Summer/Fall 2022 Volume 58 Number 2 September 7, 2022

PHYCOLOGICAL NEWSLETTER

MESSAGE FROM THE PRESIDENT

Dear Members,

PSA President Deborah Robertson

It was wonderful to see many of you in person at the 76th annual PSA meeting held in conjunction with the Joint Aquatic Sciences Meeting (JASM 2022) in Grand Rapids Michigan (May 14-20). JASM brings together members of the American Fisheries Society, Association for the Sciences of Limnology and Oceanography, Coastal and Estuarine Research Federation, Freshwater Mollusk Conservation Society, International Association for Great Lakes Research, North American Lake Management Society, Society for Freshwater Science, Society for Wetlands Scientists, and the PSA. After a two-year hiatus, it was great to see fellow algal enthusiasts and to engage in spontaneous conversations. There were several sessions sponsored by the PSA, and algal research was prominent throughout the meeting sessions. Many thanks to our indefatigable Program Director, **Schonna Manning**, for her dedicated organizational work prior to the meeting, making sure that algae were front and center, and ensuring things ran smoothly during the meeting.

JASM ran in a hybrid format, allowing virtual and non-virtual attendance. Many thanks to the in-person speakers who provided recorded talks in addition to their live presentation. While designed primarily for those who were unable to attend in person, I found this format beneficial for a meeting with multiple concurrent sessions. There was no need to run from room to room; I was able to view talks that were scheduled simultaneously, and I have enjoyed being able to revisit talks, as they

Table of Contents

remain available for six months following the meeting. The past few years have provided numerous opportunities to explore different models for scientific conferences and these experiences will help scientific societies think carefully and creatively about sustainable and inclusive models for future meetings. On that note, planning for **the 2023 PSA annual meeting** is underway. The meeting will be held in **Providence Rhode Island June 24-30**.

As JASM was a large, multi-society meeting, PSA awards were presented at the business meeting and prior to the always popular auction. This year's **Bold Award Recipient** for best student presentation went to **Dr. Sabrina Heiser (University of Alabama at Birmingham)**. Sabrina also served as our student representative at JASM and I thank her for all the work she did to create a safe, welcoming, and fun environment for our student members. **Danielle Hatt (Florida International University) received the Lewin Award** for the best student poster. **The 2022 Norma J. Lang Fellowship** was awarded to **Dr. Mohammad 'Monir' Moniruzzaman (Rosenstiel School of Marine and Atmospheric Science)**.

We continue to review our diversity, equity, and inclusion practices and policies as they pertain to many aspects of our work as a scientific society, including, but not limited to, our annual meeting, experiences of our members, awards we grant, and our publishing practices. Last year the membership approved the formation of the **Inclusivity, Diversity, Equity, Access (IDEA) committee** with the chair, currently **Robin Kodner**, serving as a member the Executive Committee. Working with other leaders of the Consortium of Aquatic Science Societies (CASS), Robin secured NSF funding for a workshop for society leaders at JASM 2022. Conversations during the workshop were informative and educational as the CASS members differ in size, support different activities, and are at different points in their development of IDEA initiatives. This work will continue through PSA's involvement with ACCESS+ (Amplifying the Alliance to Catalyze Change for Equity in STEM Success). ACCESS+, a NSF funded program, helps STEM societies identify organizational strengths and opportunities and create strategic actions plans. The PSA is one of 14 scientific societies that are part of this year's ACCESS+ cohort. While our work is in the initial phase, I look forward to our continued progress

Table of Contents

Follow PSA on Twitter!
@PSAAlgae

ensuring the PSA continues as an inclusive society that supports the work of diverse and talented scientists advancing algal research.

We have several members of the Executive Committee (EC) who will be finishing their terms this year. **Morgan Vis** will be completing her term as Chair of Board of Trustees. Morgan has been working on strategies to maintain AlgaeBase, a critical resource for many phycologists and is of course, our PSA auctioneer extraordinaire. **Eric Linton** is finishing his presidential term this year as Past-President. Eric has been our main contact person with CASS, which continues to be an avenue for PSA engagement with environmental issues and legislation. **Maggie Amsler** and **Jeff Morris** are leaving the EC after serving two terms as Membership Director and Communication Director, respectively. Maggie and Jeff have been very involved in PSA's transition to the use of Wild Apricot as a platform for PSA members and membership activities, such as hosting our recent election. I thank all three for their dedication and efforts on behalf of the society.

