

Est. 1908

National Shellfisheries Association Quarterly Newsletter

2018 (4)

President's Message



Greetings from Maine. I hope that you all have had a productive fall. This year truly has flown by and it is hard to believe that the Holiday season is already upon us. I, for one, am looking forward to some much needed down time with friends and family, and of course good food. I feel lucky

to be in one of the best spots for local fresh seafood and I will surely be taking advantage of it this holiday season. Thanks to those of you who make this possible.

The 111th annual meeting in New Orleans, LA is just around the corner, March 7th-11th. The program is shaping up quite nicely and there will surely be something for everyone. The meeting is at the New Orleans Marriot, a great location with just a stone's throw from the historic French Quarter. Be sure to make your reservations early by using the link on the NSA website. The planning for the third annual Scallop Gallop is also under way, so be sure to start training. For more details and to sign up contact Lewis Deaton (led9784@louisiana.edu). As a reminder, early-bird registration ends January 21st. As always we will be having our 'not to be missed' Student Endowment Fund Auction on the Friday evening of the meeting. We are always on the hunt for great auction items, if you have anything that you think might fetch a pretty penny to support the students please bring it along. Remember, nothing is too small or too tacky!

Two last reminders before I go: Remember to renew your NSA membership for 2019 so you can continue to receive the *Journal of Shellfish Research* and the *QNL* and be on the lookout for election ballots in the mail, they should be arriving in early January. Please remember to vote for the new NSA officers. If you have an interest in serving NSA as a committee member or other volunteer, please get in touch with me. Remember, volunteers are our foundation.

If you are stumped trying to find the right holiday gift, don't forget that cookbooks, mugs, and T-shirts make great stocking stuffers.

As always thank you for being members, without you we would not have the successful association that we do.

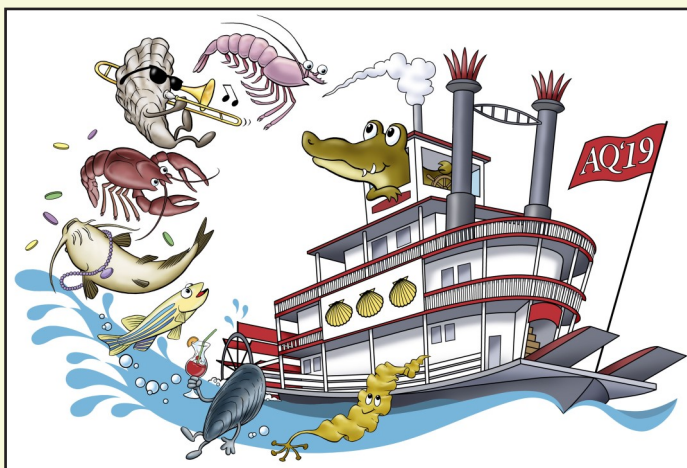
Happy Holidays!

Steven Allen, President

**Early Bird registration rate ends
January 21st 2019**

**DON'T FORGET TO
REGISTER**

<http://www.was.org/meetings>



**The abstract deadline has passed.
(Poster space still available)
Contact Sandy Shumway & Jay Parsons**

In this issue:

- **2017 Carriker Student Research Update**
- **International Pectinid Workshop**
- **Mussel Shell Art Carving**

2017 Melbourne R. Carriker Student Research Grant Update

Laura Spencer, University of Washington

"Effects of adult exposure to low pH on reproduction, offspring viability, and offspring pH response in Ostrea lurida"

The project supported by the Melbourne Carriker grant focuses on how adult exposure to low pH affects reproduction and offspring viability of *Ostrea lurida*, and whether offspring show differential responses to low pH if there is a history of parental exposure.

Until the early 1900s, *O. lurida* was abundant along the Pacific coast, distributed from Alaska to Baja California. Populations crashed due to overharvest, habitat degradation and pollution, and possibly disease or competition from the introduction of *Crassostrea gigas*. The void left by the species near collapse has spurred restoration efforts. Oysters, characterized as ecosystem engineers, provide attachment substrate for other sessile organisms, habitat for intertidal and juvenile species, biofiltration and denitrification, and are a key food source for birds and intertidal predators. There is also economic and recreational potential of *O. lurida*, as indicated by shell middens along the coast, and historic harvest records in Willapa Bay, WA, which at its peak exported over 100 million oysters annually compared to less than 1,200 today. While restoration projects are making headway, there is growing concern that changing ocean conditions further threaten *O. lurida* populations and may stymie progress.



