PCSGA

PACIFIC COAST SHELLFISH GROWERS ASSOCIATION

LONGLINES

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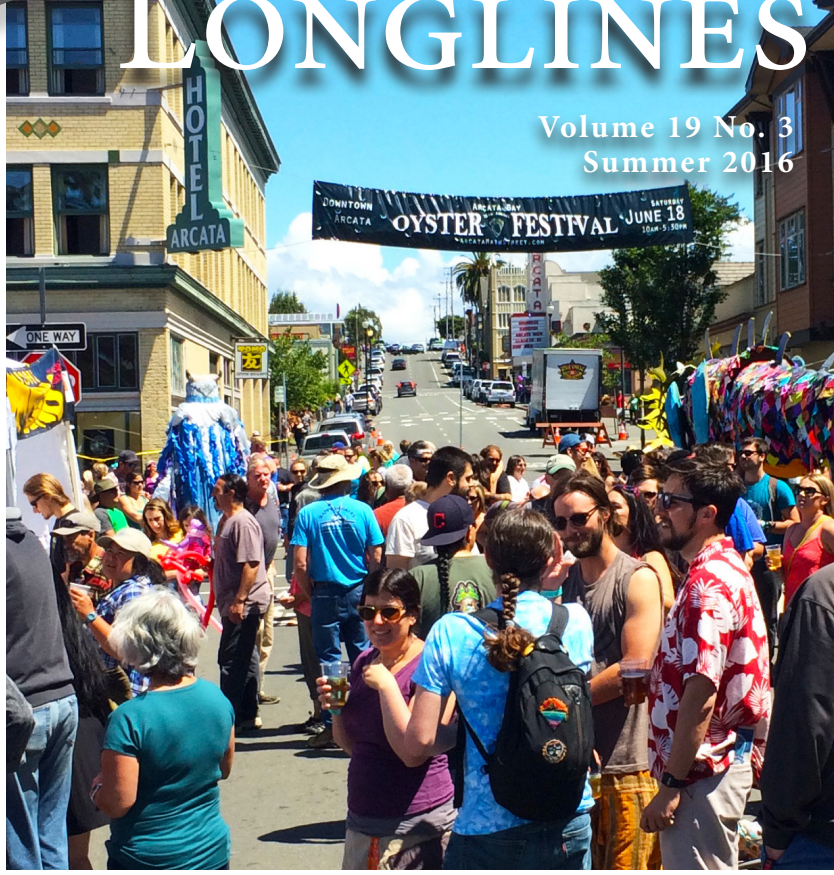

SHELLFISH APPRECIATION AND FESTIVAL EDITION

PCSGA
PACIFIC COAST SHELLFISH GROWERS ASSOCIATION
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The PCSGA strives to ensure a healthy industry and environment for shellfish farming on the Pacific Coast.

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Your comments and questions about Longlines are invited. Please email: pcsga@pcsga.org

Cover Photo:
Coast - Pacific Seafood Team 2016 OysterFest on Main Street, Arcata CA

What the Tide Brought In

Notes from the Director

Margaret admiring a *Longlines* newsletter from 2007.

I'd like to thank the academy….Well, not really the academy. More like, thank YOU, the readers of *Longlines*! In a recent survey, you told us what you think about *Longlines* and as it turns out, you like it. You like it A LOT! Each year during our budget discussions we contemplate the value of *Longlines* and if it's worth the time and expense. Now, based on the results of a recent survey, we know it's a valued function of PCSGA.

The PCSGA's Communication Committee, led by Vicki Wilson and staffed by Becky Mabardy, conducted a membership survey a few weeks back. Just under 100 PCSGA members completed an online questionnaire which told us a lot about our members – how they like to receive information, which issues we should focus on, how to best communicate, and the value of PCSGA. We were thrilled to learn that members view *Longlines* as "very good" in terms of value and ranked it second only to the Annual Conference and ahead of beach clean-ups. Half of the survey respondents told us they read *Longlines* "thoroughly", and 30% read it "somewhat thoroughly". The other thing that surprised us is that *Longlines* is the second most preferred way to get information – direct email being the most preferred and the Annual Conference being the third.