It is my pleasure to share the 2022 election results. **Chuck Amsler** was approved as the chair of the Board of Trustees. **Juliet Brodie** is our new President-Elect. **Stacy Krueger-Hadfield** will serve as the Communication Director and **Karolina Fučíková** is our new membership director. I thank everyone who agreed to run for these positions. Also, a big shout-out and thank you for the members of the society serving on our various committees. Your work reviewing grants, books, letters of nomination, IDEA initiatives, etc. is essential to the success of the society, and I thank you. I encourage all interested members to contact me to become involved with the PSA by working on one of our committees or running for an elected position.

I thank you for your support in my role as President and I look forward to our continued work together.

With regards,

Deb

PSA NAMES 2022 NORMA J. LANG FELLOW: MOHAMMAD MONIRUZZAMAN

Congratulations to **Dr. Mohammad "Monir" Moniruzzaman** (University of Miami's Rosenstiel School of Marine and Atmospheric Science) who was awarded the 2022 Norma J. Lang Early Career Fellowship. Dr. Moniruzzaman will receive up to $10,000 to support his research project entitled **"Impact of Endogenous Giant Viruses on Genome Evolution of the Model Green Alga *Chlamydomonas reinhardtii*"**. Dr. Moniruzzaman will also receive $1000 every year of his three-year term as a Lang Fellow to attend the annual PSA meeting.

Dr. Norma J. Lang was a former PSA president and an internationally recognized phycologist who made many contributions to algal research and education over her illustrious career. To learn more about the Norma J. Lang Early Career Fellowship, visit the following PSA webpage: https://www.psaalgae.org/norma-j-lang-fellowships/

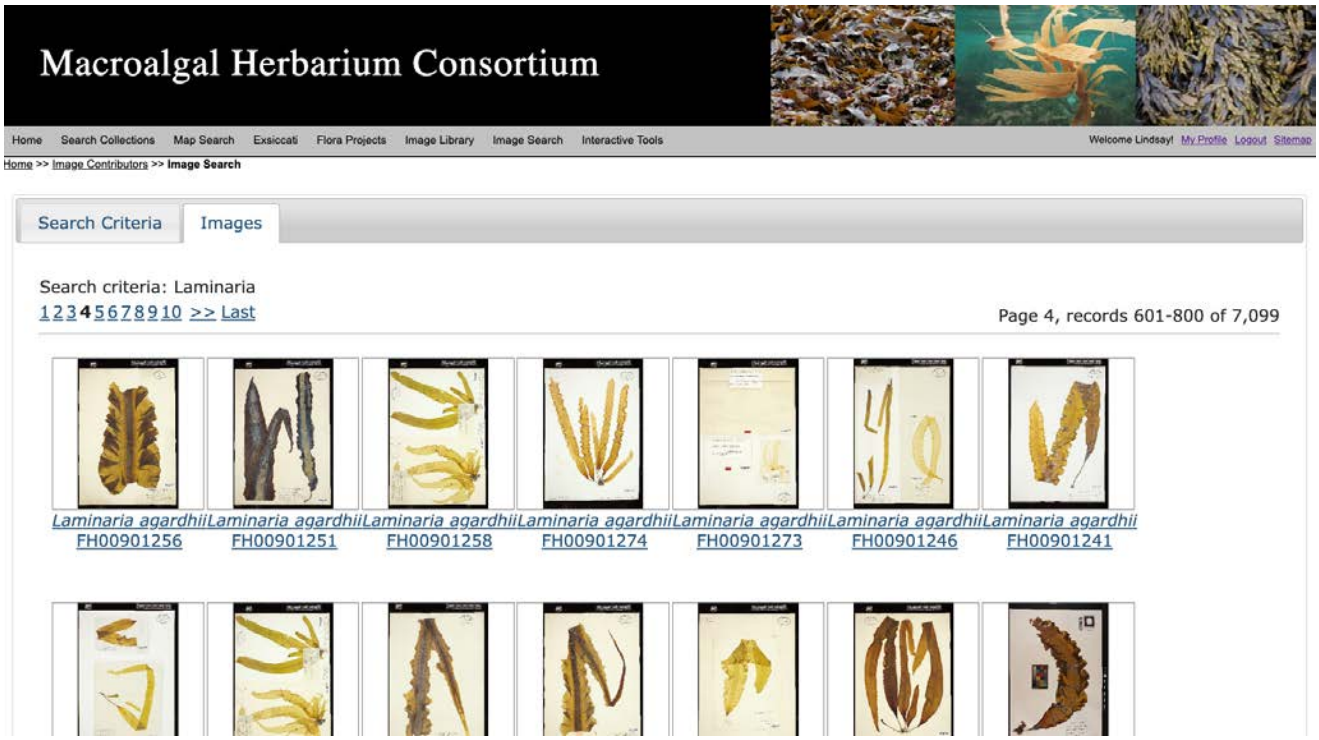
PSA now accepts donations through Paypal.
Please consider a donation to support PSA students and their research!
http://www.psaalgae.org/endowment-donations

