

PCSGA



PACIFIC COAST SHELLFISH GROWERS ASSOCIATION

LONGLINES

Volume 18 No. 2
Spring 2015

WALK THE HILL p. 6

WA REVISES VIBRIO RULE p. 8

**TRANSGENERATIONAL EFFECTS OF OCEAN
ACIDIFICATION ON OYSTERS p. 11**

**USDA AQUACULTURE
CENSUS DATA p.15**



The PCSGA works on behalf of its members on a broad spectrum of issues, including environmental protection, shellfish safety, regulations, technology, and marketing.

What the Tide Brought In

Notes from the Director



Margaret Barrette, PCSGA Director, with Bob Rheault, ECSGA Director.

The Pacific Northwest has been enjoying a very early, warm, and sunny spring. For whatever reason, Mother Nature seems to have peacefully meandered her way through the western part of the country, building up strength and releasing all kinds of crazy winter weather on all parts east. It hasn't made for a very good ski-season, but it's brought us spring flowers and thoughts of barbecuing much sooner than usual.

Let's face it, spring is typically the time of year we shift our culinary choices from cozy high-calorie comfort foods to lighter, fresh options. This is the time we finally admit that our new year's resolutions to make better food choices were not well implemented. Grilling becomes our last-ditch effort to eat healthy and reduce that dreaded winter weight we're all too eager to lose.

I was recently thinking about how others within the animal kingdom deal with food and weight. Lo and behold, a recent SeafoodSource webinar on aquaculture titled, "Aquaculture's Prominent Role in Feeding a Growing Population," shared some numbers that I think many of us will find useful.

The general premise is that farmed fish are more efficient than other farmed species at converting feed into edible protein. According to research led by Michael Tlusty, director of Ocean Sustainability Science at the New England Aquarium and Research Facility at UMass-Boston, an average 1.1 pounds of feed is needed to produce one pound of farm-raised salmon. That number grows to 1.7 pounds of feed per pound of chicken, 2.9 pounds of feed per pound of hog, and a whopping 6.8 pounds of feed per pound of cattle.

This is just food. Once you consider the several other necessary inputs to producing protein food, like land cost, labor, fuel, and processing, aquaculture is by far the cheapest form of food production.

Off to heat up my grill. I hope my family is ready for grilled oysters, grill-sautéed mussels, clams, some farmed fish, and a fresh salad! And a chocolatey dessert, of course.

Be well,
Margaret Barrette

Executive Board 2014-2015

President
Dave Steele

Vice President
Svein Wiese-Hansen

Secretary
Sue Shotwell

Treasurer
Nick Jambor

Member-at-Large
Kyle Lentz

Executive Director
Margaret P. Barrette

Longlines Editor
Ashley Fisher

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

Cover Photo:
Bill Dewey speaking with Congressman Kilmer during Walk the Hill. Photo courtesy of Connie Smith.

120 State Avenue NE #142
Olympia, WA 98501
pcsga@pcsga.org
360-754-2744



Photo by Jon Rowley

Pearls from the Prez

I'm always happy to see the softer side of winter around the Northwest. Last night, I peered across the calm tidelands with a clear sky and full moon, watching what looked like fireflies dancing along the far shore. Our clam crew was busy digging another shipment, slowly moving across the beach with headlamps focused upon their bounty. Their voices carried across the bay in the calm, cold air. It's times like that when we need to enjoy the moment, as it will likely turn into a swirling, soaking mess a short while later.

The group of folks that walked the hill in Washington, D.C. enjoyed a similar break in the weather. It was cold and crisp most of the week, but we certainly missed the heavy snow that has fallen since. Our Congressional representatives were generally happy to see us as they have gotten to know many in the group over the years. These people are also interested in working with us on solutions to some of our problems and willing to act when requested. The Walk-the-Hill event is one of the most important each year and has resulted in great representation of the grower's issues.

At this time, many of us are preparing to implement the new Washington Dept. of Health Vibrio rules. The DOH has posted notices of rule training in March – May this year in preparation for the start of Vibrio season. The new rules are significantly more complex than what we have worked with in the past and focus on environmental conditions rather than after-the-fact illness restrictions. Monitoring air and water temperatures, in addition to illness reports and reports of TRH and TLH, will create some confusion. There will be many other hurdles to overcome when implementing these rules. I hope that everybody that harvests shellstock during May – September has a chance to get trained and that all of the work that went into this rule revision has a positive effect.

Work upgrades at my farm have kept us very busy over the winter and our busiest season is quickly approaching. That new burst of clam and oyster growth when the spring algae blooms is always great to see and we have many little oysters just waiting to jump into the half shell market. I hope that all of your farms are productive and the upcoming spring leaves you with great profits.

Sincerely,
Dave Steele

Ecosystem Services Photo Contest Winners



January's winning submission by Zack Meyer of Nisqually Shellfish Farm shows an egg mass from the many gunnels that have been using the oysters as habitat. The oysters and the bags they grow in provide essential habitat and protection for many fish species.



February's winning submission by Paul Taylor of Taylor Shellfish Farms shows oysters and eelgrass cohabitating in Willapa Bay. Both are critical habitat to the marine ecosystem.



March's winning submission by Robert Johanson of Nisqually Shellfish Farm shows gunnel egg masses within cultch seed bags. The space within the oyster cultch bags provides protection and essential interstitial space for spawning to occur.

You could win, too! See contest rules and entry information at www.pcsga.org. A winner is selected each month for the \$100 prize.



NORPLEX, INC.
NORTHWEST PLASTIC EXTRUSION

POLYETHYLENE NETTING
for Aquaculture and Marine Applications . . .

