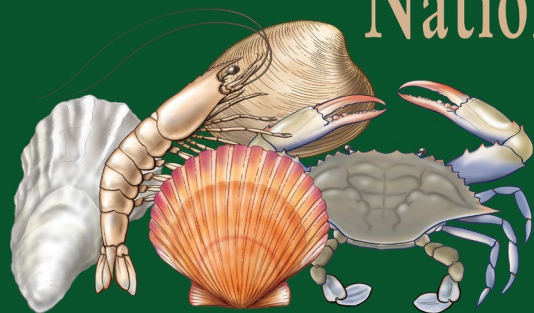


National Shellfisheries Association Quarterly Newsletter



Est. 1908

2020 (1)

President's Message



I started a draft of this message just after returning from Aquaculture America 2020 held in early February in Hawaii. At that time, COVID-19 was on the radar in the U.S. as more people than usual on airlines wore surgical masks. Typically, this post-conference President's Message conveys the success of our recent meeting. I was anticipating a description

of how our 112th annual meeting was well-attended and we had a great time seeing friends, making new friends, and learning the latest in shellfish research and commercial activities, while enjoying time in the host city. Alas, this did not come to be this year.

You may recall the email indicating that the Executive Committee agreed that the meeting was still going to occur, which was followed a few days later by a total cancellation notice. Once the U.S. federal government issued overseas travel restrictions, we knew there was no possibility to continue to hold the meeting. Now we had to undo all that had been paid for and planned. You can imagine at the time that hotel management was not seeing the event cancellation the same as we were, even with the force majeure clause in our contract. If you have organized a conference, you know that there are promises made, such as hotel nights completed and hotel food purchases. For our meetings, contracts are between \$150,000 and \$200,000.

Having a conference manager has its benefits as the connections they have are invaluable. Our hotel contact was the same person from our last meeting in Baltimore. Conference Manager, Dr. Sandra Shumway, had stayed in contact with her since then, which resulted in her being a sympathetic advocate for us. The short story is, we agreed to leave the small deposit and hold the meeting there in 2023. The hotel is going to give us the same room rates. This is incredible to lock in room rates in a city such as Baltimore three years out. Although there will be some financial loss from not holding the 2020 meeting, you will see in the Treasurer's report that we have built a financial buffer to ensure that the Association may function and survive a catastrophic event, one even worse than this meeting cancellation. I thank our prior Executive Committees for their foresight and diligence to ensure the financial well-being of our association.

This financial cushion, as well as extraordinary work by our Conference Manager, is allowing us to move forward with plans for the 113th meeting in Charlotte, NC (March 21-26, 2021). Dr. Shumway had secured over \$30,000 in direct support for the

Baltimore meeting. Virtually every sponsor has agreed to maintain their support for the Charlotte meeting. Dr. Shumway worked tirelessly writing proposals to federal agencies for some of this support and then again to convince them to extend the contracts to cover the Charlotte meeting. I am pointing this out so that when Dr. Shumway sends out her request for session ideas or other assistance, please think very seriously how you can assist to make our meetings even better. This is our association. Dr. Shumway cares deeply for the Association and enjoys seeing our meetings succeed, especially for our student members, but her conference manager obligations do not cover being a development officer for the meetings.

The effect of the COVID-19 pandemic is being felt in some way by everyone. Fortunately, technology has allowed many of us to continue, albeit in a different structure and maybe with different short-term goals. The Executive Committee held its meeting as scheduled via webinar software. You will be receiving by email a summary of important items from the meeting as we were not able to hold our annual Business Luncheon where you would have heard this information. One item to mention is the election results. We thank those who volunteered to be a candidate on the ballot this year. Our new Vice-President is Dr. Aswani Volety of Elon University, Treasurer is Dr. G. Jay Parsons of Fisheries and Oceans Canada, and Member-at-Large is Dr. Louis Plough of University of Maryland Center for Environmental Science. We thank those who served their terms as Vice-President, Dr. Kennedy Paynter, and Member-at-Large, Dr. Kay McGraw, and those that are continuing in their duties.

Continued on page 2...

In this issue:

- ***113th Annual Meeting Charlotte 2021***
- ***North Atlantic European Mussel Organization Workshop***
- ***NSA Resolutions***
- ***Restoration Guidelines for Shellfish Reefs***

Continued from page 1...



Another item is refunds for the 112th meeting registration. The Secretariat has been diligently doing the credit card refunds. This is a slow process as she has to separate out membership dues for those that renewed along with meeting registration. For those that paid by check, she is developing a list that will be shared with the Treasurer so he can start writing refund checks and mailing them. Those that registered with a credit card in 2019 may not be able to get a credit refund but will have to be issued a check. We are looking into this further as we know some credit cards may be agency or company cards. We are trying to complete all of this by the end of April. If you have any questions about your refund, please contact me by email.

As we move forward this year, please remember to follow the "National Shellfisheries Association" on Facebook and "@NationalShellfisheries" on Instagram. If you have not renewed your membership for 2020, please do so. Along with renewing, please consider adding \$5, \$10, or more as a donation to the Student Endowment Fund (SEF). With no meeting this year, we will have to rely on donations to increase the endowment, which surpassed \$150,000 this past year. Thank you to everyone who has or continues to donate! In these times of low interest, the amount available to assist student attendance at meetings is lower than anticipated.