Ocean acidification (OA) is of particular concern as farmed oysters along the Pacific Northwest coastline are already exhibiting negative effects. Larval *O. lurida* exposed to low pH display poor shell development, and are more susceptible to predation by invasive snails; however, compared to the non-native oyster *C. gigas*, *O. lurida* shows signs of pH tolerance. Furthermore, there is evidence that adult exposure to environmental conditions can be inherited by offspring. For example, Sydney rock oysters (*Saccostrea glomerata*) exposed to elevated pCO_2 during reproductive conditioning performed better in OA conditions compared to larvae of broodstock conditioned at ambient pCO_2 levels (Parker et al, 2012). While the mechanisms are unknown, epigenetic modification in the adult, and then inherited epigenetic regulation of gene expression in the offspring may be at play. This project has two phases to investigate whether low pH can alter gene expression in adult *O. lurida*, and if modifications are heritable, persistent and beneficial to the next generation.

In phase 1, I seek to determine whether adult exposure to low pH prior to reproductive conditioning affects gonadal gene expression, larval production, larval survival to metamorphosis, survival to post-set, and growth to the juvenile stage. Adult Olympia oysters were held for 7 weeks at 7.2 and 7.8 pH prior to reproductive conditioning and spawning, offspring were then grown under ambient conditions for 10 months. Transcriptional

analysis is in progress, but initial results indicate no effect on reproductive output, a negative effect on larval survival, and a persistent negative effect on growth after 10 months.

In Phase 2, currently in progress, I expose the offspring produced in Phase 1 to low pH conditions both in an acute laboratory exposure, and in a field deployment leveraging the naturally variable pH conditions in Puget Sound, Washington between eelgrass and unvegetated habitats. Previous field deployments by my collaborators indicate that *O. lurida* juveniles grow slower in unvegetated habitats with lower pH (~7.5 pH) compared to more alkaline eelgrass patches (~7.8). If parental exposure does indeed better equip offspring, we should not see significant growth differences between habitats in oysters from exposed parents. In the acute exposure, I will compare *O. lurida* gene expression in acidic (7.0) and ambient (8.0) conditions, and between oysters with and without parental exposure history. Results from this phase are forthcoming.

In a related project, I am investigating the effects of winter temperature on *O. lurida* reproduction. Increasing ocean temperatures are a concern for sessile poikilotherms such as oysters, whose body temperatures fluctuate with the environment. Temperature is a primary driver of gametogenesis and spawning in *O. lurida*. Warmer oceans during winter months, when oysters enter a gonad resting and resorption stage, may alter *O. lurida* reproductive timing, gamete quality, and larval production. To determine whether winter temperature is important for spring larval production and viability, I overwintered *O. lurida* adults at 6°C and 10°C, each at two feeding regimes (5,000 and 50,000 cells/mL) for 12 weeks prior to reproductive conditioning. No differences were observed on larval production and survival between treatments (12 families per treatment). Interestingly, the low food groups performed as well as the high food groups, indicating that broodstock can be fed low levels of algae during pre-conditioning, with no impact on survival or spring reproduction.

As I delve further into my PhD studies, I am becoming more broadly interested in understanding the complex reproduction of *Ostrea* species, which are simultaneous hermaphrodites (although during initial development they are protandric), spermcasters, and which brood larvae to the veliger stage. To this end, I am spending the summer in Australia with *Ostrea angasi*, the Australian flat oyster. The reproductive triggers are not fully understood in this species, and reliable conditioning and larval production in the hatchery have been thus far unsuccessful. At the New South Wales Port Stephens Fisheries Research Centre, I have been investigating whether elevated temperature can trigger gametogenesis under ample food, applying methods I use on *O. lurida* (developed by the Puget Sound Restoration Fund). During 4 weeks of conditioning, larvae were found in 12% of the oysters held at 24°C, in 2% of oysters at 21°C, and no larvae were produced at 18°C, indicating that high temperature may trigger or accelerate reproduction in the hatchery. I will assess gonad stage and sex using histology, which I am currently processing at the University of the Sunshine Coast in Queensland, Australia.