A Decade of Success for the Macroalgae Portal– What's Next?

With over 400 users, many members of the Phycological Society are likely familiar with the Macroalgae Portal (macroalgae.org), which has served as the central repository for the Macroalgal Herbarium Consortium since 2013. As one of the original Thematic Collections Networks (TCNs) funded by the US National Science Foundation (NSF Award #1304924 and others), the consortium set out to catalyze phycological research by digitizing major macroalgal collections in the United States. Key leaders in the portal's inception included the University of New Hampshire (led by PI, Dr. Christopher Neefus) and collaborators from University of California, University of Michigan, University of North Carolina, University of Washington, and the New York Botanical Garden. Nearly ten years, 50+ collections, 290k views, 862k records later, the TCN's legacy lives on through its contributions to the portal and phycological research.

While funding for this TCN ended in 2019, the Macroalgae Portal continues to play a critical role in expanding the known distribution of various algal species in time and space. Publications citing data from the portal have ranged from short descriptive works to broader, more synthetic ecological analyses disseminated in high impact journals. A selection of recent publications that cite specimens from the portal include:

- **Bringloe et al. (2022, *Global Change Biology*)** and **Bringloe, Verbruggen, & Saunders (2020, *PNAS*)** used occurrences of *Laminaria solidungula* and *Odonthalia dentata* from the portal in their assessment of Arctic marine forests in the context of global climate change (view the dataset on macroalgae.org).
- **Schneider, Peterson, & Saunders (2020, *Phycologia*)** assessed historic collections of Solieriaceae from Bermuda documented in the portal to enhance the the description of a new species of red algae, *Tepoztequiella muriamans* (see paratype MICH 641029, UM Herbarium Data Group, IPT Admin L, 2022).
- **Assis et al. (2020a, *Scientific Data*)** compiled and normalized over 2 million occurrence records of brown algae and seagrasses, including a large number of records from the Macroalgae Portal (see Assis et al., 2020b for the complete dataset).
- **O'Brien, Neefus, & Dijkstra (2019, 2022)** used the maximum entropy ("MaxEnt") method to model the potential spread of invasive algal species using historical occurrence records from the portal.
- **Karol & Sleith (2017, *Journal of Phycology*)** located the oldest vouchered observation of *Nitellopsis obtusa*, an invasive green alga collected from the St. Lawrence Seaway near Montréal that is now widespread in the Great Lakes region (see NY 02318193, Ramirez et al., 2022).
- **Melton, García-Soto, & López-Bautista (2016, *Algas*)** extended the distribution of the tropical-subtropical species of green algae to the Caribbean with a new record of *Ulva ohnoi*, now vouchered in the University of Alabama's herbarium (see UNA00072658).



Financial support for the Macroalgae Portal concluded with the TCN. Yet, the portal lives on, and in April 2022, it was transferred to servers at Arizona State University (ASU) for co-administration between the University of New Hampshire and iDigBio's Symbiota Support Hub. This transfer enables the Support Hub, based at ASU, to better assist the portal community with technical requests and increases their capacity to contribute to future portal developments. As numerous collections documented in the portal form the foundation for many phycological studies, this move to sustain the portal was crucial, and clearly aligns with the Phycological Society's mission "to promote the advancement of Phycology and to foster phycological research".