Even during this disruption, let us continue to make contributions to shellfisheries and the Association by publishing your research findings in our *Journal*, recruiting new members, and assisting the Association in any manner you can.

John Scarpa, President

Congratulations! Reed Mariculture

Celebrating 30 years in business



NSA Member Recognized



Bob Rheault (NSA Wallace Award recipient), received the Joseph P. McCraren Award for outstanding contributions in promoting the growth of aquaculture.

CONGRATULATIONS!

SAVE THE DATE



Photo credit: <https://www.flickr.com/photos/digidreamgrafix/>

**113th Annual NSA Meeting
Charlotte, North Carolina
Sheraton Charlotte Hotel
March 21-26, 2021**

**Please consider organizing a special
session or workshop.**

Send your title to
sandra.shumway@uconn.edu

NSA is on Instagram

Be sure to follow the latest NSA news, events, and publications on our Instagram account @nationalshellfisheries. We will regularly post updates regarding to the *Quarterly Newsletter*, upcoming conferences and meetings, and general shellfish news from around the world. And in a new initiative to increase visibility of the NSA and its publications, contributing authors to the *Journal of Shellfish Research* will be encouraged to submit materials including images, videos, links, hashtags, and short descriptions to help promote their work and their paper on our social media. We will also post “throwbacks” to past journal articles and conference talks to highlight some topics of general interest. Not only do we hope to keep our existing members more connected with NSA and our publications, but we also hope to bring more awareness of the great science published in the *JSR* to shellfish professionals and enthusiasts outside our society, including those in industry, government, NGO, education, and the general scientific community. So please help support this effort by encouraging colleagues, students, friends, and family to follow NSA on Instagram. Please send any suggestions or ideas for posts, as well as any questions, to Michael.Doall@stonybrook.edu.



Treasurer's Report (FY 2019)

The most recent completed fiscal year for NSA was from October 1, 2018 through September 30, 2019, which encompassed the triennial meeting in New Orleans. Revenues and expenses were \$279,844.73 and \$267,463.50, respectively, which resulted in a net gain of \$12,381.23. The revenue sharing from the triennial meeting was about \$50,000, which resulted in the net increase. This amount was 3x that anticipated. This shows why it is important for NSA members to not only attend the triennial meeting, but to indicate on the registration form as being associated with NSA. Total end of fiscal year assets were \$607,993.56, which included \$137,029.18 in the Student Endowment Fund. The SEF will increase to just above \$154,000 when account reconciliation is completed. We still maintain assets above our 10-year average annual expenses of \$293,196, which the Executive Committee recommends for maintaining Association security for unanticipated events.

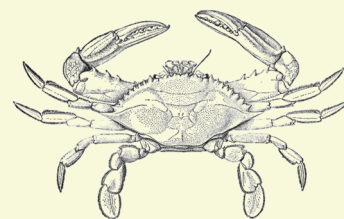
2020 NSA Resolutions

Each year, the National Shellfisheries Association recognizes individuals for special contributions to the society in the form of Resolutions. Each begins with the same introduction:

Whereas, the National Shellfisheries Association, Inc. (NSA) is a Not-for Profit Corporation, and Whereas, members serve as officers and committee members on a voluntary basis, Be It Resolved that on the 1st of April, 2020, the National Shellfisheries Association formally recognizes and thanks:

This year, the following Resolutions were presented.

- The FUCOBI Foundation and Acacia Alcivar-Warren: for their dedication to environmental health, biodiversity, microbiome, toxicological, and epidemiological epigenetics, the ONE HEALTH program, and most especially for their continued encouragement, education, and support of minority students and the National Shellfisheries Association
- The extraordinary staff of the Crowne Plaza Baltimore – Inner Harbor Hotel, especially Patrice Palmere, Irene Rosen, and Chef Jerome Talley: for their outstanding assistance in making the 112th annual meeting of the National Shellfisheries Association a great success. Everyone went ‘above and beyond’ and their professionalism, attention to details, and friendliness were instrumental in making what would have been a memorable meeting. We thank them all for their outstanding efforts!
- The Sheridan Press: for another year of outstanding service and collaboration publishing the *Journal of Shellfish Research*. We especially recognize Joyce Coulter, Susan Parente, Kim Salois, and Lisa Small for their efforts on behalf of the *Journal* and the National Shellfisheries Association, which are gratefully acknowledged and appreciated.
- BioOne: Their efforts on behalf of the *Journal* and the National Shellfisheries Association have not only elevated the exposure and stature of the *JSR*, but have provided a strong business relationship and provided financial stability, all of which is gratefully acknowledged and appreciated.
- The SunTrust Bank in Baltimore for their financial guidance and outstanding service since 1996. We especially recognize Deanna Whittington, our first liaison, Stephanie Perkins, our current liaison, and all of those who have served in between. Their collective efforts on behalf of the National Shellfisheries Association are gratefully acknowledged and appreciated.



