71st Annual
Shellfish Growers
Conference and Tradeshow
Resort at The Mountain
Welches, OR
September 18-21, 2017
Welcome to the 71st Annual Shellfish Growers Conference and Tradeshow. Over the three days, growers, researchers, agency staff, industry partners, and students will explore new research findings, consider public policy issues facing the shellfish industry, share stories and learn from each others’ experiences. You may even take home a few pearls of wisdom!

The hashtag for the 71st Annual Shellfish Growers Conference is #shellfish71. Using this hashtag on social media allows followers who could not attend the conference remain engaged throughout the event. Share things you like and learn, as well as new experiences with #shellfish71!

On behalf of the 2017 Conference Planning Committee, thank you to the generous volunteers, growers who donated delicious shellfish, tradeshow vendors, sponsors, and auction donators. It takes bushels of time, service and energy to fully realize this annual event. Thank you for your part in the health and future of the shellfish industry. We invite you to share and be receptive to new ideas, and welcome new opportunities and partnerships that will help all of us reach success.

2017 Annual Conference Planning Committee

Margaret Pilaro Barrette, PCSGA Executive Director  
Connie Smith, PCSGA Assistant Director  
Becky Mabardy, PCSGA Outreach and Project Coordinator  
Tamara Piñero, PCSGA Administrative Assistant  
Laura Hoberecht, NSA-PCS Chair, NOAA Fisheries  
P. Sean McDonald, NSA-PCS Vice-Chair, University of Washington  
Philippa Kohn, NSA-PCS Secretary, Marine Stewardship Council  
Bethany Stevick, NSA-PCS Treasurer, Washington Department of Fish & Wildlife  
David Fyfe, NSA-PCS Member at Large, Northwest Indian Fisheries Commission  
Julie Barber, NSA-PCS Member at Large, Swinomish Tribe  
Chris Eardley, NSA-PCS Member at Large, Washington Department of Fish & Wildlife

Monday, September 18

8:00 Schley Golf Scramble Mt. Hood Golf Course. Pre-registration required.
12:00 Lunch on your own
2:00 PCSGA Annual General Meeting (AGM) Hunchback and Huckleberry  
Open only to PCSGA Grower Members in good standing.
7:00 B-I-N-G-O: After Dinner Battle The Foliage Room. Pre-registration required.
### Plenary Session, Cascade Ballroom

**9:00**
**Conference Welcome:** Margaret Pilaro Barrette PCSGA, and Laura Hoberecht NOAA Fisheries

**9:15**
**Keynote Speaker:** Dr. Charles Yarish, University of Connecticut, *Cultivation of Economically & Ecologically Important Marine Algae for Ecosystem Services, Food, Feeds, Fertilizers, and Biofuels*

**10:00**
**What Causes Predictable and Unpredictable Variation of the Tide & How Will It Change In The Future?**
Dr. Parker MacCready, University of Washington

**10:15**
**Coffee Break Sponsored by Rock Point Oyster Company**

**10:45**
*Turning the Headlights on High: Improving an Ocean Acidification Observation System to Support Shellfish Growers,*
Dr. Jan Newton, University of Washington

**11:00**
**John Lentz Profiles In Innovation Speaker Series:** A Biodegradable Hardscape for the Creation of Diverse Oyster-Based Products for Aquaculture, Habitat Restoration, and Living Shorelines,
Dr. Niels Lindquist, Sandbar Oyster Company and Oyster Catcher™

**11:45**
*Billion Oyster Project’s Community Reefs Program as a Tool for Understanding Challenges and Opportunities for Oyster Restoration in an Urban Setting,* Pete Malinowski, Co-founder of Billion Oyster Project

**12:00**
**Luncheon and Speaker:** Jonathan White, author of *Tides*, shares his passion for the sea with a thrilling lunchtime exchange on some of the largest, fastest, scariest, and most amazing tides in the world.