- OYSTER CULTCH BAGS**
- MUSSEL NET**
- SHELLFISH PACKAGING & SPECIALTY NETS**
- HEAVY DUTY DIAMOND MESH**
- OYSTER GROW-OUT BAGS**
- CLAM GROW-OUT BAGS**

*Call today for your FREE catalog
Fax orders 24 hours*

NORPLEX, INC.
111 - 3rd St. NW, Auburn, WA 98002

1-800-929-2960
Fax: 253-735-5056



DUNCAN & ASSOCIATES
Insurance Brokers
www.Duncanins.com
Serving all your insurance needs since 1968

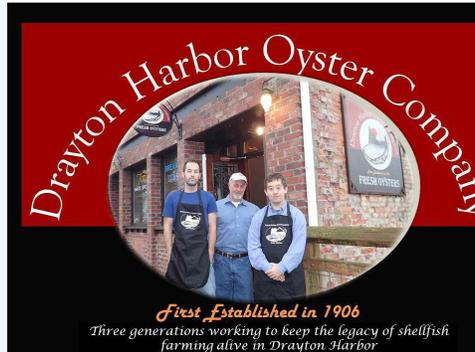
BUSINESS INSURANCE DIVISION CONTRACTOR DEPT. AUTO, HOME, BOAT AND RVS LIFE, HEALTH DISABILITY

LARGE ENOUGH TO GIVE YOU MORE
...SMALL ENOUGH TO REALLY CARE!

1-877-658-0652
www.duncanins.com

Farmers' Corner

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



Drayton Harbor Oyster Company has recently opened a store and raw bar in Blaine, WA. It has already been voted the best of the Bite of Blaine. The store overlooks the farm site and has been a wonderful opportunity to talk with watershed folks about the work to restore and protect Drayton Harbor.

NEW AND IMPROVED!

Shellfish Diet®

AN INSTANT ALGAE® PRODUCT



Algae When You Need It!™ A nutritionally optimized blend of the five essential microalgae with cell size range of 4-12 micron. This staple feed ensures excellent growth & survival rates for first feeding larvae through broodstock.

For more information, visit:
bit.ly/shellfishdiet

www.reed-mariculture.com

Hog Island planted its first seed in their new Humboldt Bay FLUPSY on New Years Eve of 2014. The FLUPSY was built by Snow & Company. They have plans to break ground on a Humboldt Bay Hatchery in 2015.



Nisqually Tribe has purchased a new oyster Scow from Penn Cove Shellfish. It was beautifully built and they look forward to using it.



MARINELLI SHELLFISH CO.

Specializing in Marketing and Distribution of Shellfish Aquaculture Products

2383 S. 200th St.
Seattle, WA 98198
Phone: (206) 870-0233
Fax: (206) 870-0238
Website: www.marinellishellfish.com

SED Shellfish Equipment

THE REVOLUTION IN

AUTOMATED OYSTER SORTING COUNTING AND BAGGING

US Ph 412-600-8998
info@agliner.com
www.shellquip.com.au

Coos Bay Oyster Farm for Sale

Due to retirement, oyster business for sale in Coos Bay, Oregon. 635 acres of leased ground, partially seeded with one, two, and three year oysters. Room for expansion. Year-round harvest in cool water conditions. DVD available. For more info please call Lilli Clausen at 541-267-3704 or 541-756-3600.
www.silverpointoysters.com

A Tale of Love, Champions, and Oysters

By Viki Schimke
Acme Seafood, Inc.

Our story begins in 1975, when my husband, Diz Schimke, began working at Blau Oyster Company. His father and mother had previously worked there and his two brothers and sister worked there off and on over the next five years. In 1980, I took a job at Blau's. I soon noticed the shy guy with the mad shucking skills. Smiles turned to conversations which turned to a date. We have been together ever since.

We married in 1982 and had our son Jediah in 1983. By 1984, I had convinced Diz to compete in oyster shucking competitions. He won the West Coast Championship and National titles in 1984. In September of 1984, we went to Ireland for the World Championships, where Diz won 6th place and the Best Presentation award.

In 1985, I was sponsored by Blau to compete at Nationals, where I won the women's title and Diz won the men's title. We shucked against each other for the National title. He won, so off we went again to Ireland for the World Championships. This time he won 4th place overall, and once again the Best Presentation award.

It was on the heels of all our 1985 fame that Diz formed a partnership with Dave Von Allmen and we started Acme Seafood, Inc., selling oysters and Manila clams. In the early days we worked on leased ground, selling approximately 20 dozen oysters and 100 pounds of clams per week. In the early 1990s, we hired Gerardo Rodarte who had married into the Schimke family. Over the years the company grew. Gerardo hired family members including his brothers and son.

By the year 2000, Acme owned the tidelands. In 2013, Dave Von Allmen made the decision to retire, so Diz and I bought him out and became the sole owners of Acme Seafood, Inc. During this time, we also faced the challenge of relocating our land based operation, so we asked Blau Oyster Company if we could use their locations and they graciously agreed.

Throughout the year in 2014 we began to work more closely with Blau's. Our son, Jed, lends his amazing computer skills to both companies and works full time as Blau's office administrator. Keeping it in the family, my mother is our bookkeeper.

So here we are in 2015, and back where we started, two families working together to bring the finest oysters from Samish Bay. We harvest up to 200 dozen oysters and 8,000 pounds of clams a week. This year we celebrate Acme's 30th anniversary and Blau's are celebrating their 80th with the 5th generation now learning the trade of their great, great grandfather.



Left: Viki and Diz Schimke

Below: Diz presenting a platter of oysters at the 1984 West Coast Championships shucking competition in Shelton, WA.

Below Middle: Viki shucking in the 1985 West Coast Championships competition.