Inaugural Recipient of the Paul Galtsoff Industry Award

Daniel (Danny) Myer Cohen has been selected as the first recipient of the Galtsoff Industry Award. His accomplishments were unique. The Galtsoff Industry Award was established to recognize “individuals who have made substantial contributions at regional, national, or global levels, notably linking science with industry needs, and substantial outreach efforts”. Danny did all of that. Unfortunately, Danny passed before he could receive this award or even be notified of his selection. For that, we are deeply-saddened, but take solace knowing that his family, employees, industry colleagues, regulatory colleagues, and his scientific colleagues across the world will know that his work did not go unrecognized, nor unappreciated, by the National Shellfisheries Association.



Photo courtesy of Barry Cohen

Danny was President and CEO of Atlantic Capes Fisheries, Inc., a fully-integrated seafood producing conglomerate that he built from a few clam boats his father had owned. Danny was neither a fisherman nor an aquaculturist. He’s been described as the most successful fisherman that never caught a fish.

Danny’s parents passed in 1974 when he was an architecture student at Cornell University. He put his education on hold to help his family’s business and never went back, turning his father’s clam boats into a global seafood corporation employing nearly 500 people. He owned boats and managed the docks. He was a businessman. He saw how hard fishermen worked and recognized their integrity and desire to provide. He also saw the limitations of the environment, as well as the limitations of a slow and cumbersome regulatory system that often pitted regulators against the regulated even though the two were trying to achieve a common goal of sustainable fishing. Most importantly, he recognized the power of employing science to advance fisheries and aquaculture management for production and sustainability through an informed balance of conservation and exploitation.

Over four decades, Danny dedicated no less than one third of his time serving as a public advocate for fisheries and aquaculture, recognizing that sustainable harvests required responsible environmental and resource stewardship. He knew this required a solid understanding grounded in science and advocated, promoted, and even funded research in applied fisheries and aquaculture. Among his many activities Danny appeared before Congress, served in leadership roles in a variety of governmental agencies and advocacy organizations, and engaged industry members to join him in advocating for and financially supporting research to manage their fisheries sustainably.

Danny served as Chairman of the National Fisheries Institute (NFI) Scientific Monitoring Committee and on the NFI Clam Committee. He was the Principal and President of Fishermen’s Energy of New Jersey, LLC., a corporation created from an initial opposition to offshore wind development after recognizing the larger and broader scale of the world’s energy problem, an endeavor that ultimately featured him in a TEDx talk: <https://www.youtube.com/watch?v=MbkD-DOyv5w>). The NFI, the largest association of seafood harvesters, processors, marketers, and importers in the United States, recognized Danny’s environmental leadership role by awarding him the “FINese Award for Responsible Fisheries”. In 2009, Danny’s environmental leadership was recognized by the New Jersey Board of Public Utilities and named him New Jersey’s “Clean Energy Advocate of the Year”.

Danny’s role in aquaculture was equally significant. About 20 years ago, Danny was introduced to Stan Allen by NJ Sea Grant extension agent Stu Tweed who wanted Danny to learn about the potential of growing oysters using disease resistant stocks. Danny soon learned of Stan’s work with Ximing Guo on developing triploid oysters and helped fund their work to develop the tetraploid technology now used to produce triploid oysters around the world – a revolution in the industry. Danny continued investing in shellfish aquaculture operating scallop farms in British Columbia, developing triploid scallops in China, and working to resolve negative farm-wildlife interactions with scientists trying to develop innovative methods to reduce impacts on threatened and endangered species.

Working with Roger Mann, and Eric Powell, Danny helped create the Science Center for Marine Fisheries (SCeMFis) with a national footprint and an international roster of participating scientists. Atlantic Capes has been a financial supporter of SCeMFis since day one with Danny working as a quiet, but resolute, force in recruiting other industry members to this cooperative effort.

Roger Mann states, “*Danny is not a hands-on, go-to-sea or get-muddy guy (he leaves that to us), but his rare talent resides in his ability to see the larger challenge of resource management through economic development as a unified task, and to engage talent in a coordinated, rigorous effort to resolve problems in a proactive and mutually beneficial manner.*”

Danny worked to the end. In his last year, he was actively leading an effort to develop management alternatives in the offshore scallop industry with the goal of increasing safety at sea, decreasing overcapitalization in fleet resources, providing opportunity for development of young crew, and stabilization of product value on the competitive international market. The NSA honors and recognizes his contributions as the inaugural recipient of the Paul Galtsoff Industry Award.

Congratulations Danny! We appreciate your work and will miss your insightfulness, persistence, and comradery.

David Bushek

New Streamlined Flow Imaging Microscope Supports Shellfish Aquaculture

Notes from a Sponsor - Fluid Imaging Technologies, Inc.



Whether monitoring for harmful algae, assessing the food supply for filter-feeding bivalves, or determining the health and viability of shellfish larvae in aquaculture operations, shellfish managers have traditionally relied on the tedious and time-consuming practice of manual microscopy. With the advent of Flow Imaging Microscopy, they now can analyze water samples significantly faster than before.

Since its introduction in 1999, the FlowCam® has become a valued instrument for rapidly analyzing plankton populations and other marine life. More than 500 FlowCams are used in 50+ countries to identify, count, and measure phytoplankton, zooplankton, and other microscopic particles.

