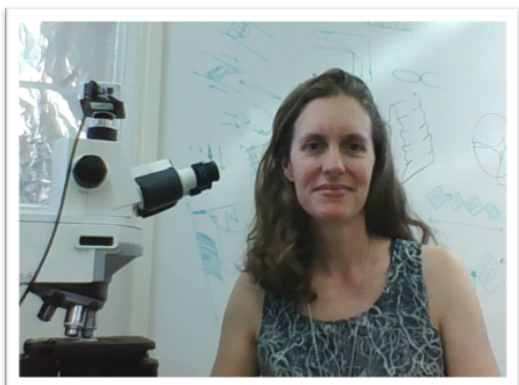

PHYCOLOGICAL NEWSLETTER

MESSAGE FROM THE PRESIDENT



PSA President Alison Sherwood

After wrapping up the 72nd annual meeting of the Phycological Society of America last month in Vancouver, British Columbia, I hope you share the sense of renewed research excitement that, for me, always seems to follow from an excellent conference. We had a wonderful array of research presented at this year's meeting, but one of the most engaging aspects was the joint nature of the conference with the **International Society of Protistologists**. Each morning we enjoyed excellent and thought-provoking plenary presentations on topics spanning from photosymbiosis, to cultural uses of seaweeds, to eukaryotic gene transfer, to the global health of kelp forests. This year's local organizers (**Patrick**

Martone and **Bridgette Clarkston** from PSA, and **Patrick Keeling** and **Laura Wegener-Parfrey** from ISOP) worked with past (**Dale Casamatta**) and present (**Amy Carlile**) PSA program directors to seamlessly blend the foci of the two societies, including plenary speakers, workshops, and the banquet – many thanks are due to them for all of their hard work!

This year marks the second occasion that we are awarding the **Lang Fellowship**, which honors **Dr. Norma J. Lang**, Past-President of PSA. Please join me in congratulating **Dr. Stacy Krueger-Hadfield** of the University of Alabama at Birmingham, who has proposed a study entitled "Spatiotemporal adaptation in the rocky intertidal: evolutionary responses of intertidal *Chondrus crispus* populations to climate change", and who was selected from a very competitive pool of 31 applicants. More details on Dr. Krueger-Hadfield and her proposed research are included in this newsletter. In addition, we were honored and pleased to have Norma Lang's nephew, **Andy Lang**, in enthusiastic attendance of the conference.

Several other PSA honors were awarded at the banquet in Vancouver. **Dr. John Beardall** was announced as this year's recipient of the PSA Award of Excellence for his sustained career of excellence in the field of phycology. The Provasoli Award, for the best paper published in the



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Journal of Phycology in 2017, was awarded to **Pilar Diaz-Tapia, Christine Maggs, John A. West, and Heroen Verbruggen** for their paper, "Analysis of chloroplast genomes and a supermatrix inform reclassification of the Rhodomelaceae (Rhodophyta)". The many students who received Hoshaw Travel Awards, Croasdale Awards, and Grants-in-Aid of Research were also recognized.

PSA has been involved in several other activities this year, including an ongoing partnership with the **Consortium of Aquatic Science Societies (CASS)**, which now encompasses nine aquatic science-focused societies. CASS has been taking the lead in drafting responses to proposed policy changes that may affect US aquatic resources, and through these letters has encouraged the consideration of sound science for resource management and scientific funding priorities. Additionally, PSA is planning to meet with many of the other member societies of CASS in 2022 at the second Joint Aquatic Sciences Meeting, which is in the early planning stages.

Two of our officers will be completing their terms of service at the end of the calendar year, and I'd like to take this opportunity to thank them for their upstanding service to PSA. **Tim Nelson** (Past President) has done a wonderful job at the helm of PSA and has been generous with his time in mentoring me along this path. **Eric Linton** (Treasurer) has very proficiently managed the purse-strings of the society for six years now, and his presence on the Executive Committee and Board of Trustees will be missed.

With the 2018 PSA elections recently concluded, we also have several new officers to welcome. **Dale Casamatta** will serve as Vice President/President-Elect, and **Julie Koester** is our incoming Treasurer.

In closing, there is still much to do with the three months remaining in my term, and I look forward to reporting back on the progress that we make in this final part of the year. Thank you all for the opportunity to serve as PSA President this year, and best wishes for a productive and enjoyable last quarter of 2018.

Phycologically yours,

Alison Sherwood

PSA NAMES 2018 NORMA J. LANG FELLOW: DR. STACY KRUEGER-HADFIELD

The Phycological Society of America is excited to announce that Stacy Krueger-Hadfield of the University of Alabama at Birmingham is the winner of the 2018 Norma J. Lang Fellowship (\$10,000). Dr. Krueger-Hadfield's proposal "Spatiotemporal adaptation in the rocky intertidal: evolutionary responses of intertidal *Chondrus crispus* populations to climate change" was selected out of a very competitive pool of 31 applicants. She will be the second Lang Fellow and will serve a three-year term, joining last year's recipient, Dr. Holly Moeller.



2017 Lang Fellow Holly Moeller (left), 2018 Lang Fellow Stacy Krueger-Hadfield (right), and Andy Lang (Norma Lang's nephew, center)



Information on this and other awards and fellowships offered by PSA can be found under the Awards and Grants tab at the PSA website: <http://www.psaalgae.org>

An Interview with Lang Fellow Holly Moeller

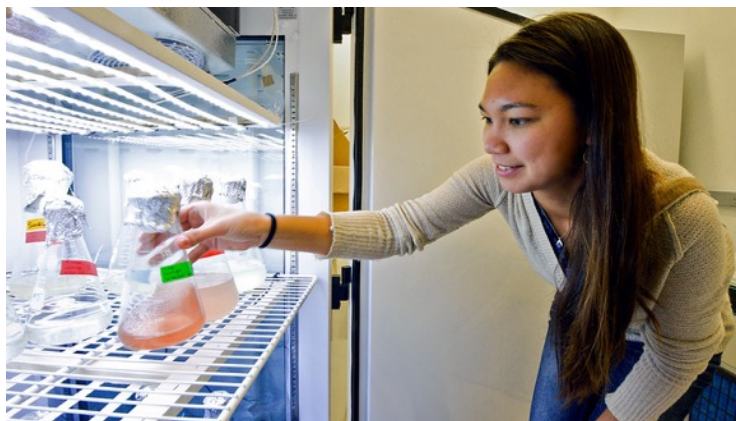
Dr. Holly Moeller was awarded the first Norma Lang Fellowship in 2017. Jeff Morris and Sabrina Heiser recently had a chance to ask about her science, her new faculty position at UCSB, and her experience as a Lang fellow.

SH: *Why do you think algae are cool? (I constantly get people asking me that, so it would be nice to hear from others)*

HM: I love algae because I love to breathe! First off, about half of photosynthesis on the planet happens in the ocean, so for every second breath we each take, we should be thanking algae! Second, unicellular algae are amazing examples of evolution. Beginning with the primary endosymbiosis event (the engulfment and retention of a cyanobacterium, which turned into the first chloroplast), protists have been passing around plastids for millions of years. It's so incredible to think of an organism being able to totally transform itself into a self-sufficient primary producer, just by hanging onto a piece of cellular machinery!

JM: *How has your year as the first Lang Fellow gone? Give us your "elevator speech" explaining the work you've been doing.*

HM: As a Lang Fellow, I'm working on a genus of marine ciliates called *Mesodinium*. Ciliates are cool little beasts for a lot of reasons -- and many people have seen them when they looked at pondwater during high school biology labs -- but *Mesodinium* stands out because many of the species in this genus are capable of stealing chloroplasts from the algae that they eat. Once they've got these chloroplasts, they're capable of photosynthesis. (Every time I eat a salad, I'm insanely jealous that I can't copy this ability! It'd save me a lot of time foraging for lunch around campus!) Interestingly, different *Mesodinium* species vary in how well they can pull off this, with some lineages getting virtually all of their carbon from photosynthesis, and other remaining entirely heterotrophic. My work has been exploring why this might be the case, and how this lineage of ciliates can be a model system to test the endosymbiosis theory of chloroplast acquisition. We're figuring out the environmental factors that favor different species of *Mesodinium*, in the hopes that we can understand how natural selection might've produced the modern eukaryotic phytoplankton.



Lang Fellow Holly Moeller swirling a flask of her beloved *Mesodinium rubrum*. Photo by Kenneth Kostel (WHOI).

JM: *What are the big questions that you see yourself addressing in the coming years?*

HM: A challenge that has motivated me since I began graduate school--and one that motivates many of us!--has been linking our growing knowledge of **who** is present in ecological communities to **what** these organisms are doing. In particular as a microbial ecologist, molecular tools have revolutionized our ability to estimate genetic diversity... But what does that all mean? How can we transition from generating lists of taxa, to predicting how ecosystems will continue to function as humans drive large shifts in their composition and climate?

That's obviously far too large of a challenge to tackle on my own (and one of the reasons I love being an ecologist is that it provides me with abundant opportunities to work collaboratively!), so I've tried instead to focus on interrogating our ability to accurately link taxonomy to function. My research on acquired metabolism is really motivated by this. Acquisitions can transform heterotrophs into phototrophs, or allow a single genotype to thrive across highly variable abiotic contexts. I've been focused on how we can combine observations, experiments, and models to ask how acquisitions create new ecological opportunity and impact community structure and function.

Increasingly, I've been recognizing the evolutionary implications of these acquisitions. For example, the "kleptoplastidic" (chloroplast-stealing) organisms that we work with could look very much like the hypothetical transitional states during the secondary endosymbioses that gave rise to most of our eukaryotic phytoplankton. So, I've been trying to think a bit more about evolutionary timescales, as well as ecological ones.

SH: *On your homepage you say that scientific communication is important. Do you have any advice on how to juggle your academic commitments (classes, research, teaching), your service commitments to the university and professional societies, and still have time (and energy!) to do effective scientific communication?*

HM: Well, as a brand new faculty member, I'm still working on figuring out my time budget. (I'm told this is a lifelong process—would love any tips!) But I will say that talking about my science in layman's terms can be really fun and rewarding. I think most of us can probably remember a few joyful moments of discovery, like seeing the ocean for the first time, or looking into a microscope and seeing the organisms we'd read about in textbooks. The fun thing about talking to non-scientists about your work (and showing them the things that you do) is that you, at least occasionally, get to witness other people having those moments of excitement and inspiration.

Beyond my own work, though, I think we're living in a time of great challenges. Even as, at least in the United States, the general public seems to be increasingly suspicious of scientific expert opinion, we're facing great challenges as a species in human overpopulation, natural resource exhaustion, and anthropogenic climate change. So I really feel like it's my mandate as a scientist to take the knowledge I've accumulated over years of coursework, reading, and research, and try to communicate it to as many people as I possibly can.

JM: *How has being a member of the PSA impacted your career?*

HM: PSA has definitely been there for the major milestones so far! For example, my very first paper was published by the Journal of Phycology, and looking back, I feel so grateful that I had such a nice experience interacting with editors and reviewers, something that I've come to appreciate as I've experienced, err, alternate types of interactions. And I'm honored to be a Lang Fellow: That was wonderful news to kick off the very first week of my first faculty position. I think the society provides an intellectual home that's so valuable for an early career scientist. As someone who can be "question driven" rather than "system driven" to a fault, it's wonderful to be surrounded by experts who know the biology and ecology of organisms so deeply.