Because the Macroalgae Portal's research and teaching potential will only increase as collections are added and existing records are refined, the Symbiota Support Hub has chosen to work with this community during an upcoming Portal Advancement Campaign. This month-long webinar series is designed to increase the accessibility of the portal's collections by refreshing existing datasets, adding new collections, and empowering the community to sustain its digitization activities. If you manage an algal collection, please consider participating in the campaign this August (register here). Campaign documentation will also be shared on the Support Hub's website for asynchronous viewing. If you are aware of collections that have yet to join the portal, but could be added–regardless of their digitization status–please let us know. The Support Hub is eager to engage with the macroalgae community through the portal campaign and beyond.

Visit the Macroalgae Portal: https://macroalgae.org/portal/
Learn more about Symbiota Portal Campaigns: https://symbiota.org/portal-advancement-campaigns/

Works Cited

Assis, J., Fragkopoulou, E., Frade, D., Neiva, J., Oliveira, A., Abecasis, D., Faugeron, S., & Serrão, E. A. (2020a). A fine-tuned global distribution dataset of marine forests. *Scientific Data*, *7*(1), 119. https://doi.org/10.1038/s41597-020-0459-x

Assis, J., Fragkopoulou, E., Frade, D., Neiva, J., Oliveira, A., Abecasis, D., Faugeron, S., & A. Serrão, E. (2020b). A fine-tuned global distribution dataset of marine forests (Version1). figshare. https://doi.org/10.6084/m9.figshare.7854767.v1

Bringloe, T. T., Wilkinson, D. P., Goldsmit, J., Savoie, A. M., Filbee-Dexter, K., Macgregor, K. A., Howland, K. L., McKindsey, C. W., & Verbruggen, H. (2022). Arctic marine forest distribution models showcase potentially severe habitat losses for cryophilic species under climate change. *Global Change Biology*, *28*(11), 3711–3727. https://doi.org/10.1111/gcb.16142

Bringloe, T. T., Verbruggen, H., & Saunders, G. W. (2020). Unique biodiversity in Arctic marine forests is shaped by diverse recolonization pathways and far northern glacial refugia. *Proceedings of the National Academy of Sciences*, *117*(36), 22590–22596. https://doi.org/10.1073/pnas.2002753117

Karol, K. G., & Sleith, R. S. (2017). Discovery of the oldest record of Nitellopsis obtusa (Charophyceae, Charophyta) in North America. *Journal of Phycology*, *53*(5), 1106–1108. https://doi.org/10.1111/jpy.12557

Melton, J. T., García-Soto, G. C., & López-Bautista, J. M. (2016). A new record of the bloom-forming green algal species Ulva ohnoi (Ulvales, Chlorophyta) in the Caribbean Sea. *Algas*, *51*, 62–64.

Melton, J. T., García-Soto, G. C., & López-Bautista, J. M. (2016). A new record of the bloom-forming green algal species Ulva ohnoi (Ulvales, Chlorophyta) in the Caribbean Sea. *Algas*, *51*, 62–64. http://www.sefalgas.org/images/pdf/boletines/ALGAS51.pdf

O'Brien, B., Neefus, C., & Dijkstra, J. (2019). *Global domination: Understanding the spread of two invasive seaweeds using habitat suitability models*. iDigBio's 3rd Annual Digital Data Conference, New Haven. https://www.idigbio.org/wiki/images/d/d3/IB_OBrien.pdf

O'Brien, B., Neefus, C., & Dijkstra, J. (2022). *Biogeography and invasion potential of five invasive seaweeds under projected ocean warming.* 50th Annual Benthic Ecology Meeting, Portsmouth.