Bottom: 1984 World Championship Shucking Parade in Galway, Ireland



Walk the Hill

By Margo Reveil
Jakolof Bay Oyster Company

My first real taste of a gathering of shellfish farmers was last fall's PCSGA annual conference. Whoever thought that such a raucous group of salt-of-the-earth personalities could actually clean up, head for Washington, D.C., and make an excellent case for the issues shellfish farmers care about? As the newbie on the trip, I admit I had my doubts, but clean up they did (for the daylight hours anyway), and I was incredibly lucky to be invited along.

While we were in Washington, D.C., the President's budget was announced and it included over \$20 million for NOAA ocean acidification funding. It was pretty exciting to be able to pitch our support for both NOAA and IOOS with a budget line item on the table to toss our saddle on (or tie our skiff to). Even if it doesn't end up getting fully funded, it was encouraging how many of the legislators we met with were also in support.

We also talked with legislators about Army Corps permitting issues in Washington state. While these do not immediately impact our farms in Alaska, it's clear that any precedents set could impact neighboring states.

While lobbying may seem a slow way to make progress, I have to say that sitting with colleagues for a half hour of face time with up to 10 legislators per day, for 3 days straight, feels a lot more empowering than my 5 minutes each year in a voting booth. I'd still rather be working on our farm's long list of tasks any day, but I learned a lesson about how important it is to come together as multiple states in one industry to push for reasonable solutions in order to give shellfish farmers a chance to grow.



PCSGA members and staff pause for a photo after meeting with Senator Murkowski (AK) in Washington, D.C., during PCSGA's annual Walk the Hill week.

Meeting farmers from both coasts and having real time to talk shop (or just talk) was my favorite part of the trip. My PCSGA cohorts were most welcoming and they guided me every step of the way. I am incredibly grateful to the farmers that have been doing this for so many years, and who have solved problems for our industry that I didn't even know needed to be solved.

This year's Hill Walkers were a raucous bunch, although they did tone it down and sit up straight for meetings (except for the cat nappers - you know who you are). It was great to be with such a mix of people with a common deep passion. Washington, D.C. hosts thousands of lobbying groups each year, but I bet we're the only one that handed out geoduck lapel pins to Senators and Representatives (Great idea, Diani!). Nothing like a geoduck to leave a memorable impression! And my fellow Hill Walkers left a memorable impression on me.

Thanks to PCSGA and the Mike Voisin Fund for sponsoring my trip!



Walk the Hill participants gather for a hard-earned dinner after a day of meeting with legislators.



Greg Dale of Coast Seafoods (center) overlooks the oyster bar at the Congressional Wine and Shellfish Reception in Washington, D.C.



Bill Taylor (left), Congressman Heck (WA) (center), and Miranda Ries at the Congressional Wine and Shellfish Reception.



A Message from Head of NOAA Fisheries

Eileen Sobeck
February 3, 2015

Farmed shellfish—oysters, clams, mussels, and geoducks—is an important and growing industry in the United States, with farms on all coasts in the lower 48 and in Alaska and Hawaii. This type of food production provides an important source of healthy domestic seafood, creates jobs, and helps preserve working waterfronts.

With the United States importing over 90 percent of its seafood, there is growing interest in finding ways to increase our domestic seafood supply. Through partnerships between scientists and fishermen, the United States is a global leader in developing technologies to increase shellfish aquaculture while protecting our nation's natural resources. NOAA is doing its part. In 2011, NOAA launched the National Shellfish Initiative to increase shellfish populations in our nation's coastal waters through sustainable commercial production and restoration activities.

I am pleased to highlight several recent accomplishments that show the progress we are making with our partners in achieving these goals. At the top of the list is the new Information for Shellfish Growers guide. Federal agencies including NOAA, the Department of Agriculture, the Environmental Protection Agency, the Fish & Wildlife Service, and the Army Corps of Engineers are working together to improve the permitting process to eliminate barriers that discourage prospective growers. The guide, released last month, provides a valuable new tool to help shellfish farmers navigate the permitting process.

NOAA is also helping guide sustainable aquaculture development offshore. Until recently, all U.S. aquaculture facilities operated close to shore in state waters, where expansion is complicated by competition for space along crowded coastlines. In 2014, the first shellfish farms were permitted offshore in federal waters off Massachusetts and Southern California, and last month a third offshore farm was permitted off Massachusetts. NOAA will continue collaborating to ensure they operate in ways that are compatible with healthy marine ecosystems.

NOAA scientists are also leading the way in shellfish research. Our own Milford Laboratory in the Northeast, a pioneer in shellfish research, continues to earn global recognition for its contributions to the field. Researchers from the Milford lab, in collaboration with NOAA's National Center for Coastal Ocean Sciences, recently published a report documenting the significant benefits that shellfish farms worldwide provide to coastal ecosystems.

Besides being great to eat, shellfish are filter feeders, so farming shellfish has the added benefit of providing 'ecosystem services' such as improving water quality. That's something good for seafood lovers to ponder as they enjoy their favorite shellfish, which is more likely to come from someplace near home as U.S. shellfish production expands with the help of NOAA and our many partners.



SORENSEN
TRANSPORT CO.
INC.

Refrigerated Trucking
632 N.W. California St.
P.O. Box 311
Chehalis, Wa 98532
1-800-332-3213
www.sorensontransport.com



SEATTLE
MARINE & FISHING
SUPPLY CO.