JM: *Where do you see yourself as a scientist in 10 years? Will you still be attending PSA meetings?*

At the moment, a ten year vision feels a bit out of reach! That's because when I look back at the science I was doing ten years ago (while it was actually on *Mesodinium*, a study system that I've ultimately returned to!), and the path I've taken since then, I would never have predicted I'd wind up in my current position, working on a suite of problems as broad as kleptoplasty, tree-fungal symbioses, coral mutualisms, and beyond! But, I'm certain that my work will always involve marine phytoplankton and mixotrophs, and so I hope I'll always have a home with the PSA.

This year will be my very first PSA meeting, despite knowing members of the community in various contexts over the years. I'm thrilled to be attending as it feels like I've found an important part of my "scientific crew!" I definitely see myself continuing to attend: I love working on phytoplankton and mixotrophs not just because of their biogeochemical significance and cool life histories, but also because their microbial lifestyle makes them hugely tractable. And, now that I've moved to UCSB, I'm starting to become involved with some work on kelp forest ecology. So I look forward to becoming a more knowledgeable phycologist who can contribute to the society.

THE NORMA J. LANG FELLOWSHIP

Norma J. Lang was an internationally recognized phycologist who made many contributions to algal research and education over her illustrious career. Lang Fellowships are awarded to carry on her legacy by providing support in the early stages of exceptional algal scientists' careers. The Lang Fellowship was made possible by a very generous donation from Norma J. Lang's estate. The Lang Fellowship and PSA's many other student and postdoc awards are sustained by charitable contributions to the Phycological Society of America Endowment. Contributions can be made via

Paypal:

<http://www.psaalgae.org/endowment-donations>

Tracking Tilden's Travels

by Stacy A. Krueger-Hadfield

Prior to the PSA-ISOP meeting in Vancouver in August, the conference organizers arranged a field trip to Josephine Tilden's Botanical Beach and the Minnesota Seaside Station led by Tom Mumford (aka [@KaptnKelp](#)) and Paul Gabrielson (aka Dr. Seaweed).



Dr. Seaweed regaling the crowd with the history of Botanical Beach while waiting to board the ferry. © Tom Mumford

Our convoy arrived at the Big Fish Lodge in Port Renfrew where we divested our gear. We all meandered along the beach to the restaurant near the marina.

We returned to the lodge, where Tom gave a brief history of Josephine Tilden and the Minnesota Seaside Station, careful not to steal too much of Gayle Hansen's thunder for her plenary on Tilden later on during the conference.

Tilden wrote about the summer of 1898 when she obtained the land on which the station was built: *"The algae covering the exposed shore were beyond my wildest dreams. I spent every daylight moment collecting algae. At stated intervals my mother doled out warmed up beans and tea. At the end of the fourth day, Mr. Baird said to me, 'I am going to give you a deed for the best four acres on my place. Take your choice.' I chose, and that spot became the site of the Minnesota Seaside Station."*



Josephine Tilden, ?1869-1957

I had never been to Botanical Beach, but was told it was a trip not to be missed. With great expectations, we loaded ourselves into vans and headed to the ferry (with some algal spotting on mudflats along the way).



A Nereo cast ashore with Botanical Beach field trippers on the way to dinner.

We learned how she and her students would travel from Minneapolis-St. Paul via train to Seattle. They would then take a steamer to Port Renfrew, from where the Pacheedaht First Nations would take them by canoe to Botanical Beach. We were almost amazed at the amount of female students in each cohort.

Some of us traveled from another continent to make our pilgrimage to Tilden’s Botanical Beach, some of us from closer afield. Nevertheless, we all had algal dreams dancing through our sleep.

The next morning, we rose to find a delectable breakfast and a packed lunch awaiting us in the lodge’s great room. Like creatures of habit, we rejoined our outbound van cohort, and set off for Botanical Beach. As the old adage goes, a picture is worth a thousand words, so pictures we shall show.

As the tide began to turn, we made our way to a rocky ledge, where we lunched.

We searched for the Minnesota Seaside Station, mistaking Paul for a black bear, before finding the remnants of one of the buildings.



© SA Krueger-Hadfield

A Postelsia stipe accompanied by a wee limpet.



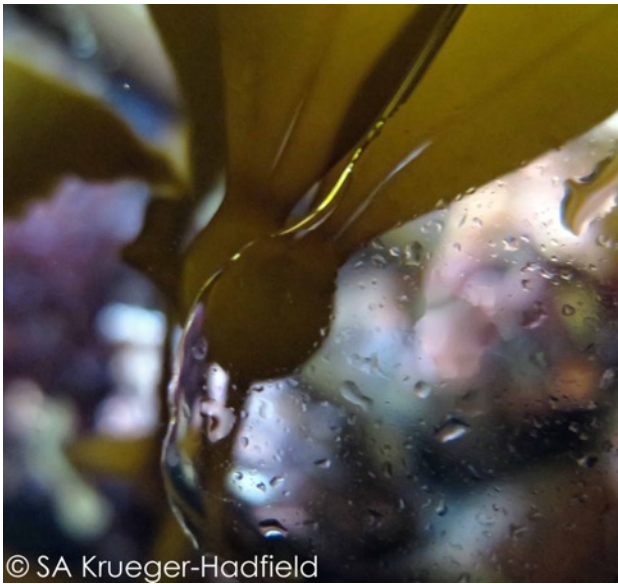
© SA Krueger-Hadfield

Tom Mumford teaching us about the natural history of Botanical Beach.



© SA Krueger-Hadfield

A kelp sorus with phycologists investigating Botanical Beach.



A small Nereocystis in a tide pool.



Learning about monoicy with Endocladia.



Pyropia reproductive structures.



Still learning on our lunch break with Paul Gabrielson and Annette Olson. © Stacy Krueger-Hadfield

We returned to the lodge briefly before setting out once more in search of Canada's Gnarliest Tree.

We found it.



Part of our group at the gnarliest tree in Canada. © Stacy Krueger-Hadfield

We dined on freshly caught salmon and told tales back at the Lodge before retiring for our next early morning of algal adventures.

The alarm rang early, but it did not seem to be as much of a burden rising early knowing another macroalgal morning awaited us.

We learned a bit about geology and the billiards of Billiards Beach.



Billiards Beach. © Stacy Krueger-Hadfield



Postelsia. © Stacy Krueger-Hadfield

Then, like clockwork, we all succumbed to the beauty of *Postelsia*.

When we could tear ourselves away from the sea palms, we were left in awe of a small *Gloiocladia* that Tom has found in that very spot for the last five years.



Gloioclada. © Stacy Krueger-Hadfield



© SA Krueger-Hadfield

Phycologists in Tilden's amphitheater, 2018.

Like any intertidal dawn, the morning slipped away. We had to start thinking about heading back to Vancouver and civilization. Before we returned to the vans, we stopped in the natural amphitheater where Tilden held lectures.

We ate our lunch just round the corner from the amphitheater before heading back. We were in luck and were able to get on an earlier ferry.

As we cruised back to Vancouver, with whales off the port side, we were all thinking about Tilden's words in "The Algae and Their Life Relations:"

*"Only a favored few, however, have experienced the sensation of viewing at close range a field of *Macrocystis* or *Nereocystis* far out from shore, the long sinuous dusky, shadowy fronds flowing in the current in the gloomy depths of the water. Not everyone has peered into clear rock pools at the hour of dawn, when the tide is at its lowest ebb, and recognized in the dusky shadowy forms of the young kelps, living creatures beyond the far distant past. Only the fortunate few can know the true meaning of the Greek word *phaios* and fully appreciate its beauty."*

We were each now one of those fortunate few.

*A young *Nereocystis* in a tide pool. © Stacy Krueger-Hadfield*



© SA Krueger-Hadfield

The Hilda Canter-Lund algal photography competition

We are pleased to announce that the winner of the 2018 Hilda Canter-Lund competition for algal photography is **Rafael Martín-Ledo** for his photograph “drifting diatoms”. The winner was chosen from the shortlist by a vote amongst BPS Council Members and Rafael’s image was a clear favourite.

The second prize goes to **John Huisman**, who was the competition winner in 2014. This prize is awarded to an image in a contrasting style, allowing the judges to highlight a microalgal image in those years when a photo of a macroalga wins and vice versa. However, this year John’s image, which is a contrast to Rafael’s, came second in the ballot, making the judge’s decision much easier.



Winner, 2018
Rafael Martín-Ledo: Drifting diatoms



Second Prize 2018
John Huisman: A New *Ganonema*

You can see all the shortlisted images, and read more about the winners, at <https://brphycsoc.org/canter-lund-2018/>

Thanks to everyone who took part this year, not just those on the shortlist. Remember, too, that fortune favours the prepared mind, and the 2019 winning entry might drift in front of your lens any time ...

Martyn Kelly

A PSA POSTCARD FROM CHINA



Hans Paerl says “*Ni Hao PSA*” from China, where he is working with his Chinese colleagues on formulating a nutrient reduction strategy aimed at controlling the “monster” cyanobacterial blooms (mainly *Microcystis*) that have plagued water quality in China’s third largest lake. The above photo is a pretty striking panoramic shot of the bloom across the lake, showing just how gigantic the problem has become. Dr. Paerl would also like to call attention to two new review articles for those interested in cyanobacterial blooms and their mitigation:

Huisman, J., G. Codd, H. Paerl, B. Ibelings, J. Verspagen, and P. Visser. 2018. Cyanobacterial blooms. *Nature Reviews Microbiology* <https://doi.org/10.1038/s41579-018-0040-1>.

Paerl, H.W. T.G. Otten, and R. Kudela. 2018. Mitigating the expansion of harmful algal blooms across the freshwater-to-marine continuum. *Environmental Science & Technology* 52:5519-5529. DOI: 10.1021/acs.est.7b05950

Sustaining AlgaeBase

Anyone wanting to know about algae has probably looked at AlgaeBase, but for phycologists it has become an indispensable tool. Whether you query the database daily or only occasionally it is the "go to" source for information on the classification, nomenclature, distribution and literature of all species considered algae in the broadest sense. AlgaeBase saves countless hours whether preparing lectures for a class or slides for a presentation, confirming taxonomy for a manuscript, or finding an obscure reference for a paper. One only has to imagine a world without AlgaeBase to understand its importance to each of us.

Mike and Wendy Guiry started, built, and have sustained AlgaeBase for the past 22 years. They anticipate doing so for another 5-10 years. After that it will be up to us, the phycological community, to maintain and expand this outstanding and vitally important resource. To that end and for the past several years, the PSA and other phycological societies independently have been contributing financially to support AlgaeBase. But, we also recognize the need to work in concert now to ensure the long-term sustainability of this important phycological resource. This began with a discussion with representatives of several societies at the recently concluded PSA/ISOP meeting, and these discussions will continue at future meetings.

