

## President's Message

"The future is uncertain. But the strange thing is, the future has always been uncertain. Change is taking place in every moment, with every rising opportunity." These times offer us "a forced opportunity to transform our relationship with uncertainty." from Buddhist teacher, Dzogchen Ponlop Rinpoche.

Within the NSA world, change and uncertainty pertains to our annual meeting; will it be in person or virtual? You can rest assured that Conference Manager, Sandy Shumway, is covering all bases to be certain we have a meeting in either platform. The uncertainty for NSA is you – please submit your abstracts so we may plan accordingly. Students – be sure to 'apply' for the travel award lottery. Check the website for meeting and session information.

Further uncertainty for NSA is membership. Members are what make this Association what it is and where it will go. Your Association needs you and others now more than ever. Please be sure to renew your membership today (tomorrow at the latest) and check with a colleague to see if they are member. If not, recruit that colleague. Our goal is to start off the new year with 100% of our current members renewing. Membership dues support the basic administration of NSA. Our journal and meetings are supported by fees, not your dues. Consider adding \$5, \$10, or more to your renewal as a donation to the Student Endowment Fund (SEF).

Uncertainty for NSA continued within the Executive Committee as *Newsletter* Editor, Student Award Committee member, and former NSA President, R. LeRoy Creswell, passed away at the end of October. LeRoy had a reoccurrence of cancer earlier in the year had beaten it twice before. Unfortunately, this time was not the same outcome. In speaking with his wife, Danita, she said it best; we had him for an extra 11 years. Our prayers go out to his wife and two daughters and to those of you who shared in his remarkable life.

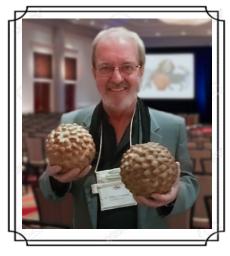
You will soon be receiving your ballots for different Executive Committee positions. The candidates are well-qualified and ready to give their time to assist with managing the Association. Please return your completed ballot as soon as you get it. For those overseas and e-mailing your vote, be assured your identity is removed from the e-mail before it is counted by two different committee members.

The end to the calendar year 2020 is fast approaching, but one thing that is certain, besides death and taxes, that the future is uncertain. You may recall in my last message that I noted we are challenged by uncertainty almost daily. We deal differently with uncertainty depending on its origin. I hope you can transform your relationship with uncertainty to make it an opportunity.

Let us continue to make contributions to shellfisheries and the Association by publishing research findings in our journal, recruiting new members, and assisting the Association in any manner you can. Remember to follow "National Shellfisheries Association" on Facebook and "NationalShellfisheries" on Instagram. With the end of year coming, I wish you a happy, healthy, and prosperous New Year!

John Scarpa, President

**R. LeRoy Creswell** Oct. 11, 1950 - Oct. 27, 2020



An *In Memoriam* will be published in a future issue of the *Newsletter*. A remembrance video for LeRoy is available: <a href="https://www.haisleyfuneralhome.com/obituaries/Roger-Creswell/">https://www.haisleyfuneralhome.com/obituaries/Roger-Creswell/</a>

# **Abstract Deadline**

**December 15, 2020** 

www.shellfish.org

Questions, contact Sandy (Sandra.shumway@uconn.edu)

#### Rectifying Wrongs - Building Reefs for Economic Recovery in Australia

A vast, colorful, continental fringing reef. An exquisite abundance of fish and other marine species. A biodiverse ecosystem in serious decline. Sound familiar? I suspect the images playing through your mind as you read this description are of tropical corals, skin diving tourists, or even threatening coral bleaching. While coral reefs like the Great Barrier Reef in Australia are indeed wonderful and under serious threat, I am actually referring to a reef that needs something warmer than a pair of floral boardies to dive on.

I am in fact talking about the great shellfish reefs of temperate Australia that once fringed the bays and estuaries of our 15,000 kilometre southern coastline from Perth, Western Australia to Noosa, Queensland including Tasmania. These reefs were created, not by corals but by accretions of shellfish, various species of bivalve molluscs including the Australian flat oyster (Ostrea angasi) and Sydney rock oyster (Sacostrea glomerata). The reefs provided a wide array of ecosystem services including a phenomenal ability to filter and clean water (100 litres per individual oyster per day), guard coastlines from storm erosion, and boost fish stocks. They did this, without cost, for aeons. Today shellfish reefs are almost entirely gone!