Thank you to the NSA for the generous award, and please follow my research and whereabouts at <https://laurahspencer.github.io/LabNotebook>

Can you identify this Honored Life Member?*



The National Shellfisheries Association has recognized 61 Honored Life Members and 22 Wallace Awardees over the course of its history. Since approximately 1990, biographies have been published in the *Journal of Shellfish* and the *Quarterly Newsletter* and more recently these materials have been posted on the NSA web page. It is important to recognize these individuals and to make their contributions known to future generations. That being said, only approximately half of these awardees have any information posted on our web page (www.shellfish.org/awards). We have reached out to some people who have agreed to prepare short biographies of individuals that they knew personally. There are many people from early days that still need biographical information to post. Volunteers are being recruited to do some historical digging. If you are interested, please contact Sandy Shumway (Sandra.shumway@uconn.edu) to see which individuals are in need of biographies. They are all very interesting people and you might have a good time doing it. These do not have to be lengthy efforts, but all of these folks deserve recognition. Please think about it and volunteer!

New BioOne Platform Coming

BioOne will be launching a new site on January 1, 2019. The new BioOne platform (remaining at bioone.org) will give BioOne Complete a more modern and intuitive look and feel, while retaining all of the functionality that our subscribers and users rely upon.

NSA members whose dues are paid can access the BioOne site via the Association website, but if your institution subscribes to BioOne.2 or BioOneComplete, **please access BioOne via your library's portal**. "Hits" from libraries (but not the NSA site) count when it comes to royalties. Because BioOne is a non-profit organization, most of the money that it receives from subscriptions is returned to publishing societies. From 2007 when NSA joined BioOne, through 2015, NSA has earned nearly \$425,000. So, use BioOne often.



* Reginald Truitt—1957



**The NSA store is
open for Christmas!**

\$5 flat-rate shipping on all orders

Great stocking stuffers

Keep track of your favorite oyster tastings with this pocket-sized diary. Fits easily in a card, also! \$5



Mugs: \$5

Cookbook: \$15 each or 3 for \$35

T-Shirts: short-sleeved \$10

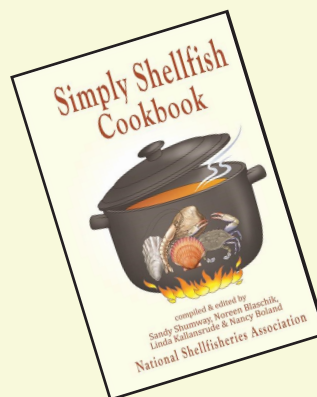
long-sleeved \$15

Pins: pewter: sm \$3, lg \$5

Contact Sandy to place your order

**All proceeds benefit the
Student Endowment Fund**

**Consider a gift membership
for your favorite student!**



Discover interesting facts on 52 different molluscs

NSA BUSINESS LUNCHEON

**AQ '19 New Orleans
March 9th 2019**

**12:30 pm - 2:30 pm
Riverview II (41st floor)**

Recruits' Corner

Fellow Recruits,

Wow, time sure does fly. We are already gearing up for the annual meeting in New Orleans, and we have a few items for you:

This year is the Triennial meeting so the conference will be much larger than the previous two years. This is a great opportunity to meet your future colleagues from other organizations. To help students find each other, we created a Facebook group called "NSA Students". Please join this group! You can post to the discussion board to coordinate lodging, airport transit, planning evenings out, and more. Look for a recent email from us entitled, "NSA Conference 2019: Facebook Group for Students." Even if you are not attending the conference, we encourage you to join.



There will, of course, be several student events at the Triennial. The schedule is still in flux, but expect a student reception and an awards ceremony the first night (with food!), followed by the annual auction. We are also organizing a panel discussion focused on career planning after graduate school, which will include an opportunity to have coffee with a mentor in your field. Stay tuned.

Keep in mind that the annual meeting in New Orleans is happening the weekend after Mardi Gras, which attracts many visitors to the city, so we recommend you start planning your trip very soon. Specifically, secure your lodging and flights!

In the next couple of months, we will be organizing student volunteers to run the NSA sales booth in New Orleans. Remember, this booth supports the Student Endowment Fund, which provides travel awards for the meeting. Please watch for an email from us in February with a sign-up sheet for the booth.