Ramirez J, Watson K, McMillin L, Gjieli E (2022). The New York Botanical Garden Herbarium (NY). Version 1.47. The New York Botanical Garden. Occurrence dataset https://doi.org/10.15468/6e8nje accessed via GBIF.org on 2022-06-21. https://www.gbif.org/occurrence/1930526116

Schneider, C. W., Peterson, E. S., & Saunders, G. W. (2020). Two new species of Solieriaceae (Rhodophyta, Gigartinales) from the euphotic and mesophotic zones off Bermuda, *Meristotheca odontoloma* and *Tepoztequiella muriamans*. *Phycologia*, *59*(2), 177–185. https://doi.org/10.1080/00318884.2020.1719326

The Phycological Society of America, Inc. Bylaws. (2019, June 12). Phycological Society of America. https://www.psaalgae.org/society-bylaws

UM Herbarium Data Group, IPT Admin L (2022). University of Michigan Herbarium. Version 1.41. University of Michigan Herbarium. Occurrence dataset https://doi.org/10.15468/nl8bvi accessed via GBIF.org on 2022-06-21. https://www.gbif.org/occurrence/1988631087

Grand Rapids or bust!

by Peter Siver

After two years of "hibernating" at home (or close to it), I was excited to finally be able to attend the PSA meeting held last May in Grand Rapids in person. After all, for me Zoom has grown old and I wanted to interact with all of my phycological friends. Of course, this meant flying once again and this time on Delta Airlines.

I was flying out of Hartford, CT, so forget about a non-stop flight all the way to Grand Rapids. Instead it was Hartford to Detroit to Grand Rapids. I booked the earliest flight out of Hartford on Sunday, something I always used to try to do because early morning flights generally did not get delayed. Well, at least that used to be the case.

It's Sunday morning and I am off – the hour ride to the airport, the shuttle from the parking lot, checking my bag, getting through security and reaching my Gate went so smooth I had a good 90 minutes to blow. What does one do to kill time in the thriving Hartford airport you may ask? Well, of course, sip slowly on your Duncan Donuts ice coffee and wait. Over an hour passed and then I felt the first tremor of the day when the announcement came that we would have a short delay. I wondered because our plane was already in place for boarding? Oh no, what about the pilot I thought, when down the hall came the crew. Once there was a pilot it was only a matter of time before we were in the air, flying high above Lakes Waramaug, Bantam, and Candlewood, some of my local collecting sites. Smooth sailing, all the way to the Motor City. Off the plane at Gate 37, and how lucky, my connecting flight to Grand Rapids, a city with three nicknames – Furniture City, River City, and my favorite, the Beer City – was in sight at Gate 35. I watched most people from the Hartford flight disappear, while others from around the country gravitated to Gate 35. I do find it interesting to check out the people who will essentially be my flying buddies. Some with children, some annoyingly taking multiple seats with huge carry on bags, some reading, and many on their cells. Everyone seemed pretty calm, which I guess made sense. After all, they mostly live and work in the Beer City, and maybe make fine furniture!

Then a nice calming voice reports, "Ladies and Gentlemen, we will be boarding in ten minutes." Super, I thought. I should be able to watch that NBA playoff game with a cold beer in the Beer City. Sitting near the window, I then noticed that there was no plane to board! Being an inquisitive phycologist (not a psychologist), I knew something was up. Then the next tremor, another stern voice announcing "the flight to Grand Rapids is canceled. Proceed to Gate 18 for instructions." What, how can they cancel a flight to the Beer City? I could see if it was Lansing, Ann Arbor, or even the Cherry Capital of the world, Traverse City, but the Beer City? Really?

The next part of my journey to get to my PSA destination was the most interesting. All of those calm people waiting to fly, mostly home to the Beer City, ramped it up and looked like the "thundering herd" heading to gate 18. I decided to let the "younger horses" take the lead and trample anyone in our way, and I simply trotted at my normal pace. A fellow came up along my side, his name was Gerson, and asked what gate we were supposed to go to. I told him Gate 18. We walked together, began a conversation, finally reached Gate 18 and

got in line. We were maybe 100 people from the front. Then the final tremor, the knockout blow, "There are no flights to Grand Rapids today or tomorrow morning." I thought, this can't be the case. Delta must know how important PSA is, right? There should be extra flights heading to PSA, because it's PSA!? Gerson had to get home (to aka the Beer City) as there was an important birthday party in his honor. I asked if there was a train or bus, and he said no. So, I asked if he wanted to rent a car and he immediately said yes. Seconds later, another guy eavesdropping behind us named Richard asked if he could join us. Like, why not? We headed to car rentals and specifically Avis. Shortly after we started our walk a young man named Andy, who I think noticed me from our flight from Hartford, anxiously asked what we were doing and just like that there were four of us.