Cordage ⌘ Raingear ⌘ Knives
Marine Hardware
Gloves ⌘ Safety

Ph: 206-285-5010 Since 1948
800-426-2783 Fax: 206-285-7925
seamar@seamar.com
www.b2b.seamar.com

Your Molding Solutions

- Plastic & Glass Jars • Plastic Tubs
- Plastic Pails • Metal Cans • Closures

Phone: 253.872.4994
Fax: 253.872.5184

7817 S 210th St Suite B-101
Kent, WA 98032
www.aaronpackaging.com



AARON
PACKAGING INC



FRONTIER PACKAGING

The Freshest Approach
In Packaging

Working Exclusively with
The Seafood Industry

.....

CUSTOM DESIGN & LOCAL STOCK
1.800.767.7333

www.FrontierPackaging.com



Donna Moir
Aquaculture and
Agriculture Lending
360.570.7348



HERITAGE BANK
the quality bank

800.455.6126
www.HeritageBankNW.com

Member FDIC

OLYMPIA SUPPLY CO.
HARDWARE
Since 1906
Serving The Community For Over 100 Years

625 Columbia Street SW
Olympia, WA 98501
(360) 357-6659
www.olympiatruevalue.com

Local Hardware Provider for PCSGA
Weekdays 7 to 6 Saturday 8 to 5
Sunday 9 to 5

True Value.
START RIGHT. START HERE.™



Northwest
FARM CREDIT SERVICES
FISHERIES FINANCING
northwestfcs.com | 800.372.0112

Washington Revises *Vibrio parahaemolyticus* Rule

On March 11th, the Board of the Washington Department of Health (DOH) adopted a rule that will proactively mitigate for illnesses caused by the consumption of raw oysters in warmer months. This rule seeks to protect public health as well as the economic stability of farms who will not face the risk of long-term bay closures after illnesses have occurred. Key elements include:

- Vibrio parahaemolyticus* controls are based on environmental conditions rather than on the occurrence of illness.
- Relative risk is used to establish harvest controls and increases the stringency of cooling requirements.
- Harvesting will be restricted for a period of 24 hours when levels of *Vibrio parahaemolyticus* in the water may cause illness.
- New recordkeeping requirements for harvest plans and oyster landings data to ensure harvesters and shellfish dealers are meeting the new requirements.
- Incremental elimination of the division of controls based on coastal and inland

growing areas. Instead, controls are established based on historical illnesses rather than geographic region.

The DOH will provide 10 trainings during 2015 to educate farms on the new requirements. The DOH recognizes that most farms will be unable to be compliant by the beginning of the control season (May 1), and will work with farms with the understanding that 2015 is a period of adjustment.

Numerous members of the PCSGA were part of the two-year process that developed this rule. PCSGA testified in support at the DOH Board hearing on March 11.

For more information on the rule, contact PCSGA or view the rule at <http://www.doh.wa.gov/CommunityandEnvironment/Shellfish/Rules/VibrioRuleRevision>.

The DOH will offer trainings on the rule throughout the spring, at various locations in Washington state. You can access the registration form at <http://www.doh.wa.gov/Portals/1/Documents/4400/VpAC-TrainingRegistration.pdf>. Training dates are listed on the on the back page of this newsletter.

Seaproducts,
Inc
3011 S Chandler St
Tacoma, WA 98409
Kyle Lentz
(253) 905-8870
Kyle@seaproducts.com

Your "One-Stop-Shop"



Aqua-Stacks
Beach Harvesting
Baskets
Marker Buoys
Bungee Cord
Tools
Clips and much more!



TOLL FREE: 1-877-751-3772 or visit us



thank you
volunteers
near and far!

The events we throw simply couldn't happen without the many contributions of our members, particularly the act of showing up with smiles and energy for in-person conversations with the public about shellfish. In January, PCSGA celebrated the contributions of volunteers who helped staff events throughout 2014. Volunteer Appreciation Day included a hay wagon tour of Nelson Ranch, a multi-generation beef ranch in Olympia, WA, followed by wine tasting at Scatter Creek Winery, in Tenino, WA.

Welcome to Our New Members

WildSeed Farms LLC

By Carl Iverson



Carl Iverson of WildSeed Farms

My name is Carl Iverson. WildSeed Farms LLC is located on the Nisqually Reach, near Olympia, WA. I have owned this parcel and tidelands since 1989. With 400 feet of water frontage, we were permitted by the WDFW for aquaculture in 2007. Lynn Goodwin of Strait And Sound Marine Consulting surveyed

our beach and found it suitable for geoduck, Manila clams, and oysters. Past plantings of geoduck validated necessary conditions and environment to produce harvestable clams.

FryeCove Farms

By Marty Beagle



Marty Beagle of FryeCove Farms

When I am truly candid as to what prompted our family's venture into aquaculture, I have to blame it on the donuts. I have to hand it to Paul and Bill Taylor, those guys are two sharp cookies, ain't no doubt about it. What a brilliant marketing move to serve up free coffee and donuts

at their annual seed sales! While I have never seen them at the seed sale, I suspect those Taylor brothers are watching from an upstairs window and chortling at lack of social graces as the crowd descends upon the poor guy assigned to carrying the donut boxes from the van. He never stands a chance. Ahh, sweet, sweet sugar.

There was also the influence of carrying on the legacy of Volnay Young, for whom our oysters, those Vivacious Volnays, are named. Volnay was one of the first tugboat operators in the Olympia area. His love of oysters and "the Ranch," as his property on Eld Inlet is named, was relayed down to us in the mid-70s, when we moved to his cabin on the cove. We carried on with cultivating oysters and the

My background is in pre and post harvest sanitation of food products. Over the years, I have worked with some of the largest seafood processors in the world to successfully increase product shelf life and eliminate foodborne disease. I have authored over ten international patents relating to pathogen control, from treating packing ice to on-site reacted products using oxygen to disinfect. These technologies eradicate *E. coli*, listeria, salmonella, and anthrax, to name a few. I am interested in evaluating the effects on shellfish and developing methods for this industry also.