In 2018, Dauphin Island Sea Lab performed a study using oyster larvae from the Mobile Bay - Mississippi Sound system off the coast of Alabama. There have been concerted efforts to reestablish a flourishing population of oysters and oyster reefs in this area as part

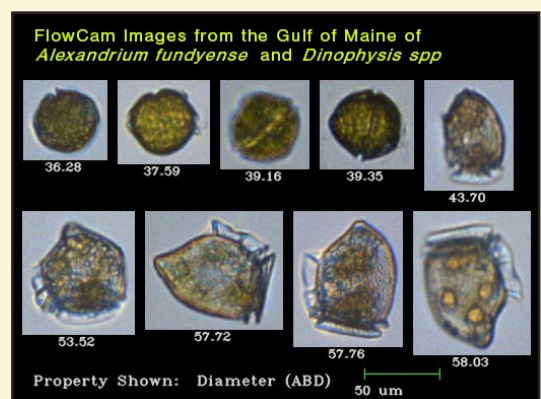
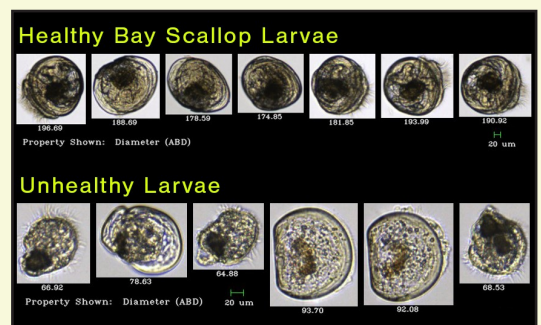
of an initiative to protect the shoreline and save the population from rapid decline. An important piece of this puzzle is the need to track larval transport from birth to adult settlements. The aim of this study was to establish a method to track these larvae migrations.

Twenty-two million larvae were released at both high- and low-salinity locations in order to test (among other things) two different methods of detection upon recapture: fluorescent microscopy and the FlowCam. It was found that although both methods worked well at identifying the calcein-stained larvae (traditional microscopy had a higher detection capacity), the FlowCam was more efficient and practical for this application. In the end, it was determined that "the FlowCam was the most viable option for detection of large-volume, high-background field sampling". [Gancel, H.N., Carmichael, R.H., Park, K. *et al.* Field Mark-Recapture of Calcein-Stained Larval Oysters (*Crassostrea virginica*) in a Freshwater-Dominated Estuary. *Estuaries and Coasts* 42, 1558–1569 (2019)]

For the farmer, the FlowCam can be used for HAB monitoring as well as evaluating the productivity and plankton availability for shellfish food supply when performing site evaluations. Samples can be analyzed in less than 10 minutes, providing immediate feedback to the farmer so that corrective action can be taken should it be warranted.

In the hatchery the FlowCam has many uses. The instrument can be used to keep track of the health of the larvae simply by looking at high resolution images. Shell abnormalities can be quickly assessed. When looking to determine the ratio of live/dead larvae, the vital stain Neutral Red can be easily added to samples. Live larvae pick up the stain allowing you to determine the number of live larvae vs dead. In addition, the hatchery manager can monitor the concentration of the algae being fed to the larvae.

In 2019, FlowCam manufacturer, Fluid Imaging Technologies, based in Scarborough, Maine, launched a new streamlined instrument, the FlowCam 5000. "Over the course of selling our FlowCam these past 20 years, we have seen a need for a simpler and less expensive instrument", says Fluid Imaging Vice President, Harry Nelson. "To meet this need, our engineering team put their heads together and created the streamlined FlowCam 5000". This new instrument was specifically designed to make semi-automated plankton analysis accessible to all organizations. To learn more about how the FlowCam can work for you, please visit www.fluidimaging.com or contact Harry Nelson at harry.nelson@fluidimaging.com.



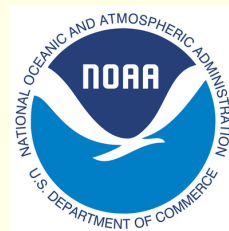
THANKS TO THOSE WHO SPONSORED BALTIMORE

See you in Charlotte!



THANKS TO THOSE WHO SPONSORED BALTIMORE

See you in Charlotte!



Baltimore Meeting post mortem...

They say there is a first time for everything - and for NSA this is the first time a meeting was cancelled. Even WWII didn't stop the meetings. We held out as long as possible, but it quickly became obvious that cancellation was inevitable. This decision was a great disappointment to everyone and all indications were that Baltimore was going to be a stellar meeting. We've spent 10 months putting the meeting together and then had to dismantle in a week or two - and I can tell you that it takes as much effort to shut it down as it did to put it together. There was a fast scramble to cancel seafood donations, program printing (that was caught with just hours to spare), and more. We are still working on final details, but it looks like we will be able to keep losses to a bare minimum. That being said, a lot of work went into getting ready for the conference and even though it didn't actually take place, thanks are due to a lot of folks. First, our sponsors. We had a very generous group of donors (see centerfold) and some new and exciting participants planned for the industry display. The good news is that almost all of those sponsors have agreed to roll their sponsorship over to the meeting in **CHARLOTTE, NORTH CAROLINA (March 21 - 26, 2021)**. If you interact with any of these folks, thank them for their support.