As usual, please email Erin (erin_roberts@my.uri.edu) or Laura (lhs3@uw.edu) with any ideas or concerns.

See you in New Orleans!

Laura & Erin

22nd International Pectinid Workshop



The 22nd International Pectinid Workshop will be held in Santiago de Compostela, Spain in the spring of 2019 (April, 24-29). These biennial Workshops are a great opportunity to meet with fellow scallop aficionados

and exchange research findings, discuss current issues in scallop aquaculture and fisheries, enjoy outstanding comradery, local history, and flavor. Santiago de Compostela is an epicenter of scallops and their importance throughout history. It is also a spectacular venue with much to offer those who might plan to extend their stay to explore the country for some rest and relaxation.

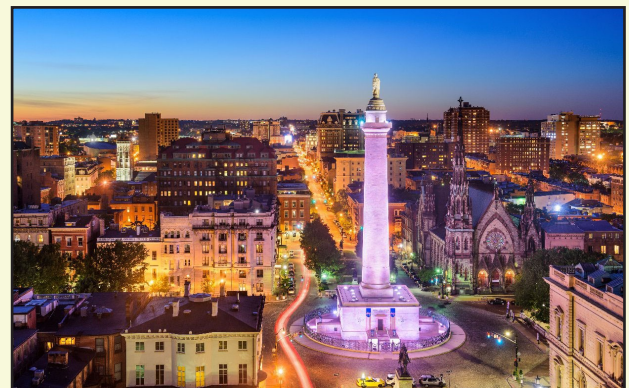
Keep an eye on the website and submit your abstract (<https://pectinidworkshop.com>). While there are formal presentations, this is a true workshop and open discussion (and discourse) are welcome and encouraged.

Don't miss this opportunity to share your work with other pectinid workers and enjoy all that Santiago de Compostela has to offer.

For more information, contact Luz Pérez-Parallé:
luz.perez-paralle@usc.es

See you in Spain!

SAVE THE DATE



**112th Annual NSA Meeting
Crowne Plaza Hotel Baltimore
Downtown-Inner Harbor
March 29 - April 2, 2020**

Keeping Traditions Alive

It takes a special eye for turning something found in nature into art – vines into baskets, clay into vessels or stone into sculpture. For Knokovtee Scott, it's shells into jewelry.

Inspired by pre-Columbian Mississippian-period shell art, Muscogee Creek and Cherokee artist Scott is still fascinated by his ancestors' style. Using the purple mussel shells found in rivers and lakes in northeastern Oklahoma, he carves, etches and polishes gorgets, which are like pendants, and earrings.



Potamilus purpuratus (Lamarck, 1819), common name is bluefer or purple. Photo credit: Freshwater Molluscan Shells.

"Purple mussels are beautiful and rare, and cherished for their purple hue, which can turn into the colors of a rainbow in sunlight," he said. "You find 10 pounds of white shells for every purple one."

Since 1988, the purple shell mussels found in the area have been known as the Mankiller Pearl Shell for then-Principal Chief Wilma Pearl Mankiller, after the Cherokee Tribal Council passed a resolution renaming it.

Designated a Cherokee National Living Treasure, Scott has been sharing his passion for shellwork at the Cherokee Art Center since it opened.

A retired art teacher, the 64-year-old shellworker has been making art as long as he can remember. His dad was a draftsman for the U.S. Army Corps of Engineers who started Scott's art education when he was four years old. "I make art because it's embedded inside my DNA," Scott said. "I grew up in a family of artists. My father painted, my mother crafted, my oldest sister made Cherokee tear dresses, my younger sister danced classical ballet, and my elder brother played toblorone. My father and mother would also take me to the Philbrook Annual Indian Art Show to see art made by my relatives," he said.

"My mother and father not only inspired me, but were always there to lend a hand, ready to pitch in with all the little things that makes a person an artist. Now that they're gone, I'm inspired by their memories and the times we shared."

In 1972, Scott began studying art at the Institute of American Indian in Santa Fe, where he was considered a studio artist. He had the opportunity to study and practice a wide variety of styles, and especially enjoyed museum studies and life drawing.

For a semester, he attended the University of Tulsa, majoring in sculpture, and in 1970, he was in the Indian Studies program at the University of Washington in Seattle, studying with Tawney Reaves, a northwest Indian carver. He graduated in 1981 from Northwestern State University with a degree in Fine Art Education. He also earned a Master's of Education in curriculum and instruction.