I look forward to my membership in the PCSGA, and to successful production of shellfish from my tidelands and home on the Puget Sound.

occasional batch of clams for our personal consumption, trying different strains as circumstance would allow. A few years ago, I retired from working at the Department of Agriculture as the manager of the Organic Food Program. At that point, we formed our LLC, got the beach certified, and I started spending more time with my hobby.

We are a "one man, one woman, one offspring" operation. The offspring, Andy, and I, haul bags around on the beach and putter about while Debi, my companion in chaos, wanders down to the beach to make sure we stay on task. We are adamant to keep the whole show small enough that we don't come down with that dreaded disease: "work."

I am by nature quite parsimonious. Thus, it took a couple of years of cajoling and derision from the Lentz's and others to get me to send in my membership check to join the PCSGA. They knew they had me hooked on those donuts and it was just a matter of time before I folded under the pressure. (The truth is I pretty quickly figured out their schedules and manage to time my "drop by" visits right about the time that John cracked open a late afternoon liquid refreshment, or in the morning when Kyle arrives with designer donuts from the North). Just don't tell Debi; she thinks my sojourns over to Chelsea Farms are to gain more knowledge about shellfish and bask in the brotherhood/sisterhood that seems so prevalent in the business. Oh, the tortuous webs we weave.



We've got the gear you need!
MARINE SUPPLIES
800-426-8860
www.lfsinc.com

Shellfish Netting

We've got you covered.

- Shellfish Farm Nets
- Geoduck Nets
- Predator Nets
- Custom Nets



CHRISTENSEN NET WORKS
1-800-459-2147 www.cnwnetting.com



BOATBUILDING
REPAIR
FABRICATION



**ALL PURPOSE UTILITY SKIFFS
& CUSTOM BUILDS**

SEATTLE, WA
206.953.7676
SNOWBOATBUILDING.COM

Perceptions of the West Coast Shellfish Industry Facing Ocean Acidification

By Becky Mabardy
Oregon State University (CEOAS)

As the west coast shellfish industry faces ocean acidification (OA), oysters are considered the aquatic ‘canary in the coal mine.’ In recent years, scientific research led by the shellfish industry identified a relationship between elevated carbon dioxide in seawater and poor oyster seed production. Production slow-down resulted in significant economic losses to the industry and spurred state and regionally led initiatives to examine the current and potential future impacts of OA. Insight from shellfish growers is valuable, especially to build cooperative partnerships and guide OA policy forward. However, few studies have documented how the industry itself views the problem.

To better understand the west coast shellfish industry’s perceptions of OA, I conducted a regional online survey (Fig. 1). Nearly half of the shellfish industry from WA, OR, and CA participated (n=86) by answering questions about their OA experiences, understanding, concerns, and adaptation. Seventy percent of respondents were owners or managers of a shellfish business.

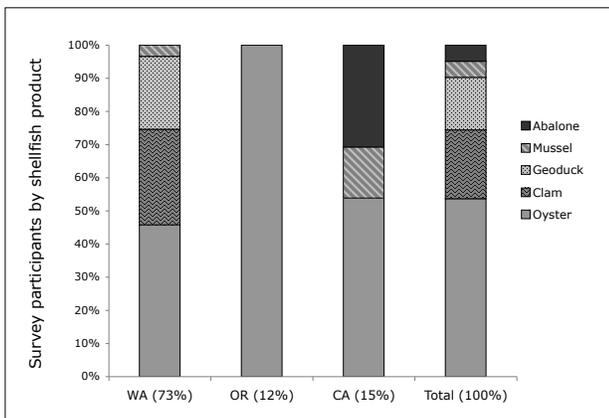


Figure 1. Percent of survey participation by state and shellfish product, and overall response.

Findings from the survey indicate that 51% of the participants had first-hand experience with negative impacts of OA. These experiences generally led to a heightened level of concern about OA. Overall, the participant’s perceived understanding of OA is fairly advanced through their observations and

economic losses, indicating an awareness of the issue and its potential impacts. As stated by one respondent, “I may not understand the data but I believe it and feel concerned about it.” Greater than 80% of participants agreed that OA has consequences today, which is approximately four times higher than the U.S. public’s perception of the threat (Ocean Conservancy Survey, 2012).

Ultimately, 59% of the industry felt they could somewhat or definitely adapt to OA, and respondents from all three states expressed guarded optimism (Fig. 2). “Short term we can adapt. Long term is unknown,” and, “Ocean acidification, particularly in the Pacific Northwest, has already happened. The quicker we get this message across, the quicker we can get around to trying to salvage what’s left,” are two survey responses that reflect that guarded optimism.

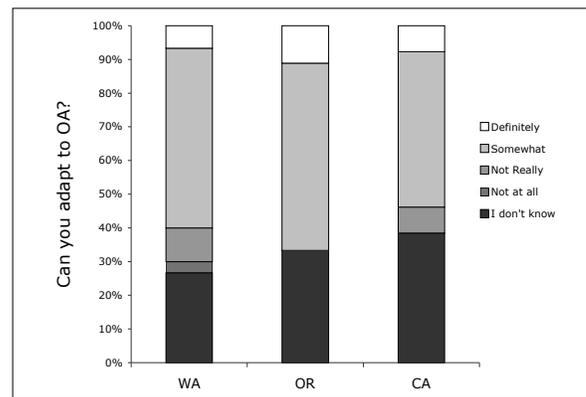


Figure 2. Perceived adaptability to OA of survey participants by state.