"I told him that I had used algae to help solve multiple murder cases in the past, and that I had worked on one of the cases ... that ended up as one of the early episodes of Forensic Files. ***Phycology strikes again, twice in ten minutes!***

Once we had secured the rental, which Gerson took charge of as you could tell he was most anxious to get home, and got on the highway, we made more formal introductions. I said my name and that I was a phycologist heading to Grand Rapids for a meeting. "Phycologist? What is that?" asked Andy. Richard went next. He is a retired scientist now living in Florida and an expert in aquatic forensic sciences. Richard was going to the same conference as I, where he would be honored for his famous text on aquatic forensics. When I told the story to a group of friends, Becky Bixby asked if Richard's last name was Merritt, and I said yes. Becky said he was very well known and was a professor at MSU for many years. Young Andy went next and told us he was an anesthesiologist at a hospital in Grand Rapids. So, what about Gerson? Well, Gerson grew up in South America, eventually moved to the USA, got his PhD, and is now the President of a university in Grand Rapids called Cornerstone University. The event he could not miss was being sponsored by the university! The conversation picked up and the four of us did not stop chatting for several hours when we arrived at the airport in Grand Rapids (where Gerson and Andy's cars were). I eventually asked Richard if he knew a guy named Wayne Lord. He looked surprised and said they were good friends, and wanted to know how I knew him. I told him that I had used algae to help solve multiple murder cases in the past, and that I had worked on one of the cases with Wayne (who worked for the FBI) that ended up as one of the early episodes of Forensic Files. Phycology strikes again, twice in ten minutes. (I am convinced that none of these guys will ever confuse phycology with psychology ever again, not even in the halls of the Grand Rapids General hospital. By the way, the hospital is also named after a "DeVos," just like the conference center.) Richard was very interested in the cases I worked on and knew of the Forensic Files shows! Wow, two of us just trying to reach the Beer City on this Sunday afternoon both knew Wayne Lord. Gerson became more curious and asked if my field also included the tiny green things that can make a pond disgusting! I kiddingly said, no that was psychology! The conversation never stopped and it turns out Richard was part of a class

that was held in a town in Venezuela where Gerson had grown up. Andy was able to explain why the anesthesia I took years ago while in high school for an appendix operation resulted in me not being able to pee when I awoke. Richard said he now lived in a town in Florida (I forget which one), and Andy said he was just returning from vacation and had been in the same place. The conversation continued like this for two hours, bonding!

Once we reached the airport, we asked Gerson what we owed him, and he replied, "gentlemen, this was so much fun and I learned so much about many things that the ride is on him." He then said, "well he was on work so the university would be covering the bill." Andy then said he would take Richard and I downtown and drop us at the hotel. After all, it was only fifteen minutes out of his way. How lucky can one be when your flight is canceled? It only took two hours to become the four amigos (Fig. 1, from left to right: Gerson, Andy, Richard, Peter).