"It was during this time period I was introduced to shell work by a shaman and herbalist," he said. Teaching is his way of keeping the art of shellwork alive.



Shell art made by Cherokee/Muscogee Creek artist Knokovtee Scott includes decorative gorgets and jewelry. Photo credit: www.cherokeephoenix.org



Earrings and a necklace piece made from purple mussel shells. Photo credit: www.cherokeephoenix.org

He's taught at schools in several states, including Oklahoma. Scott has served as director on a statewide mentoring program out of Norman, then as curriculum specialist for the Indian Education, Region 5, Southern Plains that served Oklahoma, Texas, Louisiana, Arkansas, Kansas and Missouri.

Scott has earned many awards since the 1980s, including Best of Show at the Five Civilized Tribes Museum, and has pieces in many permanent collections, such as at the Oklahoma Museum of Natural History, Southern Plains Museum and the Smithsonian Institute. His art is available at the Cherokee Spider Gallery and the Cherokee Heritage Center.

"Art is basic to our existence," Scott said. "Through the study of cultural artifacts we gain knowledge of the past and receive insight into the lives of our ancient ancestors. Without it, we wouldn't know appreciation or understand life."

NSA Pacific Coast Section News

Greetings from the Pacific Coast!



The 72nd annual meeting of the NSA-PCS was held from September 18-20 in Blaine, Washington, in conjunction with the Pacific Coast Shellfish Growers Association (PCSGA). Over 250 people registered for the conference, of which approximately 25% were NSA members. NSA-PCS

sincerely thanks the shellfish industry and the PCSGA conference planning committee (Margaret Pilaro, Connie Smith, Rebbecka Allen, and Sara Grant) for making this annual joint conference a great success. Thanks also to thank Bethany Stevick for organizing the NSA-PCS student support, and Sean McDonald for coordinating student volunteers and judges, and running all the conference A/V.

The keynote speaker, Dr. Ray Hilborn, (University of Washington) gave an insightful talk about the environmental cost of food production and why shellfish aquaculture offers an optimal form of protein production. The fourth recipient of the *John Lentz Profiles in Innovation Speaker Series* was Dr. Bernardo Broitman, from the Center for the Study of Multiple Drivers of Socio-Ecological Marine Systems in Chile, who presented research focused on multiple-stressors on both mussels and scallops. The morning session also included presentations by The Nature Conservancy on shellfish growers as advocates for climate action, and by Californian Ports and Harbor Districts about increasing their role in aquaculture.

The conference was filled with excellent sessions including estuarine habitat, genetics and broodstock development, emerging species for culture, shellfish disease, permitting/regulatory issues, human health issues, marine debris, pest management, and restoration. Workshops were also convened at the conference on *Vibrio parahaemolyticus*, underwater video, issues facing small growers, and Dungeness crab recruitment dynamics in Puget Sound. The conference wrapped up with the reinstitution of the ever-popular "Shellfish Shorts" session, a series of speedy presentations, each with 20 slides timed to advance every 15 seconds.

Student involvement continues to be a primary focus of the NSA-PCS mission and funding was provided to support the participation of 19 (!) students. The best student presentation was awarded to Laura Spencer (UW) for her talk, "Low pH and high temperature adult exposure affects larval viability and juvenile growth in *O. lurida* from Puget Sound, WA" and honorable mention went to Yaamini Venkataraman (UW) for her talk, "Influence of ocean acidification on the epigenome of oyster reproductive tissue." Both students received NSA-PCS memberships and cash awards. Support for students to attend the meeting was generously provided by the Dr. Ken Chew Student Scholarship Fund, the NOAA Office of Aquaculture, Arcadia Point Seafoods, Dan Cheney, Chuckanut Shellfish, Kamilche Sea Farms, Rock Point Oyster Co., Salish Strait Seafood, and Whiskey Creek Shellfish Hatchery.

The NSA-PCS hosted two fund raising events at the conference: the Geo-Dunk Tank and the annual silent auction. Special thanks go to Lillian Kuehl and Chris Eardley for generating our highest-earning fund raising event ever, our clever student volunteers who upped the ante by selling bags of ice to add to the tank, and the brave souls who offered themselves up to be

dunked into the icy water! Big thanks also to all who solicited and donated items for the silent auction, especially the generous donations from the Jamestown S'Klallam Tribe. Proceeds from both events made the meeting a financial success for NSA-PCS and will help to sponsor students attending future meetings.

