Session Kim Thompson (Pacific Coast Shellfish Growers Association), Samanitha Klein, Bobbi Hudson | | | |
| 9:00 a.m. | | A Report on Work By NOAA Fisheries and Partners to Assess and Enhance The Permitting and Regulatory Landscape in Washington State Jeff Bash (NOAA Fisheries) | 9:00 a.m. | Conservation and Restoration | A population health approach to monitoring oyster disease in Long Island Sound in support of regional restoration and harvest goals Meghana P. Parikh (NOAA Fisheries Northeast Fisheries Science Center), Mariah L. Kachmar, Stephen Arnott, and Katherine McFarland | 9:00 a.m. | 1. USDA Pacific Shellfish Research Unit Engagement Session - POGS Breeding Program Update and Listening Session 1. | USDA Pacific Shellfish Research Unit Engagement Session - POGS Breeding Program Update and Listening Session USDA-ARS Pacific Shellfish Research Unit |
| 9:15 a.m. | | ELAP: Oppurntunities and Challenges from a National Perspective Charlie Culpepper (National Aquaculture Association) | 9:15 a.m. | | Determination of gonad reproductive state using non-lethal ultrasonography in endangered black (Haliotis cracherodii) and white abalone (H. sorenseni) Sara E. Boles (Bodega Marine Laboratory, University of California, Davis), Laura Rogers-Bennett, Wendy K. Bragg, Jessica Bredvik-Curran, Suzanne Graham, & Jackson A. Gross | 9:15 a.m. | | |
| 9:30 a.m. | Policy and Permitting | Shellfish Farming and the Endangered Species Act Amanda M. Carr (Plauché & Carr LLP) | 9:30 a.m. | | Integrating aquaculture to improve Olympia oyster restoration in the Elkhorn Slough, CA Jacob Harris* (Moss Landing Marine Laboratories, San Jose State University), Luke Gardner, Amanda Kahn, Kerstin Wasson | 9:30 a.m. | | |
| 9:45 a.m. | | Legal Issues Impacting Shellfish Samuel W. (Billy) Plauché (Plauché & Carr LLP) | 9:45 a.m. | | Every Breath You Take: Siphon Visibility Of Puget Sound Wild Geoducks Henry S. Carson(WA Dept. of Fish and Wildlife) Bethany C. Stevick and Ocean Working | 9:45 a.m. | | |
| 10:00 a.m. | | Communicating information on ecosystem services provided by shellfish aquaculture into the aquaculture permitting and review process. Chris Schillaci (NOAA Fisheries) | 10:00 a.m. | | A Novel Social-Ecological Clam Garden Site Selection Process Joe Williams (Swinomish Indian Tribal Community), Courtney M. Greiner, Julie S. Barber, Jamie Donatuto, Melissa Poe, James McArdle, Lindy Hunter, Michal Heidt | 10:00 a.m. | | |
| 10:15 a.m. | n. | 10:15 a.m. | | Baskets of cockles in fields of geoduck: Assessing Clinocardium nuttallii abundance in geoduck farms across Puget Sound Ryan Crim (Puget Sound Restoration Fund) , Emily Buckner, Elizabeth Unsell, Darbhi Durvasula, Hannah Garfield, Jodie Toft | 10:15 a.m. | L | | |
| 10:30 a.m. | | | | | BREAK | | | |
| 11:00 a.m. | | Session 1 - Riverside A | 11:00 a.m. | | Session 2 - Riverside B Watching from Above – Monitoring Eelgrass Habitats in Humboldt, Samish, and Willapa Bays Phil Bloch(Confluence Environmental Company), Kelly McDonald, Whelan Gilkerson and Bobbi Hudson | 11:00 a.m. | | Session 3 - Pacific Room |
| 11:15 a.m. | | Washington State Department of Health Commercial Shellfish Enforcement Program Overview Dani Toepelt, R.S. (WA Dept. of Health) | 11:15 a.m. | Conservation and Restoration | Recovery mechanisms of eelgrass (Zostera marina) following dredging disturbance Fiona Boardman* (University of Washington), Elena Subbotin, Jennifer Ruesink | 11:15 a.m. | for Shellfish Health Management - OsHV- 1 and The West Coast Shellfish Industry | Workshop: Strengthening Research Support for Shellfish Health Management - OsHV-1 and The West Coast Shellfish Industry NOAA Fisheries Northeast Fisheries Science Center and CA Department of Public Health |
| 11:30 a.m. | | An electronic aquaculture production data system for Washington Chris Eardley (WA Dept. of Fish and Wildlife), Bobbi Hudson, Dani Toepelt, David Beugli, Laura Butler, Kim Thompson, Kevin Decker | 11:30 a.m. | | Nekton Use of Seagrass (Zostera Marina) Habitat on Oyster Flip-bag Farms Katie Houle (Pacific Shellfish Institute), Kalloway Page, Fiona Boardman, Jennifer Ruesink | 11:30 a.m. | | |
| 11:45 a.m. | | Public Engagement Toolkit Kim Thompson (Pacific Coast Shellfish Growers Association) | 11:45 a.m. | | Can coralline algae habitat bolster the climate resilience of Washington's endangered pinto abalone? Eileen Bates* (University of Washington), Josh Bouma, Ryan Crim, Jodie Toft, Jacqueline Padilla- Gamino | 11:45 a.m. | | |
| 12:00 p.m. | Policy/Permitting | | 12:00 p.m. | - Lightning Talks | WDFW's Safeguard Our Shellfish Campaign Nam Siu (WA Dept. of Fish and Wildlife), Katy Davis, Matt Hoehn, Chris Eardley; An update on West Coast Shellfish Biosecurity Workshop Series Chris Eardley (WA Dept. of Fish and Wildlife), Chris Langdon, Maria Haws; Effect of Biofouling and Stocking Density on Microclimate in off-Bottom Oyster Culture Grow-Out Bags Julianne Grenn* (Virginia Institute of Marine Science) and William Walton | 12:00 p.m. | | |
| 12:15 p.m. | S | Shellfish Farm Permitting Toolbox Kelly McDonald (Confluence Environmental Company) , Marlene Meaders, Jesse DeNike, Samantha Klein | 12:15 p.m. | | Is water temperature a critical factor dictating OsHV-1 SD Bay µvar infection and mortality rates in Pacific oysters? Emily Kunselman* (Scripps Institution of Oceanography). Daysi Manrique, Zachary Daniel, Colleen Burge, Sarah Allard, Jack Gilbert; Enhancing access to ocean data and information products from the Central and Northern California Ocean Observing System (CeNCOOS) to support well-informed shellfishery management Marine Lebrec (Monterey Bay Aquarium Research Institute), Alex Harper | 12:15 p.m. | Outreach and Education | An oyster farm in your living room: Distant, Immersive, Virtual Education for Agriculture (DIVE4Ag) Ford Evans (Oregon State University) |
| 12:30 p.m. | | | | | LUNCH BREAK/NSA LUNCHEON | | | |
| | Session 1 - Necanicum East | | | Session 2 - Riverside B | | | | Session 3 - Riverside C |