Within the Executive Committee and Board of Trustees of the PSA and between a PSA subcommittee and the Guirys, we have been discussing how best to support and ensure the future of AlgaeBase. To that end, the PSA Executive Committee voted to establish an AlgaeBase Endowment Fund line and seeded this line with \$50,000 from the Treasury Reserve. Our goal is to build up a source of funds to help ensure that AlgaeBase will be sustained once the Guirys are ready to fully retire from its operation. If you are interested in contributing to this endowment now or in the future, please contact Dr. Steve Murray, Endowment Fund Manager (smurray@fullerton.edu). We will keep you informed of our efforts to sustain AlgaeBase in future newsletters.

Alison Sherwood, PSA President

Morgan Vis, Chair of the Board of Trustees

**Steve Murray and Paul W. Gabrielson
Sustaining AlgaeBase Financial Subcommittee**



News From the PSA Board of Trustees

Planned Endowment Support For 2018 And Endowment Donations For 2017:

The Phycological Society of America supports students and early career professionals working on algal-related subjects with its Endowment funds. It also uses Endowment earnings to fund awards for phycological professionals, such as the **Luigi Provasoli Award** for the best paper published each year in the Journal of Phycology. For 2018, the Society anticipates making awards totaling \$72,500 from its Endowment. This will include **up to \$15,000 for Hoshaw Travel Awards** to support students attending this year's annual meeting in British Columbia, and **\$10,000 for the Norma J. Lang Fellow program**, which supports Early Career Professionals working on phycological research problems. Be sure to access <http://www.psaalgae.org/> to learn about the Society's Awards and Grant programs.

Each year, the Society seeks donations to sustain and grow the Endowment to create and expand funding opportunities for students and professionals and to support the work of phycologists. The Society's students and professionals would like to thank those that contributed to the \$7,812 received during 2017 as donations to the Endowment. **Among these donations was a \$5,000 contribution from an anonymous source to honor Dr. Rick McCourt for his ten years of service as Chair of the Society's Board of Trustees and to recognize Dr. Morgan Vis, his successor, as the first woman to serve as Board Chair.** We are grateful to Dr. McCourt and Dr. Vis – the former for leading the Board of Trustees and helping to build the Endowment over the last decade, and the latter for her strength and leadership as we work to grow the impact of the Society and build a better future for phycologists. Contributions to the Endowment can be made at www.psaalgae.org/endowment-donations/.

Steve Murray
Fund Manager of the Endowment

THE 2018 PSA AWARD OF EXCELLENCE

The PSA Award of Excellence honors scientists for a record of sustained scholarly activity, including teaching and service, who have had a major impact on the field of phycology. The award is a career achievement recognition for a living phycologist, and this year it was given to **Dr. John Beardall**.

Dr. John Beardall is a Professor in the Department of Biological Sciences at Monash University in Melbourne, Australia. He completed his undergraduate studies at Queen Elizabeth College, University of London. John remained in London for his graduate studies, receiving his PhD in 1976 from University College. During this time he began his life-long study of the biology of phytoplankton, focusing on ways in which these phototrophs adapt to their light environment and acquire inorganic carbon for growth. John then worked as a postdoc at University College of North Wales, and later with John Raven at University of Dundee, examining mechanisms of inorganic carbon uptake by algae and ultimately publishing some of the seminal papers in the unraveling of the algal CO₂-concentrating mechanism. John moved to Melbourne in 1982, first as a lecturer at La Trobe University, and later as a professor at Monash. John's research group focuses on the physiology of algae in relation to environmental factors such as ocean

acidification. A major interest is related to understanding the ways in which marine and freshwater microalgae, including the cyanobacteria responsible for toxic blooms in inland and coastal waters, will be influenced by global change.

Other studies relate to the impacts of heavy metals on algae and possible ways to utilize these organisms in waste-water purification and the uses of algae for production of lipids for biodiesel. John has published over 175 peer-reviewed papers and 22 book chapters that have collectively been cited over 12,000 times. He has received over \$1.5 million in research funding over the last 5 years alone. John was the recipient of the Provasoli Award in 2002, and has played a key role in the phycological community of Australasia, mentoring hundreds of undergraduate students and more than 30 graduate students and postdoctoral fellows.



Photo by Stacy Krueger-Hadfield



The Provasoli Award for the year's best paper in the *Journal of Phycology* went to **Pilar Diaz-Tapia** (2nd from left), **Heroen Verbruggen** (2nd from right), **John West** (not pictured), and **Christine Maggs** (right) for their paper "**Analysis of chloroplast genomes and a supermatrix inform reclassification of the Rhodomelaceae (Rhodophyta)**" (Volume 53, pp 920-937). Photo copyright Stacy Krueger-Hadfield

The Prescott Award

Please consider nominating a book for The Gerald Prescott Award. The Prescott Award recognizes scholarly work in English in the form of a published book or monograph (including edited volumes and e-books) devoted to phycology and published in 2017 and 2018. The award will be presented at the 2019 Phycology meeting.

NOMINATION DEADLINE: APRIL 1, 2019

**Nomination letters should be sent to Cathy Pfister
cpfister@uchicago.edu**

BOLD and LEWIN AWARD WINNERS

The prestigious student award competitions at the PSA meeting included high caliber oral presentations and innovative poster presentations covering topics ranging from biological soil crusts to Arctic periglacial refugia. Congratulations to all of the student participants for their efforts to present their research in a clear, compelling, and engaging manner.

The Lewin Award for the best poster presentation was awarded to **Jacob Munz** for his poster, “**Arginine-culture induces nitrogen starvation responses during photosynthetic growth in *Chlamydomonas reinhardtii***”. Mr. Munz is from the University of British Columbia, and was recommended by his advisor Jae-Hyeok Lee. Lewin Award recipients receive \$500.

The 45th annual Bold Award was given for the outstanding oral presentation, and was awarded to two students this year. **Sam Starko**, from the University of British Columbia, presented “**A comprehensive kelp phylogeny sheds light on the evolution of an ecosystem**”, and was recommended by his advisor Patrick Martone; and **Danny Wolf** from Ohio University presented “**Multi-marker metabarcoding assessment of biodiversity within stream biofilm communities along an acid mine drainage recovery gradient**” and was supported by his advisor, Morgan Vis. Bold Award recipients receive \$1000, and special consideration for an article published in the Journal of Phycology.



*Pictured from left to right: **Danny Wolf**, Heather Spalding, Deb Robertson, Matt Ashworth, **Jacob Munz**, **Sam Starko**, Stacy Krueger-Hadfield, Nancy Turner. Photo credit: Stacy Krueger-Hadfield*

Many thanks to the judges and to plenary speaker Nancy Turner for their time and consideration. If you are interested in participating in the student awards committee, please contact Heather Spalding (hspaldin@hawaii.edu).

Heather Spalding, Student Awards Committee Chair

PSA 2018 ANNUAL MEETING

The 2018 Meeting of the Phycological Society of America was held jointly with the International Society of Protistologists and took place from July 29 to August 2 at the University of British Columbia in Vancouver. Plenary speakers included Nancy Turner, Thomas Wernberg, and Fabrice Not, and symposia featured *The Macroalgal Legacy of the Pacific Northwest*, *Kelp Forests in Flux*, *From Pharm to Table* (The Milton Sommerfeld Memorial Symposium), and *Origins and Early Evolution of Eukaryotes*. Attendees also enjoyed energetic poster sessions, a convivial opening mixer, and a highly competitive Trivia Night competition at UBC's on-campus watering hole Koerner's Pub. Thanks to local organizer Patrick Martone and PSA program director Amy Carlile, a wonderful time was had by all!

2018 PSA Meeting: Vancouver, BC, Canada (July 27 – August 3, 2018)



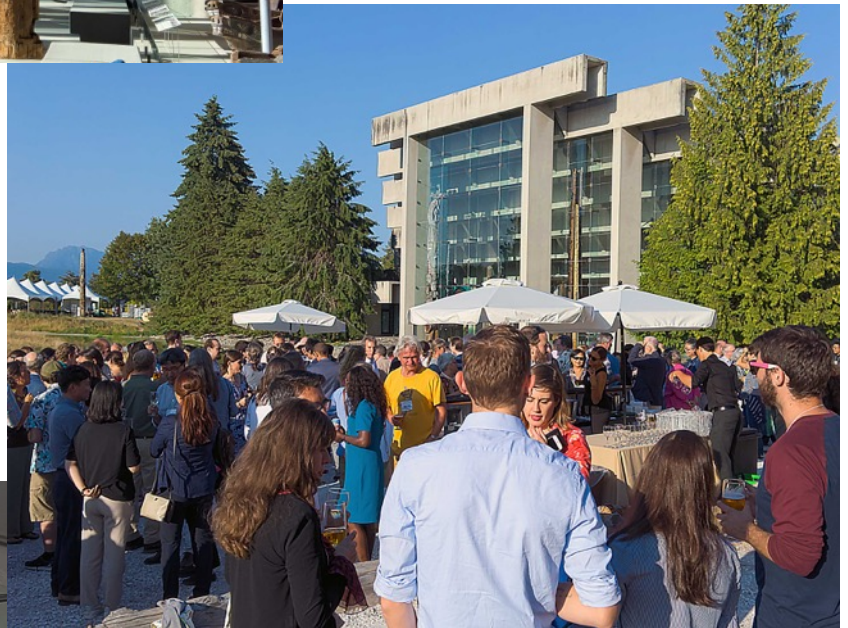
**Joint meeting with
International Society of Protistology (ISOP)**

THE 2018 PSA BANQUET



The banquet was held in the UBC Museum of Anthropology amidst amazing artifacts from the First Nations cultures of the Pacific Northwest.

If you're gonna be in a long drink line, might as well do it on a beautiful sunny summer day!



Phycologists and protistologists enjoying a delicious meal together

Photos by Stacy Krueger-Hadfield



Photos by Mike Wynne



Photos by Mike Wynne





Past presidents of the PSA



Phycologists from UAB — including your newsletter editors (2nd and 3rd from left)

ANNUAL PSA AUCTION

We would like to offer a sincere “Thank You” to the many people who placed bids and/or donated items in the 2018 PSA Auction. We raised over \$2600, which will support Hoshaw student travel awards for future PSA meetings. We especially would like to thank Kyra Janot and Liz Cooney from UBC, who were the student volunteers who organized the auction.

The auction is always a big event — start planning your donations for 2019 now!



Some of the awesome stuff that sold at the 2018 PSA Auction.



You, too, can get a copy of Jillian Freese’s children’s book **A Is For Algae** via **amazon.com**, and donate to PSA at the same time! Just follow the link.



**Phycological Society of America
Annual Business Meeting of the General Membership
Vancouver, British Columbia, Canada
30th July 2018**

MINUTES

Approximately 50 people were in attendance at the Annual Business Meeting, including Andy Lang, representing the Lang Family and the Norma Lang Fellowship.

Minutes from the 2017 Annual Business Meeting (Monterey, CA) were approved.