Opportunities are emerging for the shellfish industry to communicate the effectiveness of local adaptation strategies in combating OA. Empowered and engaged stakeholders who articulate the nature of their claims can influence and participate in development of future environmental policy. The authors greatly thank and value the west coast shellfish industry for their contributions to this work.

This work was funded by Oregon Sea Grant. G. Waldbusser, F. Conway, C. Olsen co-authored the research with Becky Mabardy.



BLUE HERRON GARDEN SERVICE

RICHARD TURNER
360-632-9523

P.O. BOX 163
GREENBANK, WA 98253

Netting Protection
Above & Below the Water

- UV Resistant Plastic
- Predator Exclusion
- Pens & Cages

INDUSTRIAL NETTING

industrialnetting.com 800-328-8456

What Doesn't Kill You Makes You Stronger: Transgenerational Effects of Ocean Acidification on the Pacific Oyster

By Daniel Gillon
University of Washington

Many studies looking at the effects of ocean acidification (OA) on bivalves paint a bleak picture for the future. Exposure to OA conditions, particularly reduced aragonite saturation, results in smaller, slower growing animals that have higher chances of perishing as larvae and seed, as witnessed in recurrent hatchery failures over the past decade.



Photo by C. Friedman

Recent research suggests that oysters may be able to withstand exposure to OA if their parents experience low pH conditions prior to fertilization.

Recent work by our lab group, however, suggests that oysters -- and possibly other marine invertebrates -- may be able to withstand exposure to OA if their parents experience low pH conditions prior to fertilization. We matured oysters under two different pH levels – one mimicking OA conditions (pH = 7.4) and the other an ambient seawater control (pH = 8.0). After spawning we reared larvae from the two parental conditions under both sets of conditions: ambient and OA. We have since been monitoring their performance after out-planting in the field.

Broodstock exposed to OA conditions during ripening produced larvae that, when reared in ambient conditions, showed higher rates of survival and yield to seed than did larvae from all other broodstock/larval treatment combinations. We observed similarly high survival and yield in those offspring after 9.5 months in the field. This suggests that the initial parental exposure to OA has a beneficial effect on offspring performance that persists even after settlement. Consequently, shellfish hatcheries may be able to improve larval and seed survival by exposing broodstock to sublethal pH levels during the ripening period.

With the support of Washington Sea Grant, Taylor Shellfish, NOAA and the Puget Sound Restoration Fund, we are currently preparing to spawn our

experimental offspring at the Kenneth K. Chew Restoration Hatchery and Laboratory in Manchester, WA, to see whether the initial broodstock exposure to OA carries over into a second generation. We are also examining OA response in up to 90 genetic lines of Pacific oyster larvae with the hopes of identifying lines that show resilience to OA for future use as industry broodstock. These results will hopefully provide new insights into the ability of marine organisms to persist in a changing ocean environment.

This research was conducted by: Daniel Gillon¹, Benoit Eudeline², Joth Davis^{2,3}, Brett Dumbauld⁴, Dacey Mercer⁴, and Carolyn S. Friedman¹.

¹ School of Aquatic & Fishery Sciences, University of Washington, Seattle, WA

² Taylor Shellfish Company, Shelton, WA

³ Pacific Shellfish Institute, Olympia, WA

⁴ USDA Agriculture Research Station, Newport, OR

	<p>SEED & LARVAE</p>
<p>Manila Clams Pacific Oysters</p>	
<p>Contact: Dave DeAndre SE 130 Lynch Road Shelton, WA 98584 Tel (360) 426-6178 Fax (360) 427-0327</p>	



SEAPA
Growing with Innovation

- Packs flat, easy to assemble
- Suits subtidal & intertidal
- Securely holds stock
- Reduce handling time
- Available in Small, Large, XL
- Various mesh sizes

P: +61 8 8350 6611 - F: +61 8 8357 4722
E: seapa@seapa.com.au - www.seapa.com.au



WASHINGTON FARM BUREAU
Healthcare

Move Toward Better Healthcare

Group Healthcare for two or more employees

Contact your insurance agent or call 1-800-681-7177



CONFLUENCE
ENVIRONMENTAL COMPANY

146 N Canal St
Suite 111
Seattle, WA 98103

206-397-3741
info@confenv.com
www.confenv.com

AquaTechnics
Shellfish Health
Management Services

Contact Ralph Elston
360-681-3122
Fax: 360-681-3123
www.aquatechnics.com

455 W Bell St.
Sequim, WA 98382

NOAA Estimates Nitrogen Removal Rates from Shellfish Farms around the World

Posted by noaa.science.gov on Jan. 5, 2015

Excessive nutrient input into estuarine and coastal environments, also known as eutrophication, can lead to algal blooms, oxygen depletion, fish kills, and a general loss of key habitats. New research from NOAA supports using shellfish aquaculture for nutrient removal and eutrophication reduction.

To include shellfish aquaculture as part of a comprehensive approach to nutrient management, scientists measured the amount of nitrogen removed from the local environment by a shellfish farm by applying the Farm Aquaculture Resource Management (FARM) model, which estimates the impact of shellfish nutrient removal through both growth and harvest, as well as shellfish production.

Applied to 14 locations across nine countries and four continents, considering seven species of shellfish, the model estimated an overall range of annual nitrogen removal from 105 to 1356 pounds per acre. These results compare favorably to reported nitrogen removal effectiveness of agricultural best management practices and stormwater control measures, indicating shellfish aquaculture as an effective candidate for inclusion in nutrient trading programs.

Determining a potential range of nitrogen removal rates by shellfish farms is valuable to coastal planners and regulators looking to develop watershed-scale nitrogen reduction plans. These results support the ongoing global discussion among growers and regulators about the role of shellfish aquaculture in reducing eutrophication-related problems while also providing a source of sustainable seafood.