The next is to thank all of those folks who helped in various ways starting with Noreen Blaschik Favreau for countless hours of tedious efforts, attention to detail, and doing it all with a smile. Linda Kallansrude handled all of the registrations - and is now dealing with the refunds. She says she's still smiling, but she's in Florida so I have no verification. Thanks to Don Webster and Ken Paynter who were 'on the ground' in Baltimore. Bob Rheault took the reins on the raw bar donations and the shuckers were at the ready. Patrice Palmere, Irene Rosen, and Chef Jerome Tolley, the crew at the Crowne Plaza Hotel Baltimore Downtown - Inner Harbor, were a delight and made everything run smoothly. As always, the team at Sheridan Press was a great help in assembling the program (and disassembling it!), and Erin Roberts and Laura Spencer did an outstanding job organizing the activities for the Recruits. Local students and supporters at UConn helped with name badges, Eric Heupel was always on call for technical issues, and Steve Allen has been his usual 'jack of all trades'.

The program was going to be outstanding, thanks to all the efforts of the special session organizers and everyone who submitted abstracts for the conference. The program will be posted on the web page for general interest, remember it is not a cite-able document. It is hoped that many of these sessions can be offered in Charlotte. Another extra thank you to everybody who submitted their abstracts on time, I think this year set a new record.

Yes, this was all a great disappointment, but we as a society can make the impact minimal. Plan now to attend the meeting next year in Charlotte and bring your colleagues and students. Think about organizing a special session, a poster session, or a workshop. The grid is open, so reserve your place now! We'll also be celebrating 40 years of the *Journal of Shellfish Research*, and need to make up for no SEF Auction by having a record breaker next year.

If we come together and go all out to support the meeting next year, we can erase any losses incurred this year. Charlotte is a great venue, easy access, and your participation can help make it the most successful meeting ever.

See you in Charlotte!
Sandy

Still looking for historians....

There has been an on-going effort, only moderately successful to date, to provide biographical information on our web page regarding past leaders of the field. There are many past Honored Life Members for whom no information is provided on the web page. This may not be at the top of everybody's list of important efforts, but it is important that this information be available and to keep their memories and contributions alive. The individuals listed below need bios. An earlier request in 2018 resulted in two individuals stepping up - thanks to Teri King and Kay McGraw for volunteering. If you are interested in doing some digging and writing a short biography on any of these individuals, please get in touch with Sandy Shumway (Sandra.shumway@uconn.edu). The article does not have to be long, just informative. Some data can be found in *Taming of the Oyster* and contacting individuals who knew the members could also prove rewarding. Please think about it and volunteer!

Jarvey W. Wiley
Sewell H. Hopkins
Hugh Smith
Thurlow C. Nelson
R.E. Coker

David Belding
Walter A. Chipman
Wesley Coe
Robert Lunz
H. Butler Flower

J.L. McHugh
Pieter Korringa
Philip Butler
A.F. Chestnut
J. Richards Nelson

NAEMO - North Atlantic and European Mussel Organization

Setting the stage for mussel research in the north Atlantic region



Blue mussels are keystone species with a corresponding high value for biodiversity. Mussels also contribute with other valuable ecosystems services, including supportive, provisional, regulatory, and cultural services. Over the past years, blue mussel (*Mytilus edulis*) beds in Europe and North America have been reported to be in regression, yet the causes and consequences of this decline are not fully understood. Further, as the current mussel culture industry is dependent upon collection of wild spat, sustainable management of wild blue mussel beds is essential to sustain the mussel aquaculture industry, yet there is a lack of knowledge related to the dependencies and interactions between wild and farmed mussels.

To address these challenges and the lack of knowledge, the North Atlantic European Mussel Organization (NAEMO) was formed in 2018, and the first NAEMO meeting was held in Corran Halls, Oban, October 30th 2019, as a back-to-back session to the 2019 ASSG conference. The workshop was supported by the ASSG to cover the costs associated to hosting the workshop. The focus of the workshop was “Setting the stage for mussel research in the north Atlantic region”. The workshop was attended by 44 participants from nine countries. Different aspects of blue mussel research were presented (i.e. mussel population status in different geographical regions, factors affecting population development, recruitment processes, and the value of mussel beds). Later, knowledge gaps related to management of blue mussels were identified by break-out groups with a subsequent plenary discussion to summarize the outcomes, followed by a more formal discussion about the specific objectives for NAEMO and how to proceed with the network.

Some of the practical outcomes from the workshop included recognition of the need for a formal mussel network and to achieve greater momentum by creating a structure for co-ordination and to identify funding options. It was decided that the scope of the network should be broadened to *Mytilus* spp. and that the North Atlantic region will persist as the main geographical focus area. The network should strive to be inclusive – all stakeholders (research, industry, governance, NGO) that see a value with the network activities are welcome. Clustering with other ongoing activities, e.g. workshops, conferences, and projects, was identified as a key component for the success of the network. There was also an expressed ambition to develop NAEMO as a networking and data-sharing platform and to develop a service directory for connecting players within the field. Other specific tasks identified as suitable for the network were to use the network for developing expert consensus opinions, and to use this as a basis for communication to facilitate governance and knowledge transfer to society.