The NSA-PCS annual business meeting included discussion of the NSA-PCS Code for Diversity and Inclusion, which will be circulated to members soon. Elections were held and the current officers are: Chair: Sean McDonald (UW); Vice Chair: Elizabeth Tobin (Jamestown S'Klallam Tribe); Secretary: Lillian Kuehl (Western Washington University); Treasurer: Chris Eardley (WA Dept. of Fish and Wildlife); and Members-at-Large: 2016-19: Lindsay Alma (UW), 2017-2020: Sandy Zeiner (Northwest Indian Fisheries Commission), and 2018-2021: Andrew Suhrbier (Pacific Shellfish Institute).

As I sign off as NSA-PCS Chair I am pleased to pass the baton to Sean McDonald, whose long-term commitment and dedication to the Section will ensure its continued success. I would also like to thank Bethany Stevick for her many years serving as the section Treasurer. She kept us on track financially, which allowed us to support the participation of many students each year at the annual conference.

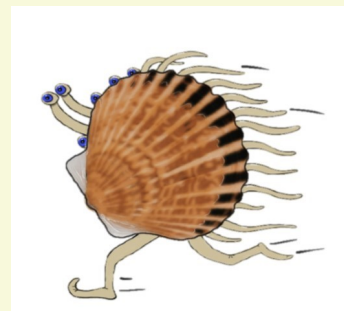
The 2019 NSA-PCS/PCSGA conference will be held September 17 - 19 at the Red Lion Hotel on the River in Portland, OR. The call for presentations will open this spring. Please let Sean McDonald (psean@uw.edu) know early if you have an idea for a special session.

As a reminder, the NSA-PCS Twitter feed and Facebook page are your best resources for news and information about the PCS and our events and annual meetings. Please join our community online.

You can follow NSA-PCS on Twitter: @nsapcs. You can like NSA-PCS on Facebook:
<https://www.facebook.com/pages/Pacific-Coast-Section-of-the-National-Shellfisheries-Association/1438569826443936>

Laura Hoberecht
Outgoing NSA-PCS Chair

3rd Annual Scallop Gallop



AQ 2019 5K in New Orleans
Sign up as an individual or as a team – AFS, NSA & WAS will have teams – we hear rumors that other teams are forming!

Contact: Lewis Deaton
led9784@louisiana.edu

Officers, Committee Chairs & Staff of the National Shellfisheries Association

Steven M. Allen
President, Webmaster
Bowdoin Coastal Studies Center
15 Bowdoin St
Brunswick, ME 04011
Phone: (443) 994-5164
Email: sallen@bowdoin.edu

John Scarpa
President-Elect
Texas A&M University - Corpus Christi
Dept. of Life Sciences
6300 Ocean Drive (Unit 5800)
Corpus Christi, TX 78412
Phone: (361) 825-2369
Email: john.scarpa@tamucc.edu

Lewis Deaton
Vice President
University of Louisiana - Lafayette
P.O. Box 42451
Lafayette, LA 70504
Phone: (337) 482-6549
Email: led9784@louisiana.edu

Nature McGinn
Treasurer
PO Box 7343
Alexandria, VA 22307
Email: naturemcginn@gmail.com

Paul Rawson
Secretary
University of Maine
5751 Murray Hall
Orono, ME 04469
Phone: (207) 581-4326
Email: prawson@maine.edu

Karolyn Mueller Hansen
Chair, Past-Presidents', Elections, Awards
Committees
University of Dayton
300 College Park
Dayton, OH 45469
Phone: (937) 229-2141
Email: khansen1@udayton.edu

Brett Dumbauld
2016-2019 Member-at-Large
Oregon State University
2030 SE Marine Science Drive
Newport, OR 97365
Email: brett.dumbauld@oregonstate.edu

Kay McGraw
2017-2020 Member-at-Large
Chair, Resolutions Committee
10409 Edgefield Dr.
Adelphi, MD 20783
Phone: (240) 821-2860
Email: kmcgraw5@earthlink.net