This research was conducted by scientists with NOAA's National Centers for Coastal Ocean Science, the National Marine Fisheries Service, and the New University of Lisbon.

For more information, contact Suzanne.Bricker@noaa.gov or contact Julie.Rose@noaa.gov.

YOUR PARTNER IN A
CHANGING WORLD

To learn more, visit PentairAES.com

PENTAIR

AQUATIC ECO-SYSTEMS™



COMMENCEMENT BAY CORRUGATED

Serving the
Great Northwest
Locally Owned

Mike Jackson Sales Coordinator

maypack4154@q.com

Mobile: 253.312.7511

1.800.845.3159

13414 142nd Avenue East
Orting, Washington 98360



ENGLUND MARINE SUPPLY CO. INC.

Foot of 15th St. Astoria, OR

503-325-4341 503-325-6421 1-800-228-7051

You'll find the help you need

at Englund Marine

Raingear * Boots

Gloves * Floats

Cordage * Knives

Safety Gear

www.englundmarine.com englund@pacifier.com

Branch Stores

Westport, WA

Ilwaco, WA

Newport OR

Charleston, OR

Crescent City, CA

Eureka, CA

Pacific Shellfish Institute Offers Classroom Presentations

By Bobbi Hudson, PSI

The Pacific Shellfish Institute (PSI) is offering “Puget Sound Beach Sweepers” presentations for Thurston County students, thanks to a grant from the Russell Family Foundation. Designed for grades 4-12, PSI’s program explores plastics in the marine environment and encourages tactics to reduce plastic pollution.

Students watch a brief video, then rotate through three hands-on learning stations. 1) Sink or Float – explores plastic density and where plastics end up once they enter the marine environment. 2) Plastic Soup – demonstrates how plastics impact marine life by observing water samples collected from the North Pacific Gyre “garbage patch” and dissecting Albatross boli collected from the Hawaiian Islands. 3) Fishing for Microplastics – showcases sources of microplastics in personal care products. Teachers may also request field notebooks,

supplies, and assistance to organize their own campus cleanup to support scientific field investigation requirements and foster ongoing environmental stewardship.

For more information, or to schedule a presentation, contact Aimee Christy (aimee@pacshell.org) or Mary Middleton (middleton@pacshell.org), 360-754-2741.



A Komachin Middle School student calculates plastic in an albatross bolus. Photo by Katie Standlee.

PCSGA Legislative Receptions

Since the beginning of the year, PCSGA has hosted legislative receptions to build relationships with state and federal elected officials in Washington, D.C., Salem, Oregon, and Olympia, Washington. PCSGA staff and members used the opportunities to feed legislators some of the finest shellfish in the world while sharing messages important to farmers. The receptions are popular and well attended. The presence of grower members makes all the difference at these receptions. We hope you will join us for a reception near you in the coming years!



PCSGA hosted a full house at the Wine and Shellfish Reception in Washington, D.C., on February 4, 2015.



Representative Caddy McKeown speaks to guests at the Oregon Legislative Shellfish Reception on February 11, 2015, in Salem, Oregon.

Wellerware™
Aquaculture Silo System
 with Interchangeable Screens

Bel-Art
SP SCIENCEWARE
www.belart.com/wellerware

Pat Leahy, MBA
 877-550-0088 ext 107
emspring.com

EMSPRING
BENEFITS ADVISORS
 The best strategic decision you can make
 for your Employee Benefits

BELLEVUE | YAKIMA | SPOKANE

Seafood Distributors
 Pier 45, Shed B, Unit 4
 San Francisco, CA 94133
 888-292-1640

Since 1970 we have supplied quality, affordable and reusable containers for the shellfish and commercial fishing industry.



Thunderbird PLASTICS Ltd.

Our products include:
Fish trays, geoduck cages, oyster growing trays, roe pails and more.

In Canada: : **888-777-BIRD** Tollfree
 In the US: **503-744-9112**
www.thunderbirdplastics.com

Leader of shellfish-poaching ring sentenced to 5 1/2 years in prison

By Sara Jean Green in The Blotter, Seattle Times

The former owner of a Quilcene Bay seafood company was sentenced to 5 1/2 years in prison Friday for leading a clam-and-oyster poaching ring responsible for illegally harvesting \$700,000 worth of shellfish from beaches owned by the state and private individuals.

Rodney Allan Clark, 50, pleaded guilty last month to 17 counts of first-degree trafficking in stolen property and one count of reckless endangerment for selling uncertified shellfish to restaurants, fish markets and seafood wholesalers in the Seattle area and other parts of Western Washington. Clark, the owner of the now-closed G & R Quality Seafoods, and 11 of his employees were charged in 2011 for illegally harvesting clams and oysters from Jefferson and Kitsap county beaches between 2008 and 2010.

According to prosecutors, Clark directed his employees to secretly harvest the shellfish from isolated beaches, then sold it for profit. He also routinely doctored paperwork to conceal the enterprise from the state Department of Health, which requires that harvesting sites be certified to eliminate public health risks.

Eight of Clark's employees pleaded guilty to misdemeanor fishing violations and have already been sentenced, according to Dan Donohoe, a spokesman for King County Prosecutor Dan Satterberg.

Charges were dismissed against two others and a warrant has been issued for one defendant, Donohoe said.



FIBERGLASS MARINE RODUCTS
 SHELTON, WA (360) 426-9757

Custom
 Fiberglass fabrication and Repair

Richard (Bill) W. Knannlein

393 SE Dahman Rd Cell: (360) 790-5284
 Shelton, WA 98584 Business: (360) 426-9757
 email: rework@aol.com www.fiberglassmarine.com



SLURP
 May 3, 2015 at the Fishtale Brew House

Come join the festivities!