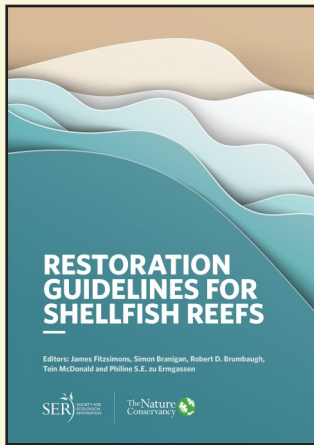
The main knowledge gaps related to management of mussels were identified as population trends and threat analysis. More specifically, it was agreed that the first step towards establishing more efficient management strategies of mussels is to establish evidence of decline. As a first activity, long-term trends based on existing datasets subdivided into different habitats will be compiled and analysed. However, in many areas long-term monitoring programs of both wild and farmed mussel populations is lacking. Standardized monitoring across the north Atlantic region with a management focus was therefore identified as an area in need of development. The second step towards improving management was identified as a lack of knowledge related to causes of decline, including evaluation of recruitment processes (i.e. quantification of larval abundances in different areas and differences in recruitment between habitats), with the objective to connect this to a risk assessment and gap analysis based on a literature review to identify existing threats. It was acknowledged that the effects of abiotic conditions on mussel recruitment is an area where more research is needed, and that the effects of the most pronounced threats (substrate destruction, commercial exploitation) can easily mask underlying causes of decline. These may potentially be disentangled by comparison of “high pressure areas” with reference areas where the major threats are less pronounced. The third step towards improved management of mussels was identified as a need to improve general knowledge of mussels and their value to society by communicating to user groups the ecosystem services provided by mussels. Special emphasis was put on providing a holistic perspective where services from wild populations to aquaculture, and from aquaculture to wild populations, was highlighted in order to enhance sustainability of all mussel-related activities.

All of these aspects are now being processed further by the steering committee in an effort to initiate some practical activities, starting with 1) Production of a short publication based on the workshop outcomes; 2) Obtaining funding to formalize the network; and 3) Collating time-series data to elucidate evidence of decline. For more information on the NAEMO and the next workshop, contact: asa.strand@ivl.se.

Åsa Strand

Restoration Guidelines for Shellfish Reefs

Simon Branigan, Operations Manager, Oceans
The Nature Conservancy, Australia



Globally, shellfish reefs are one of the most threatened marine ecosystems on the planet (Beck *et al.* 2009). This decline is mainly due to historical overharvesting, compounded by catchment to coast sedimentation, pollution, and disease. Acknowledgment of their loss coupled with growing recognition of the valuable role shellfish reef ecosystems perform in coastal systems from water filtration, to coastal protection to finfish production, has led to growing and widespread restoration and protection.

For the past twenty years, the United States has led the way in shellfish reef restoration and the first *Restoration Guide* (Brumbaugh *et al.* 2006) was primarily focused on supporting community-based restoration efforts for oyster reefs in this region. With shellfish reef restoration now an international practice, with projects emerging in Australia, New Zealand, China, Hong Kong, and Europe, there was a necessity to update this first Guide and provide a global perspective on how

to establish and implement projects.

New restoration guidelines (Fitzsimons *et al.* 2019) have been compiled for practitioners, managers and community members. The Guide provides A to Z guide on all facets of shellfish reef restoration, with key references per chapter for more information. Importantly, the Guide also aligns shellfish reef restoration approaches with guidance provided by the International Principles and Standards for the Practice of Ecological Restoration (Gann *et al.* 2019).

To inform the compilation of the content, a global survey of practitioner and managers was conducted to seek their input and ensure the updated Guide best met their needs. The survey results and the outcomes of a number of planning workshops, shaped the content direction for the updated Guide as well as who were chosen to part of the global team of editors and authors. The Guide provides direction on a variety of topics areas including, for example, knowing the system you're working such as bivalve lifecycles; identifying reference ecosystems; tips about how to secure funding; undertaking pilot studies; setting up shell recycling projects as a source of reef base substrate; reef design and construction methods; biosecurity considerations; engaging community volunteers in restoration; delivering projects at scale; monitoring approaches; and how to effectively communicate outcomes.



Deploying settlement plates as part of a monitoring program in Yueng Shui O, Hong Kong. Credit: Lori Cheung



Shellfish reef construction in Port Phillip Bay, Australia. Credit: Anita Nedosyko

The Guide contains a number of case studies to provide 'real life' context to the content, including Australia's first shellfish reef restoration project in Port Phillip Bay, Victoria. This project started in 2014 and brought together a unique partnership between The Nature Conservancy, a prominent recreational fishing club and Government. To date, 2.5 hectares of shellfish reefs have been restored, both oyster and mussel reefs, using a reconstruction method, whereby a reef is constructed out of a combination of limestone rubble and recycled shells then seeded with hundreds of thousand of hatchery reared Australian flat oysters and or Blue mussels. Community support through volunteering and citizen science has underpinned the success of this projects. Planning is now underway to restore another 20 hectares over the next three years.

A global team of editors and authors compiled the new Guide and has been jointly published by The Nature Conservancy and the Society for Ecological

Restoration. The web version of the new Guide is available to be downloaded at www.natureaustralia.org.au/restoration-guidelines in English, Simplified Chinese and Traditional Chinese.