### Tuesday, September 19

#### Concurrent Session A, Huckleberry
**Seaweed: The Superfood Missing From Your Diet**
Moderator: Dr. Charles Yarish, University of Connecticut

**2:00**
*Climate Change Effects on Seaweed Production,* Janet E. Kübler, University of Connecticut

**2:15**
*Update on Kelp OA Investigation on Hood Head,* Betsy Peabody, Puget Sound Restoration Fund

**2:30**
*Alaska’s First Commercial Harvest of Aquacultured Kelp,* Trevor Sande, Marble Seafoods

**2:45**
*Bull Kelp Early Life History Study; Developing Strategies for Canopy Habitat Restoration,* Brian Allen, Puget Sound Restoration Fund

#### Concurrent Session B, Hunchback
**Managing Shellfish Disease**
Moderator: Lisa Crosson, University of Washington

**2:00**

**2:15**
*Molecular Characterization of a Hyperparasite Bacteriophage and its Pathogenic Host,* Candidatus Xenohaliotis californiensis, Carolyn S. Friedman, University of Washington

**2:30**
*Water Temperature Influences the Oyster’s Bacterial Community: Implications for Host Survival and Immunity,* Timothy Green, Macquarie University, AUS

**2:45**
*Elucidating Abalone Withering Syndrome Disease Dynamics: Low Pathogen Viability & Infectious Dose,* Lisa Crosson, University of Washington

**3:00**
*Lessons on Kelp Cultivation in B.C.,* Kate Rolheiser, Nova Harvest

**3:15**
*Norovirus Outbreaks in Washington Shellfish,* Clara Hard, Washington Department of Health

**3:15**
**Coffee Break Sponsored by Rock Point Oyster Company**

---

**Tuesday Continued On Next Page...**
<table>
<thead>
<tr>
<th>Concurrent Session A, Huckleberry</th>
<th>Concurrent Session B, Hunchback</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seafood Safety 101: Focus on Vibrio</strong>&lt;br&gt;Moderator: Dave Steele, Rock Point Oyster Co.</td>
<td><strong>Breeding For Aquaculture</strong>&lt;br&gt;Moderator: Dennis Hedgecock, University of Southern California</td>
</tr>
<tr>
<td>4:00 <em>Strategies to Minimize Risks Associated with Human Pathogenic Vibrio spp. in Farm-raised Oysters Grown in the US Mid-Atlantic Region</em>, Kimberly Reece, Virginia Institute of Marine Science</td>
<td><em>Boom-and-Bust Production Cycles Threaten Aquaculture Sustainability and Global Seafood Security</em>, Dennis Hedgecock, University of Southern California</td>
</tr>
<tr>
<td>4:30 <em>Using NOAA Observational &amp; Modeling Tools to Address Vibrio Risk</em>, John Jacobs, NOAA Fisheries</td>
<td><em>Correlations Among Larval, Spat and Field Performance Traits of the Pacific Oyster (Crassostrea gigas)</em>, Evan Durland, Oregon State University</td>
</tr>
<tr>
<td>4:45 <em>Bacteriophages Significantly Reduce Larval Oyster Mortality Caused by Vibrio coralliilyticus</em>, David Madison, Oregon State University</td>
<td></td>
</tr>
<tr>
<td><strong>Opening Night Tradeshow Reception at Cascades Ballroom</strong></td>
<td></td>
</tr>
<tr>
<td>Tradeshow Reception Bar Sponsored by <em>Hoopers Island Oyster Co.</em></td>
<td>Tradeshow Reception Sponsored by <em>Miller Nash Graham &amp; Dunn LLP</em></td>
</tr>
<tr>
<td>6:30 National Shellfisheries Association: Student Fundraiser</td>
<td></td>
</tr>
</tbody>
</table>

**A Special Thank You To:**

*Norplex, Inc.* for generously hosting the Hospitality Suite, year after year!