#### The collapse of an ecosystem

A study was performed to examine the true extent of shellfish reef decline in southern Australia (Gilles et al., 2018)<sup>1</sup>. It was found that on average, 90 percent of the Australian oyster reefs had disappeared by the turn of this century – even worse than the global average of 85 percent. For reefs dominated by Australian flat oysters only one percent of their former extent survived – just one functioning reef at Georges Bay, St. Helens in Tasmania. They



Rock oyster reef. Photo credit: Francisco Martinez Baena.

teeter on the brink of extinction. The culprit in this catastrophic decline was a trifecta of over-exploitation (both in terms of historical overfishing and dredging to mine the reefs themselves for lime production), water pollution and disease. While this loss was fast on an ecological time-scale, it was slow enough – over about a century – to be almost unnoticed by the general community.

#### Gone but not lost forever (hopefully)

Hope prevails. The Nature Conservancy has worked for decades on re-establishing lost shellfish reefs across the United States and now, in Australia, we have that same opportunity to undo the wrongs of the past. A few native shellfish reefs still survive in pockets tucked away in estuaries up and down the Australian east coast. These remanet reefs provide glimpses into how shellfish reefs function and how we can bring them back from the brink of extinction. Probed by a team of enthusiastic scientists, their mysteries and wonders are providing vital clues on the process of how reefs are formed in the first place.

In 2015 using lessons and techniques developed from 20 years of shellfish restoration in the United States, we commenced our first shellfish reef restoration project in Australia – in Melbourne's Port Phillip Bay. This iconic location, so familiar to Victorians, once had half of its seafloor covered in mussel beds and oyster reefs. Before we commenced work, those reefs had been totally removed from the Bay.

#### A solid start

Since the commencement of that first Port Phillip Bay Project, The Nature Conservancy has gone on to rebuild further Australian shellfish reefs at eight more locations across Australia, from the tourist haven of Noosa in the East, to the bustling city of Perth in the West - a distance equivalent to working across the east, south and west of the United States. We've been able to achieve this thanks to the financial and in-kind support provided by a range of partners from local, state and commonwealth governments, public corporations, private foundations, and individuals.



Reef construction. Photo credit: Adam Bolton

**Reef Builder: creating jobs and stimulating local economies through restoration** Emboldened by our early successes and the economic benefits realized through the 2009

Emboldened by our early successes and the economic benefits realized through the 2009 stimulus investment in coastal restoration<sup>2</sup> under the Obama Administration, on September 1<sup>st</sup>, 2020, the Australian Government invested \$20 million in shellfish restoration as a Covid-19 recovery investment. The largest investment of its kind outside of the Great Barrier Reef, the 'Reef Builder' program will see shellfish reefs built at 13 locations across Australia. Several hundred jobs will be created and over 120 businesses will be engaged in the procurement of shellfish, recycling of shells and rubble, and in the construction of new reefs.

The investment is a big step towards achieving our goal of rebuilding 60 reefs across Australia, which, if realized, would see Australia become the first nation in the world to recover a critically endangered marine ecosystem. Perhaps even more importantly, it's

recognition that the recovery of nature can play a leading role in *building back bluer* from the economic impacts of Covid-19. Without intact and healthy marine ecosystems our ecotourism, aquaculture, fisheries sectors, and their services industries will not have the clean water, coastal protection, and biodiversity that they need to help strengthen the recovery of visitor and seafood economies post-Covid-19.

To read more about The Nature Conservancy's Reef Builder and Shellfish Reefs Program visit: www.natureaustralia.org.au/shellfishreefs

Chris Gillies, Ph.D., Oceans Manager Australia, The Nature Conservancy

<sup>&</sup>lt;sup>2</sup>Through the American Recovery and Reinvestment Act (2009) \$167 million was allocated to coastal restoration including shellfish reefs across the U.S. to stimulate jobs and economic recovery.



<sup>&</sup>lt;sup>1</sup>https://doi.org/10.1371/journal.pone.0190914

### Plans for the 113<sup>th</sup> Annual Meeting are Underway



THERE WILL BE A MEETING. The format is still under development, but meeting plans are moving forward. It is likely that the meeting will be in some part (or all) virtual, so you will be able to attend! We cannot make an official statement at the moment as there are still contract obligations under consideration. Updates will be posted on the web page and sent to you via email.