Beck, M.W., Brumbaugh, R.D., Airoidi, L., Carranza, A., Coen, L.D., Crawford, C., Defeo, O., Edgar, G., Hancock, B., Kay, M., Lenihan, H., Luckenbach, M., Toropova, C. and Zhang, G. (2009). Shellfish Reefs at Risk: A Global Analysis of Problems and Solutions. *The Nature Conservancy, Arlington, VA, USA.*

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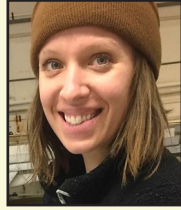
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Recruits' Corner

Fellow Recruits,

This year's conference in Baltimore, MD was shaping up to be one of the best yet. Recruits Co-Chairs Laura and Erin had been working hard with other NSA student members and NSA executives to plan several exciting events for our annual conference, including the Student Breakfast, a Bar Crawl in Fells Point, a meet and greet at Peter's Pour House, and a Student Session entitled "How I got my job: a career development panel for students". We were also looking forward to continuing our tradition of running the "Scallop Gallop" 5K race with our fellow members and wearing this year's Scallop Gallop t-shirt (a crowd favorite!). We are sad that we couldn't reunite with all of you and strengthen our relationships with one another, but in the months ahead we'll work hard to continue planning stellar events for next year in Charlotte!



We hope that you continue to reach out to us in the months ahead with your ideas for events and share the work you've been doing. For instance, what are you working on during your self-isolation? Michael Doall, Associate Director for Bivalve Restoration at Stony Brook University, is taking over coordinating NSA on Instagram, @nationalshellfisheries. Students specifically will have a monthly showcase. **Please send Erin or Laura what you've been working on so we can share your awesome work on our Instagram student showcase!**



With this year's conference on hold, we look forward with even greater anticipation to the 2021 Annual Conference in Charlotte, NC, to be held at the **Sheraton Charlotte Hotel from March 21 - March 26th, 2021**. Erin and Laura intend to reschedule all main events originally planned for Baltimore to the Charlotte conference. Students who received SEF Travel Awards for this year's Baltimore Conference will need to re-enter the lottery next year.

Congratulations to student award winners of the Castagna and Carriker awards! Please don't forget to apply for these and the Abbe award next year! The application process is short and each award is for \$1250. Application numbers have been very low in recent years. **To keep these excellent awards around we need to increase application numbers!**

Please email Laura Spencer (lhs3@uw.edu) or Erin Roberts (erin_roberts@my.uri.edu) with any questions or updates.

Wishing you a healthy spring and summer!

Erin and Laura

2020 NSA Student Research Awards

Thank you to the students who applied for research awards this year. These competitive grants provide \$1250 in support funding earmarked for student research projects as well as for the Best Student Paper published in the *JSR*.

The Melbourne R. Carriker Award supports a student research project in any topic of shellfisheries. The 2020 Carriker Award was awarded to Samuel Gurr, University of Rhode Island, "Potential for intragenerational pCO_2 conditioning of juvenile Pacific geoduck *Panopea*".



The Michael Castagna Award for student research is an award devoted to the area of applied shellfisheries. Winning this year was Emily Cooksey, University of Arizona, for her proposal entitled, "Prevalence and human health risk associated with *Vibrio* spp. in Pacific oysters".

Judging of the Sandra E. Shumway Award for the Best Student Paper published in the *JSR* has specific selection and evaluation criteria: (1) The lead author must have been a student when the work was completed, (2) the paper must present the student's work, not that of a co-author, (3) it will be evaluated on the quality of science and writing, and (4) the importance of the work to the field of shellfish research. A panel of judges evaluated 29 papers, and the award was presented to Mariana Hinzmann, University of Portugal, for her manuscript:

Hinzmann, M., Bessa, L.J., Teixeira, A., Da Costa, P.M., and MacHado, J. 2018. Antimicrobial and antibiofilm activity of unionid mussels from the north of Portugal. *Journal of Shellfish Research*, 37(1): 121 – 130.



Thank you, again, to all the students for submitting their proposals and for the reviewers for evaluating each these proposals and student papers so thoughtfully.

Application deadline for 2021 is November 1st.

Start planning now! Details are available at www.shellfish.org.

**Steve Allen, Past-President
Student Awards Committee**



NSA Pacific Coast Section News

Greetings from the Pacific Coast!

Greetings from Left Coast, where self-isolating has given me time to reflect on the past year and prepare for the next one. First, the year in review. The 73rd Annual Meeting of the National Shellfisheries Association Pacific Coast Section (NSA-PCS) was held from September 17-19, 2019, in Portland, Oregon, in conjunction with the Pacific Coast Shellfish Growers Association (PCSGA). Over 300 people registered for the conference, of which approximately 26% were NSA-PCS members (or former members - don't forget to pay your PCS dues!). The meeting included over 60 presentations and three workshops, as well as a Tribal growers meeting. NSA-PCS sincerely appreciates this ongoing collaboration with the West Coast shellfish industry and the PCSGA Conference Planning Committee (Margaret Pilaro, Connie Smith, and Sara Grant).