*Braemer Suite, S100*

**Student Sponsors**

Vicki and Steve Wilson, Arcadia Point Seafood (2)  
Lentz Family, Chelsea Farms  
Bill Dewey, Chuckanut Shellfish  
Todd Van Herpe, Humboldt Bay Oyster Co.  
Dave Steele, Rock Point Oyster Co. (2)  
Jim Gibbons, Seattle Shellfish, LLC  
Sue Cudd, Whiskey Creek Shellfish Hatchery (2)  

**Tradeshow Reception and Grand Awards Banquet Shellfish Donors**

Goose Point Oysters  
Oregon Oyster Farms Inc.  
Penn Cove Shellfish LLC  
Rock Point Oyster Co.
Wednesday, September 20

Concurrent Session A, Huckleberry

**Tradeshow Vendor Spotlight!**

8:00  Tradeshow exhibitors take a few minutes to introduce their company and share how their businesses support the shellfish industry. Learn about goods and services that are tide tested, and grower approved!

8:15  **Proactive Planning & Permitting**

Moderator: Laura Hoberecht, NOAA Fisheries

8:30  Evaluation of U.S. Shellfish Aquaculture Permitting Systems: Recommendations to Improve Permitting Efficiencies & Industry Devt., Susan Bunsick, NOAA

8:45  Washington Eelgrass/Shellfish Aquaculture Workshop Summary, Laura Hoberecht, NOAA Fisheries

9:00  **Eyes in the Sky: Using Unmanned Aerial Vehicles to Support Shellfish Aquaculture**, Phil Bloch, Confluence Environmental

9:15  **Understanding & Planning for Local/Regional Oyster Economies**, Sophie Kelmenson, University of North Carolina at Chapel Hill

9:30  **Workshop: Lean Practices For Your Farm**

Quentin Fong, Seafood Marketing Specialist, University of Alaska

9:45  Workshop continued.

10:00 Coffee Break

10:15  Strategies For Community Engagement

Moderator: Lisa Redfern, Seattle Shellfish

10:45  **Bridging the Gap Between Industry & Education**, Kathryn Kurtz, Pacific Education Institute

11:00  **K-12 Marine Science Education for the Next Generation**, Aimee Christy and Mary Middleton, Pacific Shellfish Institute

11:15  **Science Theater - Ocean Acidification & Eutrophication Take the Stage**, Aimee Christy and Mary Middleton, Pacific Shellfish Institute

11:30  **Update on Crab Team: The Citizen Science Monitoring Program for Invasive Green Crab in Puget Sound**, P. Sean McDonald, University of Washington

11:45  **Public Education Through Ecosystem Restoration as a Method for Improving Outcomes for Students & Ecosystems**, Pete Malinowski, Billion Oyster Project

Concurrent Session B, Hunchback

**Nearshore Ecology: Livin' La Vida Loca**

Moderator: Julie Barber, Swinomish Indian Tribe

8:15  The Reproduction Cycle of Cultured Purple Hinged Rock Scallop, Crassadoma gigantea, in Dabob Bay Washington, Molly Jackson, University of Washington

9:00  Giant Red Sea Cucumber (Parastichopus californicus) Puget Sound Growout Trials & Other Interesting Facts, Andy Suhrbier, Pacific Shellfish Institute

9:45  At the Whim of the Tides: Larval Exchange Among Olympia Oyster (Ostrea lurida) in Puget Sound, Megan Hintz, University of Washington

10:30  Survival of Hatchery Origin Juvenile Pinto Abalone (Haliotis kamtschatkana) Outplanted to Species Restoration Sites in the San Juan Archipelago, Henry Carson, Washington Dept. of Fish and Wildlife

11:15  A Tale of Two Crabbies: Temperature Effects on the Bioenergetics of Dungeness & Graceful Crabs, P. Sean McDonald, University of Washington

11:30  Spatial & Temporal Population Variability in Intertidal Clams: Final Results of a Decadal Analysis, Julie Barber, Swinomish Indian Tribal Community

**Workshop: Mitigating Harmful Blooms Impacts On U.S. Aquaculture**

Moderator: Marc Suddleson, NOAA Ocean Services

**Harmful Algal Bloom Workshop Panelists:**

- Marc Suddleson, NOAA Ocean Services
- Raphael Kudela, University of Southern California
- Michael Jamros, Sitka Tribe of Alaska
- Neil Harrington, Jamestown S’Klallam Tribe
- Jerry Borchert, Washington Department of Health
- Audrey Coyne, Washington Department of Health
- Teri King, Washington Sea Grant