As an avid reader of *Longlines*, you're probably used to seeing these pages chock-full of activities that PCSGA is doing to support the industry and connect with shellfish consumers. Each issue gets better and there's always something new. There's a great deal of effort and expense in producing our quarterly newsletter. *Longlines* Editor, Becky Mabardy, has transformed *Longlines* from a monochromatic run-of-the-mill newsletter to what it is today. Thanks Becky, and thank you readers for letting us know it's all worth it.

Be well and happy reading!
Margaret Barrette

Remembering Jan Wilson

It is with great sadness that we pass along news that Jan Wilson of Bay Center Mariculture passed away June 27th.

Jan and her husband Dick created a full and productive life together in the Willapa Bay region, raising a family, being involved in various clubs and organizations, and advocating for community environmentalism. Jan was a loving mother of three and grandmother of five. Jan taught math and showed great compassion as a first responder and aid giver.

At Bay Center Mariculture, Jan was the algologist and the critical partner in all that she and Dick attempted and achieved in oyster farming. Jan is sorely missed as we send thoughts of peace to Dick through this time of remembrance.

Pearls from the Prez

As a small shellfish farmer, I am often burdened by the heavy weight of government agencies' requirements. These cumbersome regulations dominate the framework of our business operations. It often feels that permit coordination is ineffective and that results in growers' resources being depleted by untimely and unpredictable decisions. It is easy to get frustrated with the permitting process and compliance with the hegemony of regulatory complexity and overlap of this industry. These problems can easily cast a shadow over the progress of our businesses, but the Board, various members, and PCSGA staff are working tirelessly with both state and federal agencies to streamline regulatory processes.

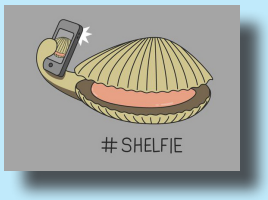
I think it is good to switch gears and spend some energy to reflect on the positive contributions of our industry. We are stewards of our environment, taking great pride in our farms and the quality of food we produce. The nutritious and sustainable food we grow provides ecosystem services with benefits extending far beyond what is measured and valued. Just to name a few: water quality maintenance, shoreline and sediment stabilization, habitat and refuge for organisms, carbon sequestration, and nutrient cycling. We must champion these benefits to all who we engage with. Get your story out there, and be involved!

I don't think the positives can be overstated. In addition to environmental services, shellfish are key to providing jobs and income to rural communities across the coastlines. Shellfish farming is a way of life for many families. It is time for us to tout and celebrate the shellfish we grow.

- Kyle Lentz
Chelsea Farms, Olympia WA

Follow PCSGA's social network on Facebook & Instagram!

Share shellfish news, connect with other shellfish farmers, like photos from community events, post updates from your company, show your environmental stewardship, market your product, and much more!



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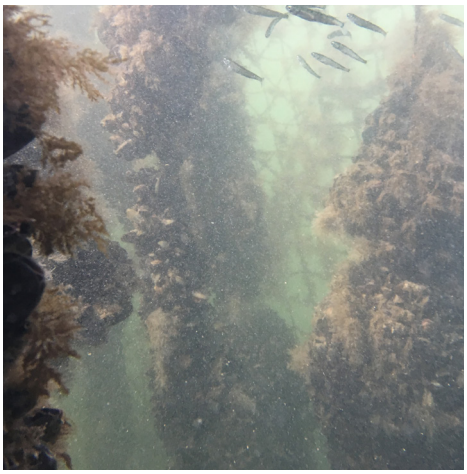
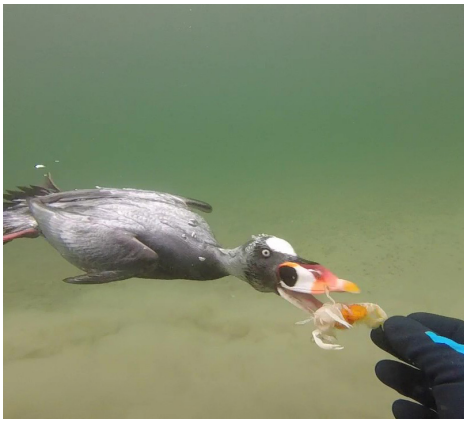
Ecosystem Services Photo Contest Winners



APRIL: Zach Loescher snaps a shot of juvenile pink salmon finding protection while foraging food among mussel lines.