The keynote speaker, Dr. Halley Froehlich, University of California, Santa Barbara, presented *Local to global: exploring the future for shellfish in a multi-stressor world*, which summarized synoptic studies of shellfisheries and aquaculture responses to global change. This thought-provoking presentation set the stage for a great conference. Eric Marrisal of Grainocean International brought an industry perspective as the fifth recipient of the *John Lentz Profiles in Innovation Speaker Series*. He discussed innovative uses of technology in the French aquaculture industry, along with some amazing video of European shellfish production. The luncheon speaker was Judy Twedt, University of Washington, who engaged the audience with her presentation, *Can you hear climate change?* In her work, Twedt sonifies climate data and sets it to music as a means to communicate science to the public.



The NSA-PCS continues to focus on supporting our student members both financially and professionally. The 73rd meeting saw another great year of student engagement, and NSA-PCS provided funding to support participation of 18 students. As always, these student members contributed many of the scientific highlights and fantastic presentations. In fact, presentation judging was more challenging than ever, resulting in our very first tie! The 2019 NSA-PCS Outstanding Student Presentation awards went to Amanda Xuereb, University of Toronto (“Population genetic structure and connectivity of *Parastichopus californicus* in the northeastern Pacific coastal region”), and Eileen Bates, University of Washington (“Physiological Impacts of Ocean Acidification and warming on early life stages of pinto abalone (*Haliotis kamtschatkana*) in WA State”). Both students received NSA-PCS memberships and cash awards. Support for students was generously provided by the Dr. Ken Chew Student Scholarship Fund, the NOAA Office of Aquaculture, Arcadia Point Seafoods, Chuckanut

Shellfish, Hama Hama Company, Rock Point Oyster Co., and Whiskey Creek Shellfish Hatchery. The students and the NSA-PCS officers thank these sponsors for their continued support.

The NSA-PCS hosted two fundraising events at the conference: *Put it in your Pie-hole* (pie-throwing event) and the annual silent auction. While pie-throwing may sound innocuous enough, the stakes were a bit higher because participants could pay to add ‘extras’, including hot mustard and maple syrup. Needless to say, many items of clothing were ruined for a great cause. Big thanks to our brave pie volunteers, as well as those who solicited and donated items for the silent auction. Proceeds from fundraisers, merchandise sales, sponsor donations, and registration fees all help to support students.

As with previous meetings, students participated by staffing the NSA-PCS table and assisting with sessions, and also attended the banquet as guests of the Section. In an effort to increase retention of student members, the Executive Committee developed several additional engagement opportunities at the meeting. These included a student mixer on opening night, a mentor-mentee coffee, and a cocktail hour with the keynote speaker. These events were a hit with students and I'm sure we'll host them again at future meetings.

The NSA-PCS also held its annual Business Meeting during the conference. Old business included the NSA-PCS Code of Conduct and Diversity Statement, which had previously been circulated to the members for comment. The members in attendance conducted an advisory vote and overwhelmingly voted in favor of adopting the Statement for future meetings. New business included a discussion of membership and the formation of an ad-hoc group to investigate options for increasing new membership within the organization. Elections were held: Chair Sean McDonald (UW), Vice Chair: Elizabeth Tobin (Jamestown S'Klallam Tribe), Secretary: Laura Butler (Washington Department of Agriculture), Treasurer: Sandy Zeiner (Northwest Indian Fisheries Commission), and Members-at-Large: Andrew Suhrbier (2018-2021, Pacific Shellfish Institute), Katie Houle, (2019-2022, Pacific Shellfish Institute), and Brian Allen (2019-2022, Puget Sound Restoration Fund).

Plans are underway for the 74th Annual Shellfish Conference (NSA-PCS/PCSGA joint meeting), to be held October 6-8, 2020 at the Wenatchee Convention Center in Wenatchee, WA. The call for presentations is open, titles are due May 1st, and full abstracts by May 30th. Please join us! Find more information at: <https://pcsga.org/annual-conferences/>

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) or on Facebook.

P. Sean McDonald
NSA-PCS Chair



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Upcoming Events

Aquaculture Canada/WAS North America 2020:
Aug 30-Sept 2. St. John's, Newfoundland, Canada.
For more information: www.was.org

Physiomar 2020: Sept 1-4, 2020. Nelson, New Zealand. For more information: www.physiomar2020.org

Aquaculture Europe 2020, "The Blue and the Green": Sept 29 - Oct 2, 2020. Cork, Ireland. For more information: <https://www.aquaeas.eu>

74th Annual Shellfish Conference (NSA-PCS/PCSGA): Oct 6-8, 2020. Wenatchee, WA. For more information: <https://pcsga.org/annual-conferences>

20th International Conference on Shellfish Restoration: Dec 8-11, 2020. Nelson Bay, NSW Australia. For more information: <https://willorganise.eventsair.com/2020-international-conference-on-shellfish-restoration/>

113th Annual NSA Meeting: Mar. 21-26, 2021. Charlotte, North Carolina. For more information: www.shellfish.org

Aquaculture America 2021: Feb 21-24, 2021. San Antonio, Texas. For more information: www.was.org

Aquaculture 2022: Feb 27-Mar 3, 2022. San Diego, California. For more information: www.was.org

Aquaculture America 2023: Feb 19-22, 2023. New Orleans, Louisiana. For more information: www.was.org

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).