Wednesday Continued On Next Page...
**Wednesday, September 20, Continued**

<table>
<thead>
<tr>
<th>Concurrent Session A, Huckleberry</th>
<th>Concurrent Session B, Hunchback</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>12:00</strong> Lunch on your own</td>
<td>11:45 am - 2:00 pm: NSA-PCS Annual Business Lunch at Barlow Trail Roadhouse, 69580 E Hwy 26</td>
</tr>
</tbody>
</table>

### A Closer Look At Changing Ocean Conditions

**Moderator:** Julie Horowitz, Washington Governor's Senior Policy Advisor, Ocean Acidification

**2:00** Seasonal Forecasts of Ocean Acidification in Washington & Oregon Waters, Samantha Siedlecki, University of Washington

**2:15** Persistent Trans-generational Effects of Ocean Acidification on Pacific Oyster Crassostrea gigas, Daniel Gillon, University of Washington

**2:30** Geoduck as Indicators of Environmental Change, Laura Spencer, University of Washington

**2:45** Lifting Barriers to Range Expansion: The European Green Grab, Carcinus maenas, Enters the Salish Sea, Sylvia Yamada, Oregon State University

**3:00** Coffee Break Sponsored by **Alaska Packaging, Inc.**

**3:15** Monitoring for Ocean Acidification Near Coast Villages in South-Central Alaska; Building Capacity & Assessing Vulnerability, Jeff Hetrick, Alutiiq Pride Shellfish Hatchery

**3:30** Effects of Ocean Acidification & Warming on Physiology of Purple-Hinge Rock Scallops: A Multi-Stressor & Multi-Method Approach, Lindsay Alma, University of Washington

**3:45** Energy Allocation to Growth & Structural Support Differs for Two Congener Mussels, Mytilus trossulus & Mytilus galloprovincialis, Emily Roberts, University of Washington

**4:00** Exploring Proteomic Variation in Pacific Oysters, Yaamini Venkataraman, University of Washington

**4:15** Potential Trans-Generational Effects of Ocean Acidification & Hypoxia on the Fecundity of Olympia Oysters (Ostrea lurida), Bryanda Wippel, University of Washington