MAY: Brad Woolf shows that mussel rafts provide not only a safe haul out location, but also attract food for harbor seal pups.



JUNE: Nyle Taylor captures this underwater photo of a scoter duck eating ghost shrimp from the hand of a geoduck harvester.

A winner is selected each month for the $100 prize. See contest rules and entry information at www.pcsga.org.

Party with a Purpose!

John Finger
Hog Island Oyster Co.

On May 19th, Sean Beyo, Hog Island's wholesale manager, and I attended the Billion Oyster Party in Brooklyn, NY. We were joined by almost 40 other oyster farms from all coasts, as well as several New York restaurants. PCSGA was well represented, with Taylor Shellfish, Chelsea Farms, Capital Oysters, Baywater, and Hama Hama all shucking (and jiving). It was the most extensive gathering of oyster farmers that I've been part of. The sense of comradery was amazing, and it was a blast visiting and catching up with folks that I've known for 30+ years, as well as meeting oyster folk new to me. We all donated our time and oysters, and people were incredibly appreciative and surprised that we had come all the way from the west coast to support this cause.

The party was the 3rd annual fundraiser for the Billion Oyster Project, an audacious and ambitious effort to restore water quality and habitat in New York Harbor. By planting a billion oysters and creating 100 acres of oyster reefs, ecosystem services are being revived while engaging hundreds of thousands of school children through STEM education programs. Students at New York Harbor School have been growing and restoring oysters in New York Harbor for the last six years. They have learned to SCUBA dive safely, raise oyster larvae, operate and maintain vessels, build and operate commercial-scaled oyster nurseries, design underwater monitoring equipment and conduct long-term authentic research projects all in the murky, contaminated, fast moving waters of one of the busiest ports in the country.

Sean Beyo, Hog Island Oyster Co. wholesale manger, shucking some briny bivalves at the event!

With the help of many partners these students have restored over eleven million oysters. Thirty-six public schools have partnered with the project to provide authentic, place-based science and math lessons through the lens of oyster restoration.

Find out more about this amazing project:
http://www.billionoysterproject.org

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SLURP 2016

PCSGA's 18th Annual Shellfish Lovers Ultimate Rejuvenation Party is a community event to raise money for local habitat and environmental restoration efforts.

40 volunteers staffed the event	**30,400** dollars raised for habitat and environmental restoration	**470** community members attended the event
610 dozen oysters donated to the raw-shucked bar	**125** geoduck donated to showcase supporting restaurants	**11** event sponsors raised $4,950

Thank you to PCSGA members who donated shellfish and resources to this event, ensuring its success year after year!

People's Choice Awards:

Best Shellfish Dish: Kern's Kitchen and Food Truck
Best Shellfish Dish Runner Up: Beau Legs Fish & Chips
Best Wine: Cameron Winery
Best Wine Runner Up: Marchetti Wines
Best Brew: Fish Brewing Co.

Shellfish Restoration Fund Recipients:

Pacific Education Institute - $7,000
South Sound Estuary Assoc. - $3,500
Bellingham Tech. College - $3,500
PCSGA Beach Clean-Up - $2,000
Pacific County Museum - $1,500
AgForestry Leadership - $1,000
WA Ag. in the Classroom - $500
Tillamook Bay Watershed - $500

Huge thank you to PCSGA member Marty Beagle, of FryeCove Farms, for providing the evening's music and entertainment with his band, Marty Beagle and the Oyster Crew.

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Farmers' Corner

Written for you, by you - this is a place to share all the news from your farm! Celebrations, acquisitions, new ventures... the sky's the limit.
Submit your news any time! Send to pcsga@pcsga.org.