Treasurer's report – Eric Linton

- We have charitable status in Canada and thus all donations are tax deductible, this affects sale of t-shirts and “swag” at the conference. We also have state tax exemption in Maryland where we are incorporated, thus we do not have to pay sales tax on transactions with our publisher Wiley. Additionally, we have state tax exemption in Florida for next year's meeting. Last year we were able to transfer \$100,000 from the treasury to the endowment, and we are supporting AlgaeBase at a rate of up to \$10,000 per year.
- Budget Summary: FY 2017

Total Income / Gross Profit	\$325,538
Total Expenses	\$290,639
Net Income	\$34,899
- The profit share of the journal from 2017 (paid in 2018) was \$91,567, which is down by \$7,929 from 2017 but up by \$319 from 2016. Overall, our finances are good, but are dependent on the Journal, our biggest source of income. Depending on the cost of the meeting I hope to transfer up to \$100,000 to the endowment this year. The finances for PSA work by using the profit share to pay for all or our expenses, the biggest of which is the meeting. The income from the meeting pays the treasury back and any resulting profit or excess money is transferred to the endowment by the end of the year. The next year we start over again with the profit share from the previous year.

Fund Manager's report – Steve Murray

- Steve congratulated Eric Linton on a job well done over the last many years as PSA Treasurer and showed his appreciation with the gift of a PSA t-shirt
- Currently the endowment accounts total \$2,773,493 and are at a projected annual rate of 2.59%. The Treasury Reserve holds \$142,467 and is earning at a projected annual rate of 2.08%.

- The Commemorative Fund, which provides awards for the Grants-in-Aid of Research and the Lang Fellows program, is the largest endowment line (38.0% of the total), followed by the General Fund (13.1%), and the Lecture/Symposium Fund (12.3%). The Reserve Fund, originally set up for Life Member reserves, has been capped at \$250,000 since annual expenditures are not expected and other endowment lines are in need of funds. Funds accumulated beyond \$250,000 were distributed to the General Fund (\$10,000), Lecture/Symposium Fund (\$10,000), and Hoshaw Student Travel Award Fund (\$9,762).
- Actual Endowment expenditures for 2016 and 2017 were \$40,686 and \$59,500 respectively; anticipated expenditures for 2018 are \$72,500 with the increase largely due to the increase in Hoshaw Travel Awards and the use this year of the Lecture/Symposium fund allocation.
- Total earnings (interest and dividends) from the Endowment were \$69,581 in 2017, which would result in a projected negative balance of \$2,919 given 2018 approved expenditures of \$72,500. For 2019, approved Endowment expenditures total \$72,000 with projected 2018 earnings equal to \$71,900. This leaves an anticipated negative balance of only \$100. Note: the preceding year's earnings are used to fund the next year's expenditures.
- The Hoshaw Student Awards allocation has been increased to \$12,000 per year and the Prescott Award has been reset from \$2,000 to \$1,000 going forward.
- An additional \$422,335 is needed in the Endowment to generate sufficient annual earnings to fund those endowment lines lacking sufficient principal given the current annual earning rate of 2.59%. The largest deficit is in the Hoshaw Student Travel Awards line, which requires an additional \$201,694 to generate the annual award amount total of \$12,000 at 2.59%. We anticipate receiving a transfer of approximately \$100,000 from the Treasury at the end of 2018, which will bring the amount needed to fully fund our Endowment at the current expenditure profile down to \$322,335.
- In 2017 a total of \$7,715 in contributions to the Endowment was received. Among these was a \$5,000 contribution from an anonymous source to honor Dr. Rick McCourt for his ten years of service as Chair of the Society's Board of Trustees and to recognize Dr. Morgan Vis, his successor, as the first woman to serve as Board Chair. Another donor contributed \$500 to honor the appointment of Morgan Vis as the Chair of the Board of Trustees. The campaign to seek donations for the Endowment will continue focusing on the Hoshaw Travel Award and the Croasdale Fellowship programs.
- PSA has been working with Mike and Wendy Guiry to develop plans to support and sustain AlgaeBase, an important resource for the phycolgical community. The BoT and Executive Committee approved the establishment of an Endowment line dedicated to AlgaeBase and also to transfer \$50,000 from the Treasury Reserve to seed this line.

Membership Director's report – Maggie Amsler

- As of 2 July 2018: PSA has 953 members with 686 paid and 267 unpaid. For reference, in July 2017, there were 646 paid and 286 unpaid members.
- Categorical summary of new PSA members Oct 2017 – July 2018
27 Member (14 online, 10 print & online, 3 joint)

51 Student Member (35 online, 16 print & online)

11 Post-Doc Member

3 Teacher/Pupil Member Online

- Members voted on the recommendation of EC to not change dues. All present approved and dues will not change for 2019.

Journal of Phycology Editor's report – Mike Graham

- The Journal of Phycology is doing great, and we are pleased to announce that the Impact Factor has increased to 3.0. Recently published papers were more highly cited in 2016-2017 than in previous years, likely causing the increase in impact factor. Acceptance rate is also at its lowest since 2012 (35%), so we are being more selective for strong papers. 68% of rejections are reject without review (RWR), the highest since RWR was instituted in 2012.
- Four new members were elected to the editorial board by the PSA membership and assumed duties on Jan 1, 2018: Chuck Delwiche (University of Maryland, College Park), Suzanne Fredericq (University of Louisiana, Lafayette), Louise Lewis (University of Connecticut), and John Wehr (Fordham University).
- We are looking to increase the number of female Associate Editors. We also want to add an associate editor who specializes in identifying and commissioning front matter (reviews, mini-reviews, perspectives etc.).

Program Director's report – Amy Carlile

- 2019 PSA meeting will be in Fort Lauderdale, Florida. Originally, the tentative dates were June 9-13, but after some discussion we decided to move it later in June to accommodate universities on the quarter system, while still avoiding the heat of the Florida summer. There will be pre-meeting field trips: one to the Florida keys, and the other to the Everglades.
- The exact location of the 2020 PSA meeting is not yet certain, but will be in the Northeast USA.

Board of Trustees Chair's report – Morgan Vis

- Michelle Wood was approved and will be serving a second term on the BOT.
- BOT is looking at our current endowed awards and determining priorities for potential new awards.
- We established an endowment line for potential use in the future to help sustain AlgaeBase

Communication Director's report – Jeff Morris

- Jeff praised the Communications Committee for their hard work, especially Jillian Freese for her work on the PSA Twitter feed and Dail Laughinghouse for updating the webpage. Morris suggested that the website would be easier to maintain if the various committee heads would routinely monitor the relevant portions of the webpage and report back to him or Laughinghouse about changes that need to be made; Morris said he would reach out to the committees in the near future with specific charges.

Vice-President / President-Elect's report – Kirsten Muller

- Kirsten has engaged Dail Laughinghouse on discussions about the theme of the 2019 PSA Annual meeting. Climate change was proposed as a good focus and within which algal blooms (which are a major concern in Florida) could be included as a

symposium. There is interest from local organizations for a taxonomy workshop, particularly with Cyanobacteria and other problematic species. For the Presidential keynote, Kirsten is considering a speaker on climate change and the marine environment (focusing on seaweeds).

President's report – Alison Sherwood

- 2018 Election Results:
 - Vice-President / President-Elect – Dale Casamatta
 - Treasurer – Julie Koester
 - Journal of Phycology Editorial Board Members – Karolina Fučíková, Juan López-Bautista, Hwan Su Yoon, and Stacy Krueger-Hadfield
- By-law changes were all approved (deletion of the Public Policy Committee, reductions in size for the Elections, Communications, Membership, and Education Committees)
- Many thanks to Jim Wee (Chair of the Elections Committee), and all members who agreed to run in this year's election!

Past-President's report – Tim Nelson

- **Bylaws Changes.** Bylaw changes streamlining changes in governance were approved on our 2018 ballot.
- **Bylaws Updates.** Bylaws stipulate that one of the Past President's duties is to update the bylaws. Unfortunately, as far as several of us have been able to determine this has not been done since the summer of 2012. After having perused my own records, spoken to our Elections Committee chairs of late, and gotten 2013/2014 minutes from our past Secretary, now President Alison Sherwood, I believe a reasonable updated version of the bylaws will be available. These will be circulated at our meeting.
- There are several items I noticed in the old minutes that, as far as I can tell, never quite made it to this year's ballot. Alternatively, they may have but I have no record of the wording or that they were approved. Specifically, the Executive Committee may want to take up the following:
 1. Removing officers. There is no formal process for removing officers who are unable to perform their duties or are choosing not to perform them. This came up in 2013, and the Executive Committee at that time felt a 2/3 vote of the Ex. Com. would suffice for removal.
 2. A motion to eliminate the Archives Committee and have the Archivist sit on the Communications Committee was approved in 2014 (midyear meeting), but never (apparently) placed on the ballot.
 3. A motion to have Grants and Fellowships Committee members seated at the time of the annual meeting, rather than the January 1st, was approved in 2014 as well, but apparently never made it to the ballot.

Motion to adjourn was seconded.

**Respectfully submitted by
Patrick Martone, PSA Secretary**

Upcoming PSA Awards & Grants

PSA Award of Excellence

The Phycological Society of America is soliciting nominations for one or more Awards of Excellence. Recipients of the 2019 Award of Excellence will be chosen on the basis of their sustained scholarly contributions in, and impact on, the field of phycology, through a distinguished record of scholarly activity. Nominations will be welcomed for all fields of research on algae and also should highlight the candidate's service to the PSA and/or other phycological societies. The Award is a career achievement award for a living phycologist. Membership in the PSA is not a requirement for nomination. See previous awardees at <http://www.psaalgae.org/award-of-excellence/>.

Nomination packages should include a single nominating letter from a PSA member highlighting the reasons for the nomination. The candidate should acknowledge his/her nomination and also provide a complete C.V. (including information relating to teaching and service). The committee requests 4 additional names (and e-mail contact information) submitted to provide letters of support. The nominator is required to confirm that these individuals have agreed to write letters within two weeks of being contacted by the Committee. Nominations received for the previous year (2017) for nominees who were not selected in 2017 will automatically be reconsidered in 2018. Updates to nomination packages submitted in 2017 are not required but an updated C.V. can be substituted for the prior version if submitted by the nomination deadline. Nominations made prior to 2017 will not automatically be reconsidered but completely new nomination packages for such candidates will receive full consideration.

**Nomination Package due:
January 31, 2019**

Nominations will be welcomed for all fields of research/teaching on algae and should highlight the candidate's service to PSA and/or other phycological societies. Inquires and/or electronic nomination materials should be directed to Juan Lopez-Bautista, The University of Alabama. All nomination materials should be electronic files submitted by e-mail to jlopez@ua.edu.

In order to receive full consideration for the award that will be made at the 2018 annual meeting of the PSA, the complete nomination package must be received by January 31, 2018.

Checklist for nomination

1. Nomination letter from PSA member
2. Letter from nominee acknowledging the nomination
3. A current C.V. provided by the nominee
4. Names and contact information for 4 potential referees.

The committee will solicit letters directly, but the referees must have confirmed their willingness to provide a letter within two weeks of being contacted. If they fail to provide a letter, the Committee is under no obligation to search out new referees.