NSA needs your support now more than ever. Not having the Baltimore meeting and having a reduced 'in person' presence for 2021 is a financial as well academic and social loss. The leadership (especially George Abbe and John Kraeuter – thank you!) over the years has carefully planned for financial difficulties and the NSA is still in good financial standing. Let's keep it that way. The Student Endowment Fund has suffered without the Auction revenues, so please consider donating what you might have spent on that t-shirt,

hideous lamp, or oyster paraphernalia to the SEF when you renew your dues.

We know that it is important for our members to have a forum at which to share their research and one will be provided. There will be an official program so you can provide information to your administrators and granting agencies as evidence of official presentations and products. To do this, we need your support and cooperation. The meeting website is now open (www.shellfish.org). PLEASE SUBMIT YOUR ABSTRACT for the conference by December 15, 2020. Look on the positive side – with at least some (perhaps all) of the conference being done virtually, many of you who might not have travelled to Charlotte can now participate! If you have any questions, contact Sandy (Sandra.shumway@uconn.edu).

We hope you are all faring well during these turbulent times. NSA activities continue, please continue to support your society!

Sandra Shumway, on behalf of the Conference Management Team

### Still Seeking Authors for Biographies for Honored Life Members

This is an on-going plea to get biographical information for Honored Life Members posted on our web page. Thanks to Kay McGraw who volunteered to prepare a piece on her major advisor, Gordon Gunter, and to Val Hall for her piece on David Belding (see pg 5). We are still seeking bios for the following individuals, several of whom are the namesakes of our major awards. All of these individuals deserve recognition and newcomers to the field should have the opportunity to learn of their contributions. It's not an onerous undertaking and can be fun – please give it some thought. If you are interested in doing some digging and writing a short biography on any of these folks, please get in touch with Sandy Shumway (Sandra.shumway@uconn.edu). The article does not have to be long, just informative. Some information can be found in *Taming of the Oyster* and contacting individuals who knew the members could also prove rewarding.

Jarvey W. Wiley
Sewell H. Hopkins 

Hugh Smith
Robert Lunz
R.E. Coker
Ronald Westley
Gordon Gunter

J.L. McHugh
Walter A. Chipman
Wesley Coe
A.F. Chestnut
H. Butler Flower
Robert Ingle

Pieter Korringa
Philip Butler
Paul S. Galtsoff
Cedric Lindsay
David Belding

Trevor Kincaid

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Thank you to Dr. Gulnihal Ozbay who recruited 5 new members!

Dr. Ozbay will receive a free 2021 membership.

Congratulations!

Ballots are on their way.

Watch your mailbox!

VOTE

## **NEW DATES!**





### The NSA store is



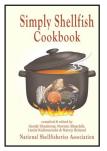
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gold: sm \$5, lg \$10

tie tacs: \$10

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All proceeds benefit the Student Endowment Fund

Contact Sandy to place your order

#### David Belding - Honored Life Member By: Val Hall

David L. Belding is considered a giant among shellfish biologists. Anyone who has studied scallops, oysters, or clams (hard or soft-shelled) has most likely begun with Belding's manuscripts. But Belding was more than 'just' a shellfish biologist. He was also a medical doctor, bacteriologist, pathologist, parasitologist, professor, and family man.

David Belding was born in 1884 in Dover Plains, New York, and graduated from the Riverview Military Academy in Poughkeepsie, NY. He attended Williams College in western Massachusetts, where he first became interested in biology and natural history. His honors included induction into Phi Beta Kappa and winning the biology prize in his senior year. Shortly after graduating from Williams in 1905 at age 21, he took a job with the Massachusetts Commissioners of Fisheries and Game to conduct studies of commercial shellfisheries in the Commonwealth. Most of his work was done on Cape Cod, mainly in the town of Wellfleet, where he set up a seaside laboratory. In 1915, he married Vassar graduate, Isabel Wheeler. The couple made their home in Watertown, MA



David Belding during World War I

and later moved to Hingham, MA. They had three daughters between 1916 and 1921. The eldest became a medical doctor, and the youngest married a pediatrician who began his practice out of the Belding family home.