**4:45** Workshop: Interstate Shellfish Sanitation Conference (ISSC) from 4:15-5:00 pm

**5:00** **PCSGA Members Only Reception with Dr. Charles Yarish**

**Hospitality Suite, Braemer Suite, S100**

**6:30** Grand Awards Banquet at **Cascades Ballroom**

**Student & Industry Awards, and Silent Auction**

**Sponsored by** **Plauché & Carr LLP**
<table>
<thead>
<tr>
<th>Time</th>
<th>Concurrent Session A, Huckleberry</th>
<th>Concurrent Session B, Hunchback</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30</td>
<td>A Visit to Killary Fjord, Ireland, Bobbi Hudson, Pacific Shellfish Institute</td>
<td>Putting it All Together: A Meta-Analysis of Shellfish Aquaculture - Eelgrass Interactions, Bridget Ferriss, NOAA</td>
</tr>
<tr>
<td>8:45</td>
<td>Tips for Saving Your Back &amp; Optimizing Small Acreage Farms, Duane Fagergren, Calm Cove Oyster Co.</td>
<td>Shellfish Community Patterns in the Native &amp; Non-Native Eelgrass Habitats of Netarts Bay, Oregon, Anthony D’Andrea, Oregon Dept. Fish and Wildlife</td>
</tr>
<tr>
<td>9:00</td>
<td>Using Drones on the Farm to Track Eelgrass, John Finger, Hog Island Oyster Co.</td>
<td>Assessments of Interactions Between Salmon Habitat Restoration &amp; Shellfish Resources, Marlene Meaders, Confluence Environmental Co.</td>
</tr>
<tr>
<td>9:15</td>
<td>The First Aquaculture Facility in U.S. Federal Waters, Maria E. Smith, Catalina Sea Ranch, LLC</td>
<td>Do Fish Recognize Shellfish Aquaculture &amp; Eelgrass as Intertidal Estuarine Landscape Features &amp; Can We Tell? Brett Dumbauld, U.S. Department of Agriculture</td>
</tr>
<tr>
<td>9:30</td>
<td>Workshop: Pricing Your Product</td>
<td>Aquaculture &amp; Eelgrass, Does Habitat Suitability Differ for West Coast Species of Interest?, Bobbi Hudson, Pacific Shellfish Institute</td>
</tr>
<tr>
<td>9:45</td>
<td>Workshop continued.</td>
<td>Oysters &amp; Eelgrass as Potential Partners in a High CO2 World, Colleen Burge, University of Maryland</td>
</tr>
<tr>
<td>10:00</td>
<td>Measuring Microplastics in the Marine Environment</td>
<td>Prey Availability of Spring Migrant Red Knots at Grays Harbor &amp; Willapa Bay, Steve Booth, Pacific Shellfish Institute</td>
</tr>
<tr>
<td>10:15</td>
<td>Regulation of Plastic Shellfish Gear, Jesse DeNike, Plauché &amp; Carr LLP</td>
<td>Comparative Habitat Use of Estuarine Habitats With &amp; Without Oyster Aquaculture; Challenges, Partnerships, &amp; Initial Lessons, Marlene Meaders &amp; Phil Bloch, Confluence Environmental Co.</td>
</tr>
<tr>
<td>10:30</td>
<td>Microplastic Debris in Pacific Coast Shellfish &amp; Shellfish Habitat, Katie Houle, Pacific Shellfish Institute</td>
<td>Q&amp;A</td>
</tr>
<tr>
<td>10:45</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td>Improving Genetic Management of Farmed Native Shellfish: Help Guide The Process</td>
<td></td>
</tr>
<tr>
<td>11:45</td>
<td>Conference Adjourns; Thank you for attending and participating!</td>
<td></td>
</tr>
</tbody>
</table>

To make the 2018 conference even more successful, please complete the post-event survey online or pick-up a hard copy at the registration table.

[www.surveymonkey.com/r/shellfish71](http://www.surveymonkey.com/r/shellfish71)