PSA Research Grants

The Psychological Society of America (PSA) supports the activities of its student and postdoctoral members through three programs administered by the Grants and Fellowships Committee of the PSA. The **Grants-in-aid-of-research** program (GIAR) provides small grants to support research that would not otherwise be possible for the applicant. The **Hannah T. Croasdale Fellowship** enables graduate students to broaden their psychological training by funding costs associated with attending psychological courses at biological field stations. Finally, the **Hoshaw Travel Awards** help students cover the costs of attending the annual PSA meeting.

Deadlines:

GIAR: November 1, 2018

Croasdale: March 1, 2019

Hoshaw: April 2, 2019

During the 2016-2017 funding cycle, there were a total of 74 applications to these programs. There were 40 applications to the GIAR program, and grants (totaling \$15,000) were awarded to 11 graduate students and 1 postdoctoral researcher. Seven graduate students applied for Hannah T. Croasdale Fellowships, 4 fellowships were awarded (totaling \$6,000). Twenty-seven students applied for Hoshaw Travel Awards to attend the PSA annual meeting in Monterey Bay, (California) during June 2017. A total of \$10,000 in travel grants were awarded to 18 students, with individual awards ranging from \$250 to \$1,000.

FUTURE DEADLINES: The deadline to apply for the GIAR program is Wednesday 1 November 2018. The deadline to apply for the next Hannah T. Croasdale Fellowship competition is Thursday 1 March 2019. The deadline to apply for a Hoshaw Travel award to attend the 2019 annual PSA meeting (in Fort Lauderdale, Florida) is Monday 2 April 2019.

MORE INFORMATION: <http://www.psaalgae.org/grants-and-fellowships/>

PSA now accepts donations through Paypal.
Please support the Hoshaw award and other PSA
Grants by following this link and donate to support
student travel to the annual PSA meeting!

<http://www.psaalgae.org/endowment-donations>

In Memoriam



Richard W. Castenholz **Microbial Trailblazer** **(1931-2018)**

One of the hallmarks of my career as a faculty member at the University of Oregon has been the fact that my office is just down the hall from that of renowned scientist, Dick Castenholz. Over more than two decades, we held joint lab meetings, served on each other's students' committees and basically had blended lab facilities sharing equipment and ideas – along with boisterous Christmas parties hosted by his lab where students made “Glug” – a fiery Scandinavian brew. The “Holiday Tree” was decorated with algae ornaments -- otherwise known as ‘dried out petri plates’ – with amazing swirls of algal filaments and colonies of cyanobacteria on them. It is my sad job today to write a short bit of history about Dick, who passed away unexpectedly last May only days after drafting a paper about new work he was doing on diatoms and cyanobacteria tolerant of extreme high salinity, extended darkness, and desiccation. In this work, he was returning to his roots, since his initial research as a graduate student was on diatoms.



Dick Castenholz sampling at Mare's Eggs Spring in Klamath County, Oregon, one of the few natural habitats for Nostoc pruniforme (aka "Mare's Eggs").

Dick started out as a freshwater ecologist and received his Ph.D. from Western Washington University in 1957 with a dissertation on diatoms of the Grand Coulee Lakes. Asked in a recent interview about how he got into studying algae, Dick said he first started as a naturalist traveling as young boy in northern Wisconsin with his father's cousin who taught him to identify birds, “follow a porcupine”, and “sneak up on bears”. An oil painter as a youth, Dick was asked to illustrate the algae section of a lab manual when he was a senior in high school and this led him to study algae at the University of Michigan as an undergraduate. In the recent interview he described Michigan as offering THREE DIFFERENT phycology courses (times have changed!), one of them at the University of Michigan Field station.

After one year of graduate school at the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences on Virginia Key, Dick decided he preferred freshwater algae and cooler climates to biweekly cruises across the Gulfstream, so he transferred to Western Washington University. From there, he never left the Pacific Northwest in terms of his

academic appointment. He graduated with his Ph.D. in 1957 and moved directly to an Assistant Professorship at the University of Oregon. I'm not sure when he moved to his lab in Onyx Bridge where I am, but the antiquity of some lab equipment suggests he's been in the same office and lab most of the time he's been at Oregon. Signs on the walls commemorate idiosyncracies of students who got their degrees in the 1960s! Joining an illustrious group of biologists, Dick developed an amazing General Microbiology class with Bill Sistrom that included labs based on culturing organisms from samples he'd collected from around the world. By the end of each term, student projects required over 40 types of media and a wide range of culture conditions. Dick also taught a course, Algae and Photosynthetic Bacteria, at the Oregon Institute of Marine Biology, UO's marine station in Charleston, Oregon. This was often a fall term course, leading to famous expeditions onto rocky cliffs to sample macrophytes in the dark, because the minus tides occurred near midnight.

Dick was a classic field scientist. He loved working in the field and had several different campers set up for lab work over the years. In most years that I knew him, he made annual trips to Yellowstone National Park, but there was also a period when his lab group made summer trips to Guerrero Negro, Mexico, studying hypersaline microbial mats near the lagoons visited by Pacific Grey Whales in the winter. Barbara Javor, the first of his students to do work at Guerrero Negro, introduced Dick to the study of cyanobacteria in hypersaline mats when she went to the region on her own in the 1970s. In a letter she wrote to participants in a tribute session for Dick at the International Symposium for Photosynthetic Prokaryotes meeting last summer, she described Dick's transformation from phycologist to microbiologist (although, to my knowledge he never stopped being a phycologist, just branched out!). She said that, at the time she was a student, the discussion about how "blue-green algae" should be classified was just heating up.. bacteria or algae, which was it? This was also a time that some new concrete was being poured in Dick's office to fix a crack in the floor... and Barbara sneaked in and carved a RWC + BGA that remains to this day.

Dick DID love blue-green algae and his students have won the Bold Award and other PSA awards. He is, however, perhaps among the most important contributors to the classification of prokaryotes that perform oxygenic photosynthesis as cyanobacteria, using the bacterial system, rather than as algae using the botanical system. He edited the cyanobacteria section of the first and second edition of Bergey's Manual of Systematic Bacteriology and was in the process of editing the third edition when he died. From 1991-2001, he served on the Board of the Bergey's Trust; in 2005, the Trust awarded him the Bergey's Medal for Distinguished Achievement in Bacterial Taxonomy.



Love of algae preserved for posterity; Barbara Javor's finger-painting in the wet concrete of Dick's office.

While respecting (and using) the power of molecular genetics, Dick was totally old-school in his belief that cultures were essential to research in microbial ecology. His collection of >1200 extremophile organisms – known as the Culture Collection of Microbes from Extreme Environments (CCMEE) – is based on work from his laboratory and also from the legacy of Imre Freidmann, whose collection merged with Dick's in the 1990s. Dick managed the CCMEE for years, shipping cultures all over the world, but a few years ago he moved it to Pacific Northwest National Laboratory where it is now curated by Dr. Sherry Cady. In 2009, Dick received the Porter Award from the American Society for Microbiology for his efforts as “collector and curator of this unique collection of extremophilic organisms.... his generosity in sharing cultures has been invaluable to the scientific community”.



Dick and former student Scott Miller, who continues work on cyanobacteria of Yellowstone thermal springs as a professor at the University of Montana. This photo, taken during Dick's 2017 field trip to YNP, shows his most recent lab/trailer.

Dick's expertise on cyanobacteria evolved in the 1960s when he started working on hot spring mats in Eastern Oregon, particularly at Hunter's Hot Spring (a site he also visited as recently as 2017, and from which he had new isolates he was studying when he died). With his many graduate students, and various undergraduate assistants, he also maintained a long-term NSF funded program in Yellowstone National Park, and also did other projects in hot springs around the world, including in Japan, New Zealand, and Iceland. A project in 1996 took him to the Dry Valley Lakes of Antarctica, following up on an earlier trip in 1990. Rumors have it that his expedition leader commented that it was very hard to get him to stop sampling when there was 24 hours of daylight!

Dick had more than 30 graduate students, over a third of whom earned tenure in major universities. Together, they discovered *Chloroflexus aurantiacus* (Pierson and Castenolz), demonstrated the role passive sunscreen scytonomin in sheath-forming cyanobacteria, identified and described microevolutionary adaptation in thermophilic *Synechococcus*, and collected and described the first true psychrophilic cyanobacteria. Dick published more than 150 papers, garnered over 13,000 citations and was honored as a fellow of the American Society of Microbiology and AAAS. He left behind his wife of 35 years, a son, two dogs (one of whom was often with him in the lab), and many friends and colleagues whose lives he enriched in many ways. He loved sailing, Paris, opera, and a nice chardonnay. Here's a glass to you, Dick!

Michelle Wood
University of Oregon

Mark Hildebrand

1958-2018

On August 9th Mark Hildebrand has passed away at the age of 59 after a long battle with cancer. Many of us have lost a dear colleague and friend, and the algae community has lost one of its foremost pioneering researchers in the area of the molecular biology of diatoms. During the past three decades Mark was a major driving force in unraveling the molecular basis of diatom silica (Si) and carbon (C) metabolism and made major contributions to the metabolic engineering of diatoms. Despite serious health issues during the past four years, Mark remained remarkably productive, publishing in June this year what turned out to be the final paper during his lifetime.

For those of us familiar with Mark's research and his wide knowledge in molecular genetics and evolution, it may come as a surprise that he was educated as a chemist. He graduated as a Chemistry major from SUNY Syracuse (1980) and obtained a PhD in Biochemistry from the University at Arizona (1987). During his PhD Mark worked with Don Bourque on chloroplast DNA from higher plants, studying gene expression and trans-splicing. In 1988 he became a postdoc in Ben Volcani's diatom group at UC San Diego's Scripps Institution of Oceanography,



Figure 1. Participants of the first diatom genome annotation meeting at JGI in Walnut Creek, CA in October 2002. Mark is in the third row on the right (courtesy of Ginger Armbrust).

which has remained his scientific home ever since. Volcani's lab had been studying diatom cell wall biogenesis since the mid 1960's using electron microscopy, physiology and biochemistry. However, modern molecular biology tools which were just becoming available during the 1980's had not yet been applied to diatoms. Mark set out to change this. After an initial success discovering and characterizing plasmids in diatoms [1,2], he took on the great challenge of identifying "silicon responsive genes". What is a straightforward exercise in routine transcriptomics analysis today was a tour-de-force in the 1990s. Numerous manual steps needed to be diligently

performed to generate subtracted cDNA libraries that would then needed to be sequenced by hand. Mark was justly rewarded for this effort by discovering a novel gene family of transmembrane proteins that mediate Na⁺-dependent silicic acid uptake into cells. Functional studies on these silicon transporter proteins (SITs) were performed by recombinant expression in *Xenopus* oocytes and electrophysiology measurements together with Julian Schroeder at UC San Diego [3]. Throughout his career Mark followed up on this seminal discovery aiming to deeply understand the role of SITs in diatom physiology. His group performed carefully thought out silicic acid uptake experiments, raised antibodies against the SIT proteins, and utilized gene knock-down and GFP-tagging [4-6]. Altogether these studies revealed a surprisingly complex role for SITs. They are required for silicic acid uptake only at low (i.e. environmentally relevant) silicic acid concentrations, and their down-regulation induces an accumulation of lipids. This led Mark to propose an additional, sensory, function for SITs that enables coupling of Si and C metabolisms.