Pairing Oysters and Tang...

An update from a recipient of the PCSGA Enrichment and Development Fund

Before I attended the Washington State Department of Health's April offering of Hazard Analysis Critical Control Point (HACCP) training, I really didn't know what HACCP was. I had the impression that it was all about sanitation, but at the class I learned what it actually is: a systematic, preventive approach to keep food safe from biological, chemical, and physical hazards in production processes. Though HACCP is now widely applied, I was intrigued to learn that it began as a way for NASA to ensure that food for astronauts, like Tang, was safe to consume.

While Tang may not be your usual pairing with oysters, the powdered juice has joined many space missions and has a surprising connection to shellfish.

Being a new shellfish farmer, I enjoyed meeting and hearing the experiences of other shellfish growers in the class. Throughout the course I was impressed with my colleagues' high level of knowledge, participation, and interest.

I attended the course on scholarship from PCSGA's Enrichment Fund. As a small farmer, I am extremely grateful that the opportunity to this funding was available for an educational opportunity. During the class I learned how HACCP applies to shellfish production, how to develop a HACCP plan, and went through exercises in HACCP implementation.

Perhaps oysters too will someday follow in Tang's footsteps and visit the final frontier, but for now I've learned how to keep them safe to eat down on Earth.

Alice Helker
Set & Drift LLC

The PCSGA Grower Enrichment and Development Fund

This fund provides financial assistance to members of PCSGA for expenses related to education opportunities, experimental practices, and attending PCSGA events such as the Annual Conference or DC Walk the Hill.

If you are interested in applying or to make a donation, please e-mail PCSGA at pcsga@pcsga.org

From Saloon to Silo

Lissa James
Marketing Director, Hama Hama Oyster Co.

An hours drive north of our farm on Hood Canal will take you into a different universe. Or maybe, just a different state, like Vermont, a place where you can find solvent artisans, independent movie screenings, obscure and delicious food, and busy farmers markets. Chimacum and Port Townsend exist in an uncanny valley… you know you haven't left the Olympic Peninsula. But you wonder, where are the run-down logging towns? We're always looking for excuses to head up there and escape the North/South tunnel-vision of the lower Hood Canal. The Thai food is pretty darn good too.

But since this bucolic paradise is actually located on the Olympic Peninsula (and not inland New England), we thought it would also be a good idea to add a bit of salt to the Vermont vibe. This summer we've setup camp beneath an old grain silo, serving raw and grilled oysters a few days a week at the Finnriver Cider Garden. It's a lovely, inspiring scene… Finnriver makes delicious cider, and they have a pizza oven on site so our staff meals are pretty tasty. Plus, the Cider Garden is located about a 10 minute drive from one of our oyster leases.

Despite all the praise we've listed above, the truly great thing about the northern peninsula is the cold summer water… something my brother Adam keeps exploring with his wetsuit and a surfboard. We're happy to keep reminding folks up north that they're actually a coastal people, and that they should be proud not only of their open farm land but also of the bivalves that grow downstream. This message, we find, is best served up slowly, cooked over lowest heat, with a drizzle of garlic butter. Or maybe, if that's not your jam, raw with a spritz of lemon.

Hama Hama crew serving up a hearty dose of oysters at the Finnriver Cider Garden in Chimacum.

PCSGA Member Seeks Oyster Gear

HC Snail on Hood Canal is looking for about 50 oyster tumble cages to clip on long lines.

They have used the rigid rectangular Zapco tumble cages with a float and halibut clips in the past with good results.

Please contact Daniel Hanson at (253) 350-9217 with possibilities.

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How to Eat an Oyster and Not Look Like an Idiot

Excerpts from Vice - Munchies (e)
Rowan Jacobsen
June 24, 2016

The best gateway into trying oysters are the tumbled ones from the West Coast: There's the Kusshi, but now there's Shigoku and others like Blue Pool and Chelsea Gem. They're small, they have smooth shells, and the meat is different inside. The tumbling process makes them a little firmer so that you don't have sprawling oyster gills in the same way as some of the other kinds that are out there. It feels like a little nugget of meat compared to a complex sea creature, and they're sweet and beautiful.