During the time he worked for the Commissioners, Belding wrote his seminal treatises on bay scallops (1910), quahogs and oysters (1912), and soft-shell clams (1915). Not only were these extraordinary in his time, but they haven't been matched since then. For example, the hand-drawn stages of the bay scallop development from egg to pediveliger are exquisite. In addition, his photographs documented the tools and techniques used in shellfishing during the early years of the twentieth century. Belding was also one of the first to recognize that shellfish such as quahogs were being over-harvested in New England, to the point that they had to be imported from southern states to fill the demand for littlenecks (1-2" size). He also was one of the first to emphasize the need for artificial culture of oysters to supplement declining wild stocks in New England. But oyster aquaculture did not become established until the mid- 1900s. Belding also was concerned about the effects of pollution on shellfish growing areas, and understood that the "Tragedy of the Commons" always leads to over-exploitation of the resource. He was a proponent of local control of shellfish beds in order to address this issue.

David was not only a fishery biologist. He was also a well-known medical doctor, specializing in bacteriology, parasitology, and pathology. After his time with the Commissioners, he attended Harvard University, where he earned both a Master's degree and an MD, and then another MD from Boston University, this time in Homeopathic Medicine. In 1917, the Massachusetts Homeopathic Hospital in Boston, where Belding served as a pathologist, was commissioned as an Army Base Hospital. The entire medical staff was transferred to New Jersey, and then to Pougues-les-Eaux, a resort town close to the front in France, for the duration of the First World War. Belding began his stint with the Army Medical Corps as a First Lieutenant, served as hospital laboratory director in France, and was then was promoted to Captain in 1919 at the end of the war. David carried a draft registration card in 1942, but by that time he was 57 years old and wasn't called to serve in World War II.

David Belding's medical science career was wide-ranging. He wrote or co-wrote three books in the 1930s, two on parasitology and one on medical bacteriology. By then, he had also written several articles that were published between 1920 and 1951 in medical journals including the New England Journal of Medicine. These spanned topics such as the Wasserman test for syphilis, laboratory analysis of diphtheria cultures, tularemia in domestic rabbits, and a review of medical microbiology. In 1947, he was honored by being elected to the National Academy of Arts and Sciences. Belding completed a long career as Professor of Bacteriology and Experimental Pathology at the Boston University School of Medicine when he retired in the early 1950s. He was a long-time Mason, member of the YMCA Board of Directors, the Harvard Medical School Alumni Association, the Alpha Sigma Medical Fraternity, and the American Institute of Homeopathy.

Dr. Belding did not lose his passion for marine biology in those later years. On the contrary, he continued to do research on the soft-shelled clam at the Woods Hole Oceanographic Institution and served as a consultant for the U.S. Fish and Wildlife Service. In the summer of 1952, Belding joined another researcher, H.J. Turner, to investigate the possibility of growing clams in artificial ponds, where conditions could be controlled and predators excluded. The ponds were constructed in nearby Cotuit, but apparently the experiment failed. Later that year, the pair studied the intertidal flats in Boston Harbor, which still had plenty of clams. They were particularly interested in determining the major predators of the soft-shelled clams (horseshoe crabs and conchs), and concluded that clams could not be grown commercially on open tidal flats because of intense predation.

Belding died of cancer in 1970 at the age of 86, and was buried in the Hingham town cemetery. Fifty years later, his legacy continues.

#### **Recruits' Corner**

Fellow Recruits,

How is it already winter?! We are gearing up for the Annual Meeting and have a few updates for you.



The Annual Meeting WILL happen this year, and will be at least partially virtual. Though the format is not entirely set, you can still present your research. We are excited to hear about what you've been up to. We will 'see' you at the conference - be it virtual or in person.

The last day to submit abstracts for the conference is quickly approaching. Submit your abstracts and apply for the Student Endowment Fund (SEF) Presentation and Travel Awards by **December 15**<sup>th</sup>! Travel awards provide lodging or registration for students attending the upcoming meeting. To be eligible for the SEF Travel Awards you must be a current student member and presenting at the conference. Find applications and more information about the upcoming conference on the NSA website (https://www.shellfish.org/annual-meeting).

There will be student events at the conference. The schedule is still in flux and we are waiting to hear about the final conference format, but we are in the process of planning flexible student events which can be virtual or in person. If there is an event in particular you would like to see, we want to hear from you! Stay tuned for an upcoming email with more information.