Mark's interest in Si metabolism extended well beyond the SITs. He skillfully utilized "omics" tools to identify candidate proteins involved in biosilica formation. The prerequisite for these studies was the first diatom genome project. This was led by Ginger Armbrust (University of Washington) who assembled in 2002 a small group of diatom researchers that she deemed suitable to take on the challenge of making sense from the *Thalassiosira pseudonana* genome sequence. Mark was an obvious choice and essential member of this group (Figure 1). Shortly thereafter he developed a method for synchronization of the *T. pseudonana* cell cycle and utilized it for the first proteomics study on diatoms in a collaboration with Paul Haynes (University of Arizona) [7]. In this work he ingeniously combined information from cell cycle specific proteomics and mRNA data to narrow down a list of 10 genes with expression patterns similar to the gene that encodes the diatom biosilica-associated protein silaffin-3. One of the new genes that Mark found encoded for an enzyme involved in polyamine biosynthesis. Blocking this enzyme by adding an inhibitor in vivo led to aberrations in biosilica morphology in growing cells. Mark's result beautifully complemented independent work by my own group which demonstrated that long-chain polyamines and proteins bearing polyamine modifications (e.g. silaffin-3) exhibit silica forming activity in vitro. When microarray technology became available, Mark performed together with Andrew Allen (Scripps Institution of Oceanography and J. Craig Venter Institute) the most thorough cell cycle specific gene expression analyses of the entire *T. pseudonana* transcriptome to date [8, 9]. Surveying the vast amount of data he noticed a new family of three acidic proteins that were predicted to be type-I transmembrane proteins. Not being shy of bold hypotheses, Mark aimed to investigate whether these proteins are actually



Figure 2. Mark together with his group members in April 2017 (courtesy of Sarah Lerch).

located in the membranes of the silica deposition vesicles (SDVs) and influence silica morphogenesis possibly by interactions of their acidic domains with the basic domains of polyamine-bearing molecules. Indeed GFP tagging of two of these proteins (termed SAP1 and SAP3) was consistent with a location in the SDV. What's more, knock-down of each of the SAPs caused distinct phenotypes in biosilica morphology [10]. The implications of this result cannot be understated as SAP1 and SAP3 are the first genes with a proven *in vivo* role in biosilica morphogenesis.

Although Mark's research was primarily motivated by intellectual curiosity, he was also very interested in exploring potential applications of diatoms. Research in this area included the characterization of the optical properties of biosilica [11], establishing diatoms as efficient expression platforms for medically relevant proteins [12, 13], and foremost metabolic engineering of diatoms for biofuels production [14]. Mark was a founding member of the California Center for Algae Biotechnology, which provided an excellent environment for him to apply his vast experience in diatom molecular biology on practical problems. In a particularly interesting study, together with Bill Gerwick (Scripps Institution of Oceanography), Mark's group achieved enhanced lipid accumulation in *T. pseudonana* with no detriment to growth through knocking-down a lipase gene [15]. For this breakthrough Mark's group was recognized in 2013 by the Department of Energy as one of the top algae biofuels laboratories in the US.

Mark has served as the Director of the Marine Biology Research Division at Scripps since 2012, and was a role model in many ways. He was passionately dedicated to his research, devoted to his students (Figure 2), and always willing and able to provide constructive criticism for collaborators and competitors alike. Being low key, modest, and endowed with a great sense of humor Mark exuded the opposite of vanity. He was aware of the great contributions he had made to diatom research, which for him was boundless fun and intellectual satisfaction - rather than a trophy. It may be difficult to imagine for the young generation of researchers how uncharted the scientific territory on diatom molecular biology was when Mark entered the field 31 years ago. Today the challenges of these times are merely a faint memory for weathered scientists like myself. This we owe in no small part to Mark Hildebrand and the co-workers and colleagues that he inspired.

Nils Kröger

B CUBE Center for Molecular Bioengineering
CMCB
TU Dresden, Germany

References

1. Hildebrand M., Corey DK, Ludwig JR, Kukel A, Feng T-Y, Volcani BE (1991) Plasmids in diatom species. *J. Bacteriol.* 173, 5924-7
2. Hildebrand M, Hasegawa P, Ord RW, Thorpe VS, Glass CA, Volcani BE (1992) Nucleotide sequence of diatom plasmids: identification of open reading frames with similarity to site-specific recombinases. *Plant Mol. Biol.* 19, 759-70
3. Hildebrand M, Volcani BE, Gassmann W, Schroeder JI (1997) A gene family of silicon transporters. *Nature* 385, 688-9

4. Thamatrakoln K, Hildebrand M (2007) Analysis of *Thalassiosira pseudonana* silicon transporters indicates distinct regulatory levels and transport activity through the cell cycle. *Eukaryot. Cell* 6, 271-9
5. Thamatrakoln K, Hildebrand M (2008) Silicon uptake in diatoms revisited: a model for saturable and nonsaturable uptake kinetics and the role of silicon transporters. *Plant Physiol.* 146, 1397-407
6. Shrestha RP, Hildebrand M (2015) Evidence for a regulatory role of diatom silicon transporters in cellular silicon responses. *Eukaryot. Cell* 14, 29-40
7. Frigeri LG, Radabaugh TR, Haynes PA, Hildebrand M (2006) Identification of proteins from a cell wall fraction of the diatom *Thalassiosira pseudonana*: insights into silica structure formation. *Mol. Cell Proteomics* 5, 182-93
8. Shrestha RP, Tesson B, Norden-Krichmar T, Federowicz S, Hildebrand M, Allen AE (2012) Whole transcriptome analysis of the silicon response of the diatom *Thalassiosira pseudonana*. *BMC Genomics.* 13, 499
9. Smith SR, Gle C, Abbriano RM, Traller, JC, Davis A, Trentacoste E, Vernet M, Allen AE, Hildebrand M (2016) Transcript level coordination of carbon pathways during silicon starvation-induced lipid accumulation in the diatom *Thalassiosira pseudonana*. *New Phytologist* 210, 890-904
10. Tesson B, Lerch SJL, Hildebrand M (2017) Characterization of a New Protein Family Associated With the Silica Deposition Vesicle Membrane Enables Genetic Manipulation of Diatom Silica. *Sci. Rep.* 7, 13457
11. Kieu K, Li C, Fang Y, Cohoon G, Herrera OD, Hildebrand M, Sandhage KH, Norwood RA (2014) Structure-based optical filtering by the silica microshell of the centric marine diatom *Coscinodiscus wailesii*. *Optics Express* 22, 15992-15999
12. Davis A, Crum LT, Corbeil LB, Hildebrand M (2017) Expression of *Histophilus somni* IbpA DR2 protective antigen in the diatom *Thalassiosira pseudonana*. *Appl. Microbiol. Biotechnol.* 101, 5313-5324
13. Shrestha RP, Hildebrand M (2017) Development of a silicon limitation inducible expression system for recombinant protein production in the centric diatoms *Thalassiosira pseudonana* and *Cyclotella cryptica*. *Microb. Cell Fact.* 17, 145
14. Hildebrand, M, Abbriano RM, Polle JE, Traller JC, Trentacoste EM, Smith, SR, Davis AK (2013) Metabolic and cellular organization in evolutionarily diverse microalgae as related to biofuels production. *Curr. Opin. Chem. Biol.* 17, 506-514
15. Trentacoste EM, Shrestha RP, Smith SR, Glé C, Hartmann AC, Hildebrand M, Gerwick WH (2013) Metabolic engineering of lipid catabolism increases microalgal lipid accumulation without compromising growth. *Proc. Natl. Acad. Sci. USA* 110, 19748-53

Susan Williams 1952-2018

Original Article: <https://www.ucdavis.edu/news/in-memorial-susan-williams-bodega-marine-lab/>



Susan Williams, a professor at UC Davis' Bodega Marine Laboratory, died in a car crash April 24, 2018, while en route to Davis to teach a class. A resident of Bodega Bay, she had made the drive to campus countless times, devoted to her teaching as much as her research on coastal ecosystems. But this day, she would not make it — killed in an early morning crash on Lakeville Highway in Petaluma. Police said a pickup crossed the double-yellow line and struck Williams' car head-on, setting off a six-vehicle pileup. Three other people were injured.

Williams, 66, a distinguished professor of evolution and ecology and an inspired proponent of marine education and ocean conservation, joined UC Davis as the lab director in 2000. She held the post for 10 years before resuming a full-time schedule of teaching and research.

Saving the oceans through science

Williams, a fellow of the American Association for the Advancement of Science (elected in 2006) and the California Academy of Sciences (2003), demonstrated how seagrass and seaweed could aid the restoration of damaged habitats. These ocean plants provide valuable resources to coastal systems, such as protecting coral from pathogens and absorbing carbon dioxide.

Williams' research helped reveal how the strategic planting of seagrass could buffer, and, in time, help offset the destructive impact of human activities. "She was among the most renowned marine ecologists in the U.S. and the world," said Gary Cherr, who succeeded her as director of the Bodega Marine Laboratory. "She was somebody who has been tremendously impactful in terms of research — restoring habitats in degraded environments — and impacting state and national policy."

During Williams' tenure as the lab director, she prioritized community engagement and outreach to build support for marine conservation. She championed the sharing of science as an essential tool to raise awareness for ocean health. "Susan was passionate about everything she did, and her passion was contagious," said Professor Richard Grosberg, director of the Coastal and Marine Sciences Institute. "Few others could claim such an extraordinary career, combined with an

unrivalled devotion to changing the way people from all walks of life understand the ocean, and the essential resources it provides us all.”

Public servant and mentor

Williams was instrumental in demonstrating the impact that ocean health holds for local communities. In 2010, she was the recipient of the Academic Senate’s Distinguished Scholarly Public Service Award for her longtime efforts to increase protection of coastal waters. She lent her expertise to successful legislation expanding the boundaries of two national marine sanctuaries off Northern California: Gulf of the Farallones and Cordell Bank.



Williams take sediment measurements in seagrass plot in Sulawesi, Indonesia.

Upon stepping down from her leadership role at the marine laboratory, she dedicated herself again to teaching as well as developing entry-level curricula for marine biology programs to inspire undergraduate students. As a mentor, she championed inclusion and diversity in the sciences. “She mentored women scientists around the world, not only graduate students at Davis,” Cherr said. “She came out of an era where women scientists were second-class scientists. She empowered them to be leaders in the field.” The Consortium for Women and Research at UC Davis honored her as an outstanding mentor in 2009.