So take a look at your oyster. Inspect it. Then chew on it, or else you're not gonna taste it and you're just in it to look cool. Chew it because it's got a few different parts: in the center, you've got that disc of muscle which has that same firmness and sweetness as a scallop. Then there's the belly, which is gonna pop when you bite into it and it will give off a salty liquid. The gills give it a nice chewiness. When you chew it, you're mixing all of those flavors together to get that umami and sweetness.

Then there's the shell, which is the key part to the whole experience. They're so beautiful in shape, texture, and color. In a sense, they have their own smell—similar to that wet rocks at low-tide scent. After you eat the oyster, you can turn the shell upside down and build a beautiful little pattern on the plate as you eat through your dozen. By the end of consuming them all, you'll have this beautiful work of art in front of you.

Pacific Seafood's Contributions to Tillamook Bay Clean-Up

Robert Russell, Tillamook Bay Watersheld Council Coordinator

Tillamook Bay got a serious spring cleaning on April 23rd thanks to over 100 volunteers and local sponsors. The Tillamook Bay Watershed Council made special thanks to Pacific Seafood for assembling a team of shellfish growers committed to boot-on-the-ground debris removal. Additionally, Pacific Seafood's "The Fish Peddler at Pacific Oyster" donated six gallons of their famous clam chowder to feed volunteers.

Five hundred dollars in SLURP funds supported this effort. In all, roughly 2 tons of garbage were pulled out of the estuary over the course of five hours. It was an outpouring of effort and support beyond our wildest dreams. And it was a huge demonstration of love and generosity from the communities surrounding Tillamook Bay.

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Washington Federal Regulatory Update

Billy Plauché and Jesse DeNike
Plauché and Carr LLP

The Seattle District of the U.S Army Corps of Engineers (Corps) is on the cusp of making critical and wide-reaching regulatory decisions on shellfish farming in Washington State.

The Corps originally issued Nation Wide Permit (NWP) 48 in 2007 in an attempt to streamline permitting for shellfish farms and shortly afterwards conducted a programmatic Endangered Species Act (ESA) consultation with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Services. Those consultations concluded that existing shellfish farming in Washington does not result in a "take" of ESA-protected species.

Unfortunately, the Corps' Seattle District, which regulates shellfish farming in Washington, waited until after March of 2012 to verify nearly all farms' coverage under NWP 48. At that point because there was a new version of NWP 48 permit in place, the District was required to start the ESA consultation process over again.

The Seattle District re-started its ESA consultation in 2013, and that consultation is still ongoing. The District has not provided PCSGA with recent information as to the content of the consultation and potential new conditions. It does, however, appear that consultation could significantly restrict shellfish farming in some areas containing eelgrass in Puget Sound and Hood Canal. It is currently unclear what, if any, other restrictions might come into play as a result of the ongoing ESA consultation.

Meanwhile, a new, draft version of NWP 48 has been published. The new version will go into effect in 2017. While the draft appears potentially helpful to shellfish farmers, the practical impact of the new permit in Washington is unclear. The Seattle District can impose conditions on shellfish farming in the state beyond those conditions included in NWP 48, and it appears the District intends to impose all of the conditions that emerge from the ongoing ESA consultation as conditions of NWP 48 in Washington. The District is also considering withdrawing NWP 48 in Washington and instead implementing a regional general permit (RGP).

We recommend growers submit comments, both to Corps headquarters on the draft 2017 NWP 48 and to the District on proposed regional conditions or the use of a RGP. Comments on the draft 2017 NWP 48 are due August 1, 2016, and the comment period for the District has not yet been set. Please stay tuned for more information from PCSGA.

SURVEY: PCSGA SHELLFISH GROWERS

Thank you for your time and participation in the PCSGA Membership Survey.