Thank you in advance for your comments and suggestions.
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Contact Person</th>
<th>Address</th>
<th>City, State, Zip</th>
<th>Phone Number</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqua-Pacific Wire &amp; Mesh Supply</td>
<td>Niki Palmer</td>
<td>2220B McCullough Road</td>
<td>Nanaimo, BC Canada</td>
<td>(250) 751-3772</td>
<td><a href="http://www.aquapacificwire.com">www.aquapacificwire.com</a></td>
</tr>
<tr>
<td>Confluence Environmental Company</td>
<td>Chris Cziesla</td>
<td>146 N Canal Street</td>
<td>Seattle, WA 98103</td>
<td>(206) 397-3741</td>
<td><a href="http://www.confenv.com">www.confenv.com</a></td>
</tr>
<tr>
<td>Englund Marine &amp; Industrial Supply</td>
<td>Dale Murff</td>
<td>PO Box 296</td>
<td>Astoria, OR 97103</td>
<td>(503) 325-4341</td>
<td><a href="http://www.englundmarine.com">www.englundmarine.com</a></td>
</tr>
<tr>
<td>Go Deep International Inc.</td>
<td>Ashley Stubbs</td>
<td>10 Watertower Road</td>
<td>Saint John, NB Canada</td>
<td>(506) 633-7850</td>
<td><a href="http://www.godeepaquaculture.com">www.godeepaquaculture.com</a></td>
</tr>
<tr>
<td>Industrial Plankton Inc.</td>
<td>Robert Roulston</td>
<td>3378 Burns Ave</td>
<td>Victoria, BC Canada</td>
<td>(250) 889-5075</td>
<td><a href="http://www.industrialplankton.com">www.industrialplankton.com</a></td>
</tr>
<tr>
<td>Jet City Label</td>
<td>Allen Osterman</td>
<td>4017 Leary Way NW</td>
<td>Seattle, WA 98107</td>
<td>(206) 706-7599</td>
<td><a href="http://www.jetcitylabel.com">www.jetcitylabel.com</a></td>
</tr>
<tr>
<td>Marvel Lock Corp.</td>
<td>Michael Yu</td>
<td>3969 Juan De Fuca Terrace</td>
<td>Victoria, BC Canada</td>
<td>(250) 884-3308</td>
<td><a href="http://www.marvellock.com">www.marvellock.com</a></td>
</tr>
<tr>
<td>McLane Research Labs</td>
<td>Vinnie Ferreira</td>
<td>121 Bernard St. Jean Drive</td>
<td>East Falmouth, MA 02536</td>
<td>(508) 495-4000</td>
<td><a href="http://www.mclanelabs.com">www.mclanelabs.com</a></td>
</tr>
<tr>
<td>Norplex Inc.</td>
<td>Jerry Sanford</td>
<td>PO Box 814</td>
<td>Auburn, WA 98002</td>
<td>(253) 735-3431</td>
<td><a href="http://www.norplexinc.com">www.norplexinc.com</a></td>
</tr>
<tr>
<td>Pacific Hybreed</td>
<td>Jon Kroman</td>
<td>4088 Mattson Place NE</td>
<td>Bainbridge Island, WA 98110</td>
<td>(206) 794-1442</td>
<td><a href="mailto:jon.kroman@gmail.com">jon.kroman@gmail.com</a></td>
</tr>
<tr>
<td>Pro-Ocean</td>
<td>Erin Wilson</td>
<td>80 Pleasant Street</td>
<td>Bridgewater, NS Canada</td>
<td>(902) 530-3550</td>
<td><a href="http://www.pro-ocean.com">www.pro-ocean.com</a></td>
</tr>
<tr>
<td>Reed Mariculture</td>
<td>Eric Henry</td>
<td>900 E. Hamilton Ave. Suite 100</td>
<td>Campbell, CA 95008</td>
<td>(408) 426-5456</td>
<td><a href="http://www.reedmariculture.com">www.reedmariculture.com</a></td>
</tr>
<tr>
<td>SEAPA USA</td>
<td>Matt Will</td>
<td>26-28 Erudina Avenue</td>
<td>Edwardstown SA Australia</td>
<td>(817) 776-2147</td>
<td><a href="http://www.seapa.com.au">www.seapa.com.au</a></td>
</tr>
<tr>
<td>Snow and Company Inc.</td>
<td>Brett Snow</td>
<td>5302 26th Ave NW</td>
<td>Seattle, WA 98107</td>
<td>(206) 953-7676</td>
<td><a href="http://www.snowboatbuilding.com">www.snowboatbuilding.com</a></td>
</tr>
<tr>
<td>Taylor Shellfish Farms</td>
<td>Dave DeAndre</td>
<td>SE 130 Lynch Rd</td>
<td>Shelton, WA 98584</td>
<td>(360) 432-3324</td>
<td><a href="http://www.taylorshellfishfarms.com">www.taylorshellfishfarms.com</a></td>
</tr>
<tr>
<td>Thunderbird Plastics Ltd.</td>
<td>Steve Call</td>
<td>2190 Greentree Rd</td>
<td>Lake Oswego, OR 97034</td>
<td>(503) 744-9112</td>
<td><a href="http://www.thunderbirdplastics.com">www.thunderbirdplastics.com</a></td>
</tr>
<tr>
<td>Vitsa International AB</td>
<td>Mark Winowich</td>
<td>19830 Bagley Drive N V202</td>
<td>Shoreline, WA 98133</td>
<td>(206) 962-0437</td>
<td><a href="http://www.vitsab.com">www.vitsab.com</a></td>
</tr>
<tr>
<td>Washington Farm Bureau</td>
<td>David Pearson</td>
<td>975 Carpenter Road, Suite 301</td>
<td>Lacey, WA 98516</td>
<td>(360) 790-2860</td>
<td><a href="http://www.wsfb.com">www.wsfb.com</a></td>
</tr>
</tbody>
</table>

Save the Date: 72nd Annual Shellfish Growers Conference and Tradeshows
September 17-19, 2018 at Semiahmoo Resort, Blaine, Washington