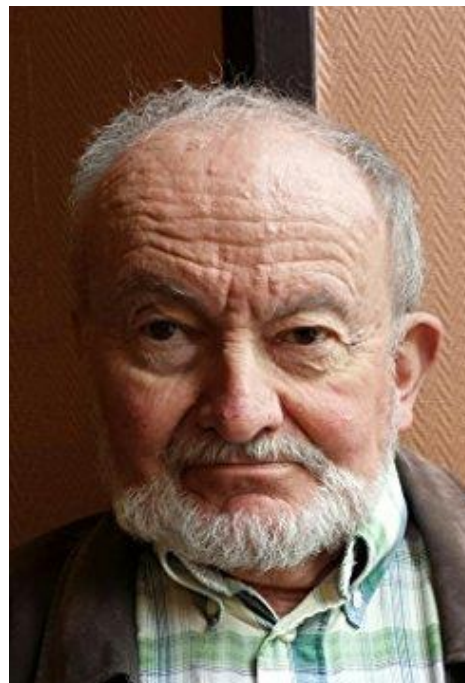
Distinguished career

Upon Williams’ arrival at the Bodega Marine Laboratory in 2000, UC Davis issued a news release describing her trajectory in ocean science: “Since earning a doctorate in botany and marine biology at the University of Maryland in 1981, Williams has taught and conducted research at major marine laboratories in Alaska, Hawaii, New England, Texas, Washington, the Caribbean, Japan and California. She has lived aboard research ships, scuba-dived, traveled to 3,000 feet in a submersible vessel and lived and conducted research in an undersea habitat for four weeks. Her career has been distinguished. When she earned her master’s degree at the University of Alaska in 1977, faculty members named her the Outstanding Student in Oceanography. At San Diego State in 1993, students named her Outstanding Biology Faculty Member. She served that same year on a panel of eminent scientists appointed by the assistant secretary of the Interior, and this year is a fellow in the Aldo Leopold Fellowship in Environmental Leadership.” She also served as president of the Coastal and Estuarine Research Federation, 2009-11, and received the organization’s Outstanding Leadership Honor in 2011 and Distinguished Service Award in 2013.

Williams is survived by her husband, Bruce Nyden. There is a memorial event planned to honor Susan in late October: <https://marinescience.ucdavis.edu/events/susan-williams-celebration>

David Slipher
UC Davis

Alain Sournia, phycologist and philosopher (1940-2018)



Alain Sournia passed away on May 28th, 2018 at 77. After his Master degree in Biological Oceanography from the Faculty of Science of the Paris University (France) in 1962, he obtained a position in 1965 as research assistant at the Overseas Fisheries Laboratory of the French National Museum of Natural History (MNHN, Paris, France). He then completed a PhD thesis on planktonic diatoms from the Mozambique Channel and Mauritius, which he defended in 1968. He was a laureate of the 'Foundation for the Vocation' in 1969. In the late 70's-early 80's, Alain Sournia worked at the MNHN antenna on Moorea Island and at Takapoto (French Polynesia). He became Assistant Professor in Zoology at the MNHN (1981) where he worked in the General and Applied Ichthyology Laboratory. In 1983, he joined the Centre National de la Recherche Scientifique (CNRS) as 'Directeur de Recherche'. He spent several years at the Roscoff Marine Station (1984-1987) and then at the Geology Laboratory of MNHN (1987-1995). The last ten years of his career in Paris were devoted to the research management, acting as 'chargé de mission' (policy officer) first at the CNRS 'National Institute of Sciences of the Universe' (INSU), from 1994 to 1999, then at the Living Resources Department of the French "National Research Institute for Sustainable Development" (IRD) from 2000 to 2005, notably as a member of the 'National Fleet Commission'.

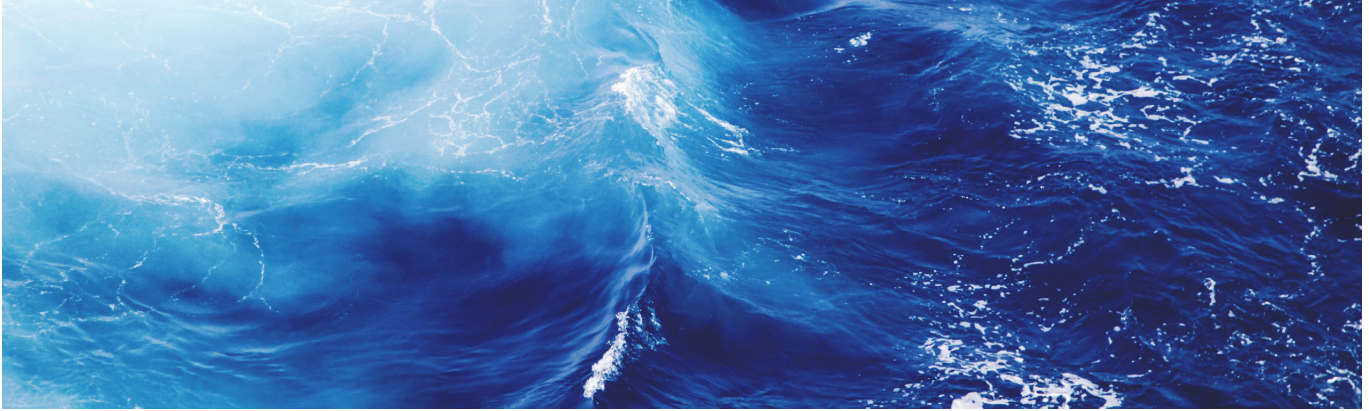
Frédéric Partensky

Daniel Vaultot

Original publication: Cahiers de Biologie Marine 59: 403–7



*The Phycological Society of America has instituted a **Legacy Society** to help individuals make a lasting impact on the Society by including it in their estate planning. If you are interested in arranging a bequest to the PSA Legacy Society, please contact our treasurer, **Eric Linton**.*



Cell biology of marine protists: Toward functional genomic tools for diverse new model organisms

The broad taxonomic and physiological diversity of marine unicellular eukaryotes offers exciting opportunities to investigate a range of features of the eukaryotic lineage that are inaccessible in canonical model organisms. On Wednesday, December 12, join us to learn more about ongoing efforts to develop functional genetic tools for better understanding the unique cell biological features of these emerging model marine protists.

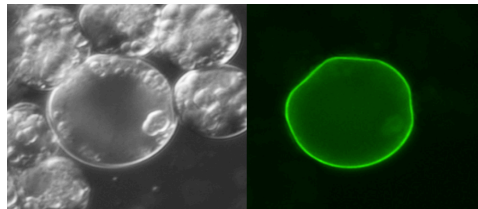


Figure: *Perkinsus olseni* (marine bivalve parasite) expressing a GFP (green) fusion with an exported cell-wall protein. Image courtesy of R.Waller, University of Cambridge, United Kingdom

PLEASE JOIN US FOR MORNING AND AFTERNOON EVENTS
WEDNESDAY, DECEMBER 12, 2018

ASCB Special Interest Subgroup: 8:30 - 11:05 a.m.
Satellite Event: 2:00 - 5:00 p.m.

see ASCB conference website for details

<https://ascb-embo2018.ascb.org/>

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British Phycological Society 67th Annual Meeting Oban, Scotland

7th to 10th January 2019

Scottish Association for Marine Science



It is my pleasure to announce that the 67th annual meeting of the British Phycological Society will be held at the Scottish Association for Marine Sciences, Oban, Scotland from Jan 7th to Jan 10th, 2019.

The call for abstracts and registration will open mid-September, with a deadline for abstract submission on **November 16th 2018**. The meeting will feature its traditional "general phycology" session, and plenary student session with prizes for best talk and best poster, named after Irene Manton. We will also host three exciting symposia on 1) interactions with microbiomes and grazers, 2) algal physiology in the limelight, and 3) blue carbon.

We have been working hard to make the conference affordable, with an unbeatable registration fee of £115 for BPS members, covering all social events and conference dinner. Accommodation deals and travel advice will also be announced when the registration opens.

All necessary information will be posted shortly on :

<https://bps2019.brphycsoc.org/>

Enquiries can be sent to:

bps2019@sams.ac.uk

We are looking forward to welcoming you in Scotland.

Claire Gachon, on behalf of the organisation committee

bpsouthend2018@gmail.com



40TH ANNUAL SOUTHEASTERN PHYSIOLOGICAL COLLOQUY (SEPC) OCTOBER 20, 2018 AT UNF

Local Organizers: Cliff Ross and Dale Casamatta

It is with great pleasure we announce the 40th Annual SEPC will be held October 20th at the University of North Florida. Our keynote speaker will be Brian LaPointe (Florida Atlantic University, Harbor Branch) who will be discussing issues relating to harmful algal blooms and eutrophication in Florida.

Registration: Registration for professionals is \$50.00 and \$30.00 for under-/graduate students and post-docs. Registration will cover morning and afternoon coffee/snack breaks, and catered lunch and dinner Saturday. There may even be a pony. Vegetarian options will be made available; if you have other dietary restrictions please contact us in advance for accommodations. Refreshments will be served during the poster session, which will precede dinner on Saturday evening

Accommodations: We have a variety of housing options close to campus, and shall send out more detailed information in a subsequent email (we are working on some group discounts).

2018 SEPC REGISTRATION INFORMATION/FORM

Please register by **Wednesday 10 October** or earlier

Name:

Professional address:

Email address:

I am a: Professional or Graduate/undergraduate/Post-doc

I will be presenting a: Poster or Oral presentation

Your Title:

Please return the registration form as an attachment via email to dcasamat@unf.edu and/or by post to the address below. Please make checks payable to UNF.

SEPC Registration
c/o Dale Casamatta
Department of Biology
1 UNF Drive
University of North Florida
Jacksonville, FL 32224

EMPLOYMENT and FUNDING

1 [Assistant Professor of Evolutionary Biology, San Francisco State, San Francisco, CA](#)

- a The Department of Biology at San Francisco State University offers an exciting opportunity for a Tenure-Track Assistant Professor position in Evolutionary Biology beginning August 2019. We seek a colleague who conducts research on evolutionary processes in natural populations (especially non-model organisms). We are particularly interested in researchers who integrate their field and/or laboratory work with mathematical modeling or with conservation issues such as climate change, disease, urbanization, or biodiversity.

2 [Tenure-Track Assistant Professor of Biological Oceanography, CSU Monterey Bay, Monterey, CA](#)

- a We seek applicants with a demonstrated commitment to teaching, and with interdisciplinary training in fisheries, population modeling, and/or oceanography. Ideal applicants have a background studying processes driving the distribution, abundance, migrations, and recruitment of marine species in the context of the variability of their abiotic and biotic environment. Applicants who use an array of techniques to answer multidisciplinary questions related to fisheries and climate variability are especially encouraged to apply.

3 [Assistant Professor, Marine Biology, Department of Biological Sciences, San José State University, San Jose, CA](#)

- a We seek broadly trained candidates that utilize cutting edge field and laboratory techniques to address questions about the biology of marine organisms and/or communities. MEL Outstanding Postdoctoral Fellowship Program



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NEW BOOK TITLES



Balogh International - New Spring Books #1

Bibliotheca Diatomologica, Band 66. *Amphora* and *Halamphora* from coastal and inland waters of the United States and Japan. Joshua G. Stepanek & Patrick J. Kociolek. 2018. ISBN: 978-3-443-57057-6. 260 pp., 1 table, 78 plates. Paperback. \$194.60

The authors of this volume study and describe the valve morphology of 108 taxa, representing 75 distinct species, in the genera *Amphora* and *Halamphora* from aquatic environments in the United States and Japan. *Amphora* Ehrenberg ex Kützing and *Halamphora* (Cleve) Levkov are taxonomically diverse genera of raphid diatoms. In addition to being species rich, their ecology is equally diverse, with representatives of the genera present in coastal and inland waters from the tropics to the arctic. Of the 75 species, nearly one-half of them (33) are described as new, including 4 from the genus *Amphora* and 29 from the genus *Halamphora*. Eight species are transferred from *Amphora* to *Halamphora* and new combinations proposed. All taxa considered herein have been cultured, and 4 genes (the nuclear encoded 18S and 28S rDNA and the chloroplast encoded *rbcl* and *psbC* genes) have been sequenced for each. This combination of morphological and molecular data lays an important foundation for future research of the taxonomy, ecology and systematics of the *Amphora* and *Halamphora* floras of coastal and inland waters.