While questionnaires continue to be analyzed, here are some preliminary results:

- Most participants had 10 or less full-time employees (57%) and were PCSGA members for 10+ years (74%)
- 46% were *very satisfied* with the value of their membership
- Biggest challenges: permitting/regulations, access to seed, pest control & management, and water quality
- Over 50% read "Longlines" *very thoroughly* and the newsletter ranked 2nd (after e-mail) as preferences for receiving information from PCSGA

Survey comment boxes showed that members want to be engaged with the improvement and evolution of PCSGA. Members would like to see the Association expand the geographic footprint of activities, events, and goals. Additionally, communication from the PCSGA office can be restructured to reach members more effectively. Members recognize and appreciate the work of PCSGA and see the value of their membership.

The PCSGA Communication and Membership Committees are working together to reorganize Board goals and priorities based on your feedback. We encourage you to join this discussion and participate.

Please email pcsga@pcsga.org if you would like to continue engaging with this project.

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Hog Island Oyster Co. Believes Doing Good is Good Business

With Terry Sawyer and John Finger at the helm, Hog Island Oyster Co. has grown to become one of the premiere producers of certified sustainable shellfish.

Hog Island Oyster Co. Environmental Efforts:

Leaders in Ocean Acidification research, in partnership with UC Davis Bodega Bay Marine Labs; One of the first Food Alliance Certified Sustainable Shellfish producers; Founding members of Tomales Bay Watershed Council; and active members of Blue Business Council and PCSGA

Brenna Schlagenhauf
Hog Island Oyster Co.
PR & Communications

Hog Island Oyster Co. announced on May 6, 2016, it has become a Certified B Corporation. B Corps are for-profit companies certified by the nonprofit B Lab to meet rigorous standards of social and environmental performance, accountability, and transparency.

There are over 1,700 Certified B Corporations worldwide crossing 130 industries in 48 countries. They include Patagonia, Ben & Jerry's, Etsy, Warby Parker, and Seventh Generation. All share a common goal: people using business as a force for good™.

"Doing good has always been part of our culture," says John Finger, co-founder and CEO of Hog Island Oyster Co. whose core values include 'People, Planet and Profit'.

"B Corp Certification validates Hog Island Oyster Co.'s longstanding belief that shellfish farming is about a lot more than just growing oysters. We sincerely believe a company's actions impact its employees, community, customers, and the environment as a whole," says Finger.

Hog Island invests in people and communities. Their 200-plus employees receive competitive pay, health insurance and wellness plans and vacation and retirement packages. The company contributes over $80,000 per year to local nonprofit organizations who work on education, health, the environment and community services.

Co-founder Terry Sawyer commented, "As a Certified B Corp we are now aligned with ethical and progressive companies. We hope to learn from and inspire other companies as we continue on this journey."

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Governor Inslee Declares First Week of June as Inaugural Washington Shellfish Week

Becky Mabardy
Outreach & Project Coordinator
PCSGA

Following the launch of Phase II of the Washington Shellfish Initiative (WSI), Governor Jay Inslee signed a ceremonial proclamation for Washington Shellfish Week, declaring June 4th-11th a time to celebrate the current and historic value of shellfish resources to the state. "Shellfish are crucial to Washington's economy, culture and environment. Consumers around the world prize our state's oysters! Improving water quality supports family shellfish farms — and shellfish in turn help filter and clean the water," stated Inslee.

Community events were offered by shellfish companies, state agencies, and a variety of other enthusiastic entities that shared their love for all things shellfish from Sound to Sea. Kyle Lentz, President of PCSGA, noted, "Washington shellfish growers are proud of our sustainable industry; many of our farms are operated by multi-generational family companies."

"WSI and Shellish Week recognize the role shellfish plays in our communities, and has played for over a century," said Margaret Barrette, Executive Director of PCSGA. "The initiative re-affirms the state's commitment to ensuring shellfish remains an integral part of our future. Shellfish growers are thankful for the governor's support and the work of state agencies."