- Grand Shellfish Bar
- Shellfish dishes prepared by area restaurants
- Live music
- A live auction
- Wine and beer
- Appearances by Rosie the Riveter

Auction donations are welcome.
 Please contact ashleyfisher@pcsga.org



CROZIER CRAFT

CUSTOM BOATS - MARINE FABRICATION

Coming in early 2014:
PACIFIC SHELLFISH TECHNOLOGIES
 SHELLFISH EQUIPMENT INCLUDING:
 •FLUPSY SYSTEMS •SEED SORTERS
 •GRADERS •TUMBLERS
 •FEED CONVEYORS •RACKS

613 W 13TH ST. PORT ANGELES, WA 9836
 (360) 461-4825 • www.croziercraft.com



Jet City Label Tel: (206) 706-7599
 353 NW 41st St. Fax: (206) 706-7598
 Seattle, WA 98107 www.jetcitylabel.com

Labels, Label Printing Systems & Graphic Design



COMMENCEMENT BAY CORRUGATED

SEA-PRO SYSTEMS

SEATTLE-TACOMA BOX COMPANY
 SINCE 1889

Contact: Jake Nist
 23400 71st Pl. South Kent WA 98032
 (253) 854-9700 jakenist@seattlebox.com

Family Owned for 6 Generations

USDA Census Data Aquaculture Production Changes 2005 to 2013

Product	No. of Farms 2005	No. of Farms 2013	Change in No. of Farms	2005 Sales	2013 Sales	Percent Change	Percent Change Adjusted for Inflation
Total Mollusk Sales, All States	980	756	224 fewer farms	\$203,183,000	\$328,567,000	Up 61.7%	Up 35.6%
Total Mollusk Sales, California, Washington, & Oregon	216	169	47 fewer farms	\$95,358,000	\$176,867,000	Up 85.5%	Up 55.5%
Mollusk Sales, California	21	27	6 more farms	\$20,064,000	\$16,992,000	Down 15.3%	Down 29%
Mollusk Sales, Oregon	21	17	4 fewer farms	\$11,584,000	10,555,000	Down 8.9%	Down 23.6%
Mollusk Sales, Washington	174	125	49 fewer farms	\$63,710,000	\$149,320,000	Up 134%	Up 96.5%
Mollusk Sales, Alaska	25	22	3 fewer farms	(D)	(D)	-----	-----
Mollusk Sales, Hawaii	6	3	3 fewer farms	\$4,043,000	(D)	-----	-----

DEFINITIONS

-“Farm” is defined as any place from which \$1,000 or more of aquaculture products were produced and sold or distributed for conservation, enhancement, or recreation during the census year.

-(D) means that information was withheld to avoid disclosing data for individual farms.

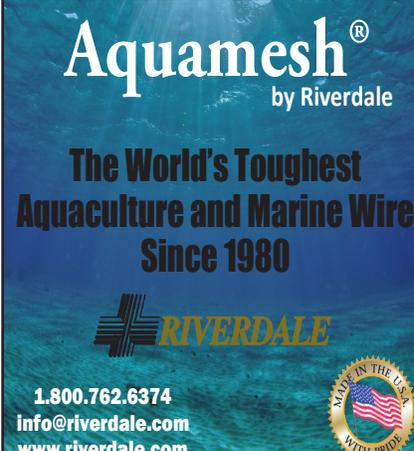
The report can be accessed at http://www.agcensus.usda.gov/Publications/2012/Online_Resources/Aquaculture/aquacen.pdf



Alaska Packaging Inc.

“SPECIALIZING IN PERISHABLE PACKAGING”

Alaska Washington
907-272-8834 360-333-5571



Aquamesh®
by Riverdale

**The World's Toughest
Aquaculture and Marine Wire
Since 1980**

RIVERDALE

1.800.762.6374
info@riverdale.com
www.riverdale.com

MADE IN THE USA
WITH PRIDE



PLAUCHÉ & CARR
LLP

811 First Avenue, Suite 630,
Seattle, WA 98104
Tel: (206) 588-4188
Fax: (206) 588-4255
www.plauchecarr.com

A natural resources and environmental law firm focusing on marine and shoreline issues.



120 State Avenue NE #142
Olympia, WA 98501

2015

April

30-April 2: Pacific Rim Shellfish Sanitation Conference, Ketchikan, AK

2: Sound Conversations 2015, Seattle, WA

9: WA Vibrio Rule Revision Training, Renton, WA

13: WA Vibrio Rule Revision Training, South Bend, WA

14: PCSGA Board Meeting via Conference Call

15: WA Vibrio Rule Revision Training, South Bend, WA

17: WA Vibrio Rule Revision Training, Tumwater, WA

23: WA Vibrio Rule Revision Training, Burlington, WA

25: Grassroots Garbage Gang Beach Cleanup, WA Peninsula

May

3: SLURP, Fish Brewing Co., Olympia, WA

7: WA Vibrio Rule Revision Training, Port Angeles, WA

9: Hama Hama Oyster Rama, Lilliwamp, WA

12: WA Vibrio Rule Revision Training, Aberdeen, WA

12-13:PCSGA Board Meeting, Portland, OR

16: Taylor Shellfish Farms Seed Sale

June

1: Farm Tour for Restaurant Industry, hosted by PCSGA

9: PCSGA Board Meeting via Conference Call

27: Taylor Shellfish Farms Seed Sale

July

5: GrassRoots Garbage Gang Beach Cleanup, WA Peninsula

8: PCSGA Board Meeting via Conference Call

18: Taylor Shellfish Farms Seed Sale

19: Allyn Days Geoduck Festival, Allyn, WA