Melissa Southworth
2018-2021
Co-Chair, Student Endowment Awards
VIMS
PO Box 1346
1208 Greate Rd
Gloucester Point, VA 23062
Phone: (804) 684-7821
Email: melsouth@vims.edu

Laura Hoberecht
Chair, Pacific Coast Section
WCR/NOAA/NMFS
7600 Sand Point Way Northeast Bld #1
Seattle, WA 98115
Phone: (206) 526-4453
Email: laura.hoberecht@noaa.gov

Sandra E. Shumway
Editor, *JSR*; Conference Manager, Membership
Committee
University of Connecticut
Dept. of Marine Sciences
1080 Shennecossett Road
Groton, CT 06340
Phone: (860) 405-9282
Email: sandra.shumway@uconn.edu

John N. Kraeuter
Chair, Audit-Budget-Finance Committee
Co-Chair, Publications Committee
1 Hills Beach Road
Biddeford, ME 04005
Email: kraeuter@hsrl.rutgers.edu

Lou D'Abramo
Co-Chair, Publications Committee
3366 Beaver Creek Drive SE
Southport, NC 28461
Phone: (662) 617-0257
Email: lrd4@msstate.edu

Peter Kingsley-Smith
Co-Chair, Student Endowment Awards
Marine Resources Research Institute
South Carolina Dept. of Natural Resources
217 Fort Johnson Road
Charleston SC 29412
Phone: (843) 953-9840
Email: kingsleysmithp@dnr.sc.gov

Tessa Getchis
Membership Committee
CT Sea Grant
University of Connecticut
1080 Shennecossett Road
Groton, CT 06340
Phone: (860) 405-9104
Email: tessa.getchis@uconn.edu

Hillary Lane Glandon
Membership Committee
Univ. of North Carolina Wilmington
Biology and Marine Biology
601 S. College Road
Wilmington, NC 28403
Phone: (301) 405-9701
Email: hillaryannelane@gmail.com

Erin Roberts
Recruits, Co-Chair
University of Rhode Island
346 Broadway
Apt. 2
Newport, RI 02840
Email: erin_roberts@my.uri.edu

Laura Spencer
Recruits, Co-Chair
University of Washington
9656 26th Ave SW
Seattle, WA 98106
Email: lhs3@uw.edu

LeRoy Creswell
Editor, *NSA Quarterly Newsletter*,
Co-Chair, Student Endowment Awards
Florida Sea Grant Extension Program
2199 South Rock Road
Ft. Pierce, FL 34945
Phone: (772) 834-9062
Email: creswell@ufl.edu

Noreen Blaschik
Associate Editor, *NSA Quarterly Newsletter*
Webmaster
University of Connecticut
Dept. of Marine Sciences
1080 Shennecossett Rd
Groton, CT 06423
Email: noreen.blaschik@uconn.edu

Linda Kallansrude, *Secretariat*
20790 Country Creek Drive
Unit #516
Estero, FL 33928
Phone: (239) 676-5685
Email: lindajk@optonline.net



Linda Kallansrude, NSA Secretariat
20790 Country Creek Drive
Unit #516
Estero, FL 33928
Forwarding Service Requested

Upcoming Events

Northeast Aquaculture Conference & Exposition / Milford Aquaculture Seminar: Jan. 9-11, 2019, Boston Park Plaza Hotel, Boston, MA. For more information: <http://www.northeastaquaculture.org>

22nd International Pectinid Workshop: Apr. 24-29, 2019. Santiago de Compostela, Spain. For more information: <https://pectinidworkshop.com>

2019 PCSGA/NSA-PCS Conference: Sept. 17 - 19, 2019, Red Lion Hotel on the River, Portland, OR. For more information: www.pcsga.org/annual-conferences

112th Annual NSA Meeting: Mar. 29 - Apr. 2, 2020. Radisson Hotel Baltimore Downtown-Inner Harbor. For more information: www.shellfish.org

For more information on these conferences:
www.was.org

Aquaculture 2020: Feb 9-12. Honolulu, Hawaii USA

Aquaculture 2022: Feb 27-Mar 3. San Diego, California, USA

Aquaculture America 2023: Feb 19-22. New Orleans, Louisiana, USA



If you would like to announce a meeting, conference, workshop, or publication that might be of interest to NSA members, please contact the *QNL* Editor, LeRoy Creswell (creswell@ufl.edu).