Learn more about Washington Shellfish Week by following the social media hashtag: #digWAshellfish

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Chrissy Barton
Volunteer President
Friends of Netarts Bay

Netarts Bay and Tillamook Bay are home to of a number of oyster farms and one of the largest oyster hatcheries in the U.S., Whiskey Creek Shellfish Hatchery. While this area is well known within the oyster industry, very few local residents or visitors are aware how active the shellfish industry is in Tillamook County or of how oysters are grown in the northwest. A new tour series, *The Art of Growing Oysters*, offers the public a rare opportunity to learn about the local industry, the issues faced by shellfish along the west coast, and the scientific research going on at the hatchery.

Learning at the Whiskey Creek Shellfish Hatchery on Netarts Bay.

Tour participants view young oyster larvae swimming under the scope, walk through the hatchery, and learn how oysters reproduce, eat, and grow. They also visit with local oyster farmers, either in their processing plants or by walking out onto oyster beds. The tour ends with a tasting and a chance to buy oysters fresh from the bay.

Exploring Pacific Seafood's oysters beds in Tillamook Bay.

This successful tour features the Whiskey Creek Shellfish Hatchery and a number of the local farmers including JAndy Oyster Company, Nevør Shellfish Farm, and Pacific Seafood. The event was launched 3 years ago with the support of Oregon Sea Grant and is now funded through the Friends of Netarts Bay, Watershed Estuary Beach & Sea (WEBS) with additional support from the Salty Dog Fund, Visit Tillamook Coast, Tillamook EcoAdventures LLC, and the Tillamook Estuaries Partnership.

"I highly recommend this tour to everyone - teachers, educators, chefs, visitors to the coast, Portlanders, and native 'coasties' as well!"
-Anonymous participant

Learn more at:www.NetartsBayToday.org, WEBS on Facebook, or contact Chrissy Smith at TillamookOysterTours@gmail.com.

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New Sites Needed for Air and Water Temperature Sensors Around Washington!

Holly Calvert and Clara Hard
Office of Environ Health & Safety
WA State Department of Health

Temperature sensors deployed at a site in Hood Canal.

The Washington State Department of Health has a temperature sensor network to assist the shellfish industry in planning summer oyster harvests. Each Decagon Em50G data logger tracks water temperature, air temperature and salinity every 15 minutes and uploads the data to the internet using a wireless connection. We purchased the sensors with a grant from National Estuary Program. This temperature sensor network is available to assist the shellfish industry in planning oyster harvests to avoid days with high Vibrio bacteria levels.

The temperature and salinity data from each sensor is available on a map-based system, in near real-time on the NANOOS NVS website, http://nvs.nanoos.org/shellfishgrowers (the Northwest Association of Networked Ocean Observing Systems Visualization System website). While this tool does not replace the need to take the air and harvest temperatures at the beach at the time of harvest (as required in the Vibrio control plan rule, WAC 246-282-006), the shellfish industry can use it to monitor temperature trends and to make safer harvesting decisions.

Do you have a dock or floating platform near your shellfish beds?

This team is looking for more sites to deploy sensors near shellfish harvest sites. Please contact Holly Calvert at 360-236-3347 or Holly.Calvert@doh.wa.gov to see if a your site meets the criteria!

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SLURP Money Translates into Puget Sound Youth Awareness

Becky Mabardy
Outreach & Project Coordinator
PCSGA

For the first time, the South Sound Estuary Association (SSEA), received $3,500 in funds from the PCSGA 2016 SLURP event. SSEA is developing a pilot project called "Estuary Life and Landforms Field Trip" for elementary school classes in the Olympia School District. The all-day activity includes instruction and outdoor exploration touring downtown Olympia to gain a better understanding of landform development and shellfish farming along a transforming waterfront. SSEA educators develop lessons that are not only fun for the students but also reinforce required science curriculum being taught in the classroom.

SSEA was founded in 2007 as a result of community interest in creating opportunities for the public to learn about estuaries, geology, natural and cultural history, marine life, and human impact on the Puget Sound, WA. SSEA has a vision to foster a community who is engaged and inspired to promote health, conservation and restoration.