Stay in the loop by following the Student Recruits page on the NSA website (https://www.shellfish.org/student-members), the NSA Student Facebook page (https://www.facebook.com/groups/2216454881732029), and NSA on Instagram (@nationalshellfisheries). We would love to showcase student research, so please send us photos of your research with a short blurb.



Please email Hannah (hannah.i.collins@uconn.edu) or Alex (armarquardt@vims.edu) if you have any ideas or concerns.

Hannah and Alex

# Calling all student presenters for NSA 2021!

On writing this newsletter contribution, the only fitting way to start it is in remembrance of our dear friend and colleague, Leroy Creswell, who sadly, recently passed away after a brave battle against cancer. As a co-chair of the Student Endowment Committee, and more broadly as a long-time member of the National Shellfisheries Association, Leroy was always looking for ways to support and showcase student activities, both at our national meetings and through the Association's activities during the year. Leroy will be sorely missed for his contributions to the Association, his contributions to the shellfish field as a whole, and especially for his friendship and generous spirit.

Missy and I will carry on in our planning for the upcoming meeting in the spirit that Leroy would have shared with us. So, first of all... there WILL be a meeting in 2021! It was disappointing for so many that worked so hard for the Baltimore meeting, and while its format remains somewhat uncertain, NSA 2021 (March 21st-25th) WILL provide a platform for graduate students to present their work and be considered for both the Gunter and Nelson awards (check the NSA website for more details). Whether the meeting is in person, or virtual, or some combination of those formats, graduate students are strongly encouraged to submit their abstracts and indicate that they wish to be considered for these awards. If the meeting is virtual, judging posters will be something that we will have to find a new approach for... but if the pandemic has taught us all anything it's how to be flexible and roll with new challenges.

For the travel awards (i.e., registration and accommodation waivers) that are now handled by a lottery system, students are asked to submit an application in time for the same deadline as abstracts (due December 15<sup>th</sup> 2020). We will not know the format of the meeting until after this deadline has passed, so for the purposes of preparing for the possibility of an in-person meeting and potential student travel awards, students who would like to be included in the lottery should continue with completing these applications.

We look forward to seeing your abstracts and having you participate in NSA 2021.

Peter Kingsley-Smith Melissa Southworth Leroy Creswell (in memoriam, and with us in spirit) Student Endowment Awards Committee

#### LOOKING FOR SHELLFISH-RELATED INFORMATION?



Visit the Shellfish Resources page

www.shellfish.org



If you have useful resources to add, send them to webmaster@shellfish.org

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### **RENEW YOUR DUES**

The membership roster is being updated, be sure to check your membership profile www.shellfish.org

### **Upcoming Events**

5<sup>th</sup> World Conference on Marine Biodiversity: December 13-16, 2020. Auckland, Australia. For more information: https://www.wcmb2020.org/

**113**<sup>th</sup> **Annual NSA Meeting:** Mar. 21-25, 2021. Charlotte, North Carolina. For more information: www.shellfish.org

**Aquaculture Europe 2021:** Apr. 12-15, 2021. Cork, Ireland. For more information: www.aquaeas.org

20<sup>th</sup> International Conference on Shellfish Restoration: Apr. 27-30, 2021. Nelson Bay, NSW Australia. For more information: https://willorganise.eventsair.com/2020-international-conference-on-shellfish-restoration/

**23**<sup>rd</sup> **International Pectinid Workshop:** Apr. 28 - May 4, 2021. Douglas, Isle of Man. For more information: www.internationalpectinidworkshop.org

**Aquaculture America 2021:** Aug. 11-14, 2021. San Antonio, TX. For more information: www.was.org

**Physiomar 2021:** Sept. 7-10, 2021. Nelson, New Zealand. For more information: https://confer.eventsair.com/physiomar-2020/

Aquaculture Canada/WAS North America 2021: Sept 26-29, 2021. St. John's, Newfoundland, Canada. For more information: www.was.org

**Aquaculture Europe 2021:** Oct. 5-8, 2021. Funchal, Madeira, Portugal. For more information: www.aquaeas.org

**Aquaculture 2022:** Feb. 27-Mar 3, 2022. San Diego, CA. 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 Interim *QNL* Editor, Steven Allen (sallen@bowdoin.edu).