| 2:00 p.m. | | West Coast Federal Shellfish Research Update and Listening Session NOAA Fisheries and USDA ARS | 2:00 p.m. | Outreach and | Seaweed farming in the classroom: educational materials Kristin Jones (Pacific Northwest National Laboratory), Deborah Rose, Molly Grear, Ruth Branch, Candace Briggs | 2:00 p.m. | | Toward the qualitative modeling of Dungeness crab for management and conservation in the South Puget Sound Melanie Good* (University of Washington), P. Sean McDonald, Erendira Aceves Bueno, and Emily Buckner | |
|-----------|---|--|-----------|----------------------------------|---|-----------|------------------|--|--|
| 2:15 p.m. | West Coast Federal Shellfish Research | | 2:15 p.m. | Education | Washington Shellfish Perceptions: Survey Results Examining Messages and Attitudes in Shellfish Producing Counties Brett Veerhusen (Ocean Strategies), Tyler Edgar | 2:15 p.m. | | Effects of climate change (warming and acidification) on bull kelp (Nereocystis leutekana) microscopic stages Miranda Roethler * (University of Washington), Jacqueline Padilla-Gamino, Cinde Donoghue | |
| 2:30 p.m. | | | 2:30 p.m. | m. Down on the Farm m. | The effect of including Nannochloropsis oculata within mixed algal diet on growth and survival of Pacific cyster Crassostrea gigas larvae. Zachary Kowash* (Oregon State University) | 2:30 p.m. | Beyond Bivalves: | The Impact of Temperature on the Nutritional Composition of Dulse (Devaleraea mollis) and its Influence on Juvenile Red Abalone (Haliotis rufescens) Jackson Gross (Univeristy of California, Davis), Natalie Rizzo, and Sara Boles | |
| 2:45 p.m. | Update and Listening Session | | 2:45 p.m. | | Quantifying Bed Quality: a Comparison of Oyster Yield Across Habitats and Growout Methods Jennifer Ruesink (University of Washington), Fiona Boardman, Wesley Hull, Aspen Katla, Andy Suhrbier, Emma Beck, Katie Houle | 2:45 p.m. | More | A year in the life: Tracking post-larval cohorts of Dungeness crab in an estuarine system Sarah Grossman (Swinomish Indian Tribal Community), Claire Cook, Julie Barber | |
| 3:00 p.m. | | | 3:00 p.m. | | Experiences With Experimenting With and Developing Floating Oyster Bags Nyle Taylor (Taylor Shellfish Farms) | 3:00 p.m. | | Return of the Green: An update on the development of a seaweed recycling network Emily Buckner (Puget Sound Restoration Fund) , Hannah Garfield, Jodie Toft, Joth Davis, Bill Dewey, Duane Fagergren, Evie Fagergren, Betsy Peabody | |
| 3.15 p.m. | | | 3.15 p.m. | | Tidal Energy for Mariculture Operations Candace Briggs (Pacific Northwest National Laboratory), Ruth Branch, Molly Grear, Debbie Rose, Kristin Jones | 3.15 p.m. | - | | |
| 3:30 p.m. | | | BREAK | | | | | | |
| | | Session 1 - Necanicum East | | | Session 2 - Riverside B | | 1 | | |
| 3:45 p.m. | | Federal Agency Policy and Program Updates and Listening Session NOAA Fisheries Office of Aquaculture, US Department of Agriculture, National Aquaculture Association | 3:45 p.m. | Ecosystem and Best Management | Ecosystem-based management for community and industry resilience: collaboratively modeling Washington coastal estuaries Nicole Naar (WA Sea Grant) , Kate Litle, P. Sean McDonald, Ashleigh Epps | 3:45 p.m. | - | | |
| 4:00 p.m. | Federal Agency Policy and Program Updates and | | 4:00 p.m. | Practices | Do Oysters Reduce or Increase Transmission of Eelgrass Wasting Disease? Lindsay Alma, PhD (University of California, Davis) | 4:00 p.m. | | | |
| | | | 4:15 p.m. | Shellfish and Human Health | Effects of the harmful alga Cochlodinium (aka Margalefedinium) polykrikoides on clearance rate of the hard clam, Mercenaria mercenaria Darren de Silva (USDA-ARS), Christopher J. Gobler | 4:15 p.m. | | | |
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 4:30 p.m.
 A:30 p.m.
 Providing ocean and coastal data access for Pacific Northwest Shellifsh Growers with the NANOOS Visualization System Rachel Wold (University of Washington), Jan Newton, Roxanne Carini, Nicholas Rome, Jonathan Allan, Troy Tanner, Charles Seaton, Michael Kosro
 4:30 p.m.