Marine Algal Bloom: Characteristics, Causes and Climate Change Impacts. Santosh Kumar Sarkar. 2018. ISBN: 978-981-10-8260-3. 172 pp., 45 illustrations, 40 in color. Hardcover. \$139.99

The book discusses the occurrence of harmful algal blooms (HABs) caused by the dinoflagellates of the genus *Alexandrium* and *Karenia*, or diatoms of the genus *Pseudo-nitzschia*, which have large and varied impacts on marine ecosystems (such as large-scale marine mortality events that have been associated with various types of shellfish poisonings) depending on the species involved, the environment where they are found, and the mechanism by which they exert negative effects. HABs represent a major environmental problem in all regions of the U.S., and their occurrence is on the rise due to increased nutrient pollution. HABs have severe impacts on human health, aquatic ecosystems, and the economy. Such blooms, known colloquially as red tides due to their red or brown hues, are increasing in frequency and magnitude worldwide as a result of changes in oceanic climate, increased coastal eutrophication and enhanced long-distance dispersal in ballast water. As such, the book offers an in-depth account of the complex biological, chemical and physical interactions of the algal blooms (both innocuous and harmful ones). It also discusses the highly topical issue of the impact of global climate change on the frequency and severity of HABs in the context of alterations in temperature, stratification, light and ocean acidification.

From KOELTZ BOTANICAL BOOKS

Turland, N. J., J. H. Wiersema, F. R. Barrie, W. Greuter, D. L. Hawksworth, P. S. Herendeen, S. Knapp, W.-H. Kusber, D.-Z. Li, K. Marhold, T. W. May, J. McNeill, A. M. Monro, J. Prado, M. J. Price and G. F. Smith

International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code). 2018. (Regnum Vegetabile, 159). XXXVIII, 254 p. gr8vo. Hardcover. EUR 58.00 (ISBN 978-3-946583-16-5)

PREFACE: The rules that govern the scientific naming of algae, fungi, and plants are revised at the Nomenclature Section of an International Botanical Congress (IBC). This edition of the International Code of Nomenclature for algae, fungi, and plants embodies the decisions of the XIX IBC, which took place in Shenzhen, China in July, 2017. This Shenzhen Code supersedes the Melbourne Code (McNeill & al. in Regnum Veg. 154. 2012), published six years ago after the XVIII IBC in Melbourne, Australia, and like its five predecessors, it is written entirely in (British) English. The Melbourne Code was translated into Chinese, French, Italian, Japanese, Korean, Portuguese, Spanish, and Turkish; it is anticipated, that the Shenzhen Code, too, will become available in several languages. In questions about the meaning of provisions in translated editions of this Code, the English edition is definitive.

Stepanek, Joshua G. and Patrick J. Kocielek: *Amphora* and *Halamphora* from coastal and inland waters of the United States and Japan. 2018. (Bibliotheca Diatomologica, 66). 78 plates. 1 tab. 260 p. Paper bd. EUR 129.00 (Approx. US\$ 150.00)

Description of the valve morphology of 108 diatom taxa, representing 75 distinct species, in the genera *Amphora* and *Halamphora* from aquatic environments in the United States and Japan. *Amphora* Ehrenberg ex Kützing and *Halamphora* (Cleve) Levkov are taxonomically diverse genera of raphid diatoms. In addition to being species rich, their ecology is equally diverse, with representatives of the genera present in coastal and inland waters from the tropics to the arctic. Of the 75 species, nearly one-half of them (33) are described as new, including 4 from the genus *Amphora* and 29 from the genus *Halamphora*. Eight species are transferred from *Amphora* to *Halamphora* and new combinations proposed. All taxa considered herein have been cultured, and 4 genes (the nuclear encoded 18S and 28S rDNA and the chloroplast encoded *rbcl* and *psbC* genes) have been sequenced for each. This combination of morphological and molecular data lays an important foundation for future research of the taxonomy, ecology and systematics of the *Amphora* and *Halamphora* floras of coastal and inland waters.

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This Guide to the Identification of Harmful Microalgae in the Gulf of Mexico was developed for analysts and managers world-wide involved in marine HAB monitoring, assessment and forecasting. Most of these programs are tied to public health or marine resource health and assessment, e.g., shellfish harvesting, shellfish and fish aquaculture, and finfish or marine mammal population assessments. The Guide is the result of two initial grants from the Environmental Protection Agency's Gulf of Mexico Program and with cooperation from the University of South Florida, Florida Institute of Oceanography, Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute, Universidad Autónoma Metropolitana, Unidad Iztapalapa Ciudad de México and private funds. It is available via a free download from <http://myfwc.com/research/redtide/research/scientific-products/>.

Guide to the Identification of
**HARMFUL
MICROALGAE**
in the Gulf of Mexico

Volume I: Taxonomy



Karen A. Steidinger & Maria Esther Meave del Castillo
Editors

There are two volumes divided into 10 chapters and two appendices. Volume I: Taxonomy has four chapters. The first chapter is an introduction to the training programs that were developed for Gulf of Mexico Mexican public health officials (Allen). Following that introductory chapter are three chapters on microscopic identification of diatoms (Meave and Zamudio), dinoflagellates (Steidinger) and rhabdophytes (Tomas). Volume II: Methods & Approaches contains chapters five (V) through 10 (X). Chapter five is water column sampling strategies (Christman and Steidinger) while chapter six is how to treat and quantify those water samples (Steidinger and Christman). Chapter seven is on benthic dinoflagellate sampling (Tester and Kibler) and chapter eight is on a rapid method for sampling of dinoflagellate resting cysts (Williams). The last two chapters are on remote sensing as a HAB tool (Cannizzaro, Soto, and Hu) and on approaches to public outreach (Brown).

RESOURCES

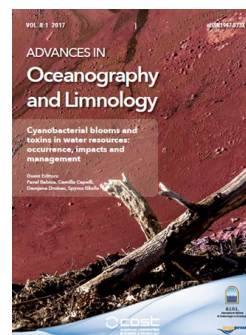
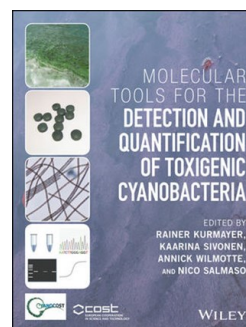
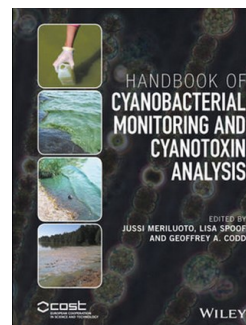
CYANOCOST: International network for toxic cyanobacteria and cyanotoxins in water resources (www.cyanocost.net)

CYANOCOST is an international network of experts and stakeholders, aiming to increase, disseminate and harmonize capabilities across Europe for the risk management of cyanobacteria and cyanotoxins in water bodies, by establishing strong links between academia, authorities, industry and citizens. The network was established and funded as a **COST Action (ES 1105)** through the years 2012-2016. More than 250 individuals from 35 countries have participated in CYANOCOST activities, a good number of them being early career researchers.

Activities of CYANOCOST include organization and support of conferences, workshops and training schools, short-term scientific missions, joint research collaborations and publication of books and research papers. Products and outcomes of the network, among others, include:

- **Handbook of Cyanobacterial Monitoring and Cyanotoxin Analysis** (2017), edited by Jussi Meriluoto, Lisa Spoof and Geoffrey Codd. Wiley ISBN: [978-1-119-06876-1](https://doi.org/10.1002/9781119068761).
- **Molecular Tools for the Detection and Quantification of Toxigenic Cyanobacteria** (2017), edited by Rainer Kurmayer, Kaarina Sivonen, Annick Wilmotte and Nico Salmaso. Wiley ISBN: [978-1-119-33210-7](https://doi.org/10.1002/9781119332107).
- Special issue “**Cyanobacterial blooms. Ecology, prevention, mitigation and control**”, Issue Editors: Petra Visser, Bastiaan Willem Ibelings, Jutta Fastner, Myriam Bormans, Bastiaan W. Ibelings. [Aquatic Ecology, Volume 50, Issue 3, 2016](https://doi.org/10.1007/978-94-007-5000-0_3), Springer.
- Special issue “**Cyanobacterial blooms and toxins in water resources: occurrence, impacts and management**”. Guest Editors: Pavel Babica, Camilla Capelli, Damjana Drobac, Spyros Gkelis. [Advances in Oceanography and Limnology Volume 8, Issue 1, 2016](https://doi.org/10.1007/978-94-007-5000-0_1), Pagepress.
- Organization of a **collaborative workshop on BMAA analysis** with results published by Faassen, et al. (2016). A Collaborative Evaluation of LC-MS/MS Based Methods for BMAA Analysis: Soluble Bound BMAA Found to Be an Important Fraction. *Marine Drugs*, 14(3), 45. [http://dx.doi.org/10.3390/md14030045](https://doi.org/10.3390/md14030045).
- Support of the **first European multi-lake survey of cyanotoxins** that was published by Mantzouki et al. (2018). Temperature Effects Explain Continental Scale Distribution of Cyanobacterial Toxins. *Toxins*, 10(4), 156; <https://doi.org/10.3390/toxins10040156>.
- **More than 200 published items** acknowledging CYANOCOST (listed in the “Publications” page of the CYANOCOST website).
- **37 short-term scientific missions** successfully completed, most of them by early-stage researchers that were hosted in a participating laboratory.

At present, CYANOCOST serves as a focal point for dissemination and communication of research, training and developments in the field of toxic cyanobacteria management. This is done through a dedicated website, www.cyanocost.net and social media (twitter and facebook pages) that have more than 1400 followers. The network also publishes a bimonthly newsletter, “**CYANOnews**” that is available online and through free-subscriptions from the “Contact” page of the website. Further to virtual communication, the network frequently re-unites, as there is a wide participation of members in international conferences, such as the forthcoming [ICHA2018](https://doi.org/10.1007/978-94-007-5000-0) (Nantes, 21-26 October 2018) and [ICTC11](https://doi.org/10.1007/978-94-007-5000-0) (Krakow, 5-10 May 2019).





**Submit your contributions to the next
Phycological Newsletter by January 15, 2019**

We also welcome your announcements regarding field courses, workshops, meetings, job opportunities, graduate student positions and other algal information throughout the year to add to the PSA webpage:
Please forward this information to

Jeffrey Morris
evolve@uab.edu

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