South Sound Estuarium:
309 State Ave. NE Olympia WA

"Thank you PCSGA for supporting our efforts to provide South Sound students with innovative and meaningful learning experiences. We hope to not only raise the youth's awareness of environmental issues, but also prepare them to become stewards of this unique ecosystem. While funding gaps persist, SSEA strives is to be recognized as a valued provider of environmental education. Funding organizations like PCSGA are so appreciated in supporting these efforts."

-Keith Arnold, SSEA Board Member

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Passing Time at High Tide

Take a photo of your completed puzzle and email to pcsga@pcsga.org for a chance to win an exclusive PCSGA prize. Photos due by September 1st.

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Study Finds Native Olympia Oysters More Resilient to Ocean Acidification

Source: (e) Oregon State University (OSU) June 10, 2016

Unlike the commercially raised Pacific oysters (Pacifics), Olympia oysters (Olys) don't begin making their shells until 2-3 days after fertilization and make them far more slowly, which helps protect them from corrosive water during this critical development phase, said OSU's George Waldbusser, principal investigator on the project. Pacifics, on the other hand, only have a six-hour window to develop their calcium carbonate shell, and when exposed to acidified water, their energy stores become depleted. The larval oysters may get through the shell-building stage, Waldbusser said, but they often will not have enough energy to survive.

"This is a unique trait that allows native oysters to survive surprisingly high levels of acidification," said Waldbusser. "But they didn't develop that trait in response to rising acidification. It has been there for some time. " In their study of Pacifics and Olys calcification rates, researchers found a seven-fold difference. Pacifics put all of their energy into rapidly developing a shell, but the price of that investment is huge. Olys developed their shells much more slowly, but seemingly at a lower cost.

"Pacifics churn out tens of millions of eggs, and those eggs are much smaller than those of Olys even though they eventually become much larger as adults," Waldbusser said. "Pacifics have less energy invested in each offspring. Olys have more of an initial energy investment from Mom, and

Native Olympia oysters once thrived along the Pacific Northwest coast until over-harvesting and habitat loss all but wiped them out.

can spend more time developing their shells and dealing with acidified water."

"Brooding was thought to provide several advantages to developing young, but we found it does not provide any physiological advantage to the larvae," said Matthew Gray, a former doctoral student in OSU's Department of Fisheries and Wildlife and now a post-doctoral researcher at the University of Maine. "They did just as well outside the brood chamber as inside.

The current research may have implications for the future of the commercial oyster industry, given that many of the problems seem to originate at this very early developmental stage. Cultivation of Olys could help guard against catastrophic Pacific losses due to acidification, the researchers say, or it may be possible to breed some of the Olys' beneficial traits into Pacifics – either slowing the calcification rate of early larvae or producing fewer and bigger eggs.

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2016

July
12: PCSGA Board Meeting via Conference Call
15: Ecosystem Services Photo Contest Submission Due
16-17: Geoduck Festival – Allyn Days, Allyn WA
20: Taylor Shellfish-Tival, Samish WA
23: ShellFest, Twanoh State Park, Hood Canal WA

August
8-9: Oregon Coast Economic Summit; North Bend, OR
9: PCSGA Board Meeting via Conference Call
15: Ecosystem Services Photo Contest Submission Due

September
8: PCSGA Fall Beach Clean-Up, WA
10: Brady's World Famous Oyster Feed, Aberdeen WA
13: PCSGA Board Meeting via Conference Call
15: Ecosystem Services Photo Contest Submission Due
23-24: Blues and Seafood, Ilwaco WA

October
30-1: Bellingham SeaFeast, Bellingham WA
1-2: OysterFest, Shelton WA
7-9: Dungeness Crab & Seafood Festival, Port Angeles WA
10: PCSGA Board Meeting week of Conference
10-13: 70th Annual PCSGA Shellfish Growers Conference and Tradeshow, Chelan WA

November
8: PCSGA Board Meeting via Conference Call
15: Ecosystem Services Photo Contest Submission Due

December
6: PCSGA Board Meeting via Conference Call
15: Ecosystem Services Photo Contest Submission Due

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