 5:00 p.m.
 Pacific Room
 Signers with the NANOOS Used at a access for Pacific Northwest Shellifsh Growers with the NANOOS Visualization System Rachel Wold (University of Washington), Jan Newton, Roxanne Carini, Nicholas Rome, Jonathan Allan, Troy Tanner, Charles Seaton, Michael Kosro
 4:30 p.m.

 5:00 p.m.
 Pacific Room
 EMEMORIAL HAPPY HOUR

 6:00 p.m.
 Pacific Room
 AWARDS BANQUET AND SILENT AUCTION

Thurs, Sept 21

Session 2 - Riverside B

| 8.30 a.m. | | wafia update Enrique Gasteium (wafia) | | | |
|------------|---------------------------|--|------------|--------------------------------|--|
| 8:45 a.m. | Labor Issues | | | Policy/Ecosystem Management | Taylor Shellfish Farms - Habitat Conservation Plan Jesse DeNike (Plauche & Carr), Samuel W. (Billy) Plauche, Phil Bloch, Kelly McDonald, and Chris Cziesła |
| 9:00 a.m. | | | 9:00 a.m. | | Ecological impacts of the invasive European green crab (Carcinus maenas) in Washington Ben Rubinoff (WA Sea Grant) |
| 9:15 a.m. | | Tide's Out: Proposed Washington Shellfish Crew and Manager Training Teri King (Washington Sea Grant), Ashleigh Epps, Nicole Naar | 9:15 a.m. | | What's Eating You: an Overview of Known Interactions and Impacts of The Invasive European Green Crab on Pacific Coast Shellfish Species. Brian Turner (WA Dept. of Fish and Wildlife) |
| 9:30 a.m. | The Nature Conservancy | TNC's Restorative Aquaculture Program Stories, Updates, and New | | Integrated Pest Management | Monitoring Recent Shifts in Burrowing Shrimp Populations in Coastal Estuaries: Are They Really New and Should a Shellfish Grower be Concerned? Brett R Dumbauld (USDA-ARS) , Brooke McIntyre, Nathaniel Lewis, Jennifer Ruesink, and Wesley Hull |
| | Program Updates | Tools The Nature Conservancy | 9:45 a.m. | | |
| 10:00 a.m. | | | | | IPM Update from WA Department of Agriculture Laura Butler (WA Department of Agriculture) |
| 10:15 a.m. | | | 10:15 a.m. | | |
| 10:30 a.m. | | | | | ADJOURN |

Session 1 - Riverside A