Peter A. Siver

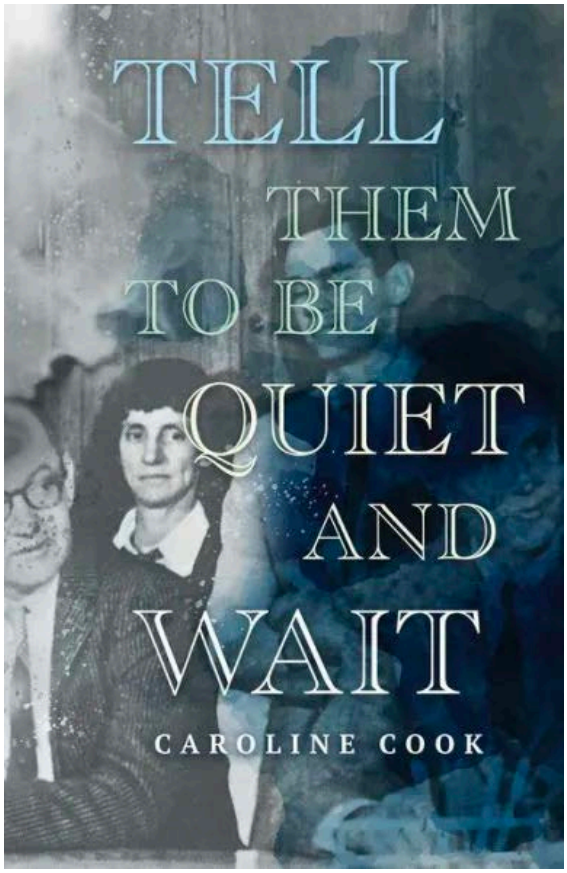
P.S. Some of you know my checked bag did not show up and apparently ended up in Houston before heading north. It arrived five days later the night before I left the Beer City. Amazingly, it cost nothing extra for my luggage to take such a long trip. I think that I should write a thank-you note to Delta.

Fig. 1: From left to right, Gerson, Andy, Richard, and Peter

Image from GrandRapidsStore.com – it comes in t-shirt form!

HISTORICAL CORNER:
Women in Phycology and the Life of Dr. Hannah Croasdale

Earlier this summer I was approached by Caroline Cook, who told me that she had written **a historical fiction novel based on the life of PSA's former president Dr. Hannah Croasdale**, founder of our Croasdale Fellowship. Cook began her research on Dr. Croasdale during her freshman summer at Dartmouth, in the college's Historical Accountability Fellowship Program. She worked with Dr. Croasdale's extensive archive to paint a portrait of the first female professor at Dartmouth, who started there in 1935 when the school was still all-male. Dr. Croasdale served as the President of the PSA in the 1960s, among many other accomplishments. Cook turned her research into a full-length historical novel, based on the life of Dr. Croasdale and other women like her at a fictional college in New Hampshire, juxtaposed with the life of a modern-day student at the same college. Dr. Croasdale's extensive publishing in and advancements in the art of teaching phycology made her worthy enough of a spotlight; the challenges she overcame as often the only woman in the room are a small part of her large career. Cook's debut novel, *Tell Them to Be Quiet and Wait,* meditates on the opportunities and challenges that academia uniquely faces. You can pre-order the novel (and make a small donation to the PSA at the same time) at this link: https://smile.amazon.com/Tell-Them-Be-Quiet-Wait/dp/1639885412/



The year is 1935, and Dr. Beverly Conner is overqualified for her job — and the only woman in sight.

When Beverly moves to rural New Hampshire to work at the all-male Marsden College to research algae, the other professors in the department are less than thrilled she's there. Over the next few decades, the world passes the small town by. The threat of war and the promise of progress could never permeate the hallowed halls of a college campus. Nothing seems to change at Marsden, even when Beverly makes a groundbreaking discovery. In 2015, Lena Rivera matriculates at the now co-ed Marsden, unknowingly following in Beverly's footsteps, but somehow still alone.

Inspired by the true story of Dr. Hannah Croasdale, *Tell Them to Be Quiet and Wait* considers how things change — or stay the same — for women, for academia, and for science, against the backdrop of a century of American history.

Request for Assistance on a NEW BOOK:

From Science Nerd to Being Cool: How Phycologists Became Phycologists

Dear Phycological Colleagues:

I am reaching out to you for an assist with my current book project. I have received a contract with Academic Press to produce a book on How Phycologists Became Phycologists. This may sound like a mundane effort, but if you think about it, almost no one wakes up at 5 years old and declares, "I want to study algae!". Most young people want to be astronauts, ballerinas, football or rock n roll stars. I am asking you all, young and not so young to send along a personal recounting of your falling in love with algae. Micro or macroalgae, size doesn't matter, please send along 1 - 10 pages on how you came to dedicate your life to algae. Please include your name, position, what you have focused as your life's work and why. Most importantly, what was the pathway that led you to algae? It could have been a slow methodical path, serendipity, or fates brought you in. Please make it personal, please make it real. Include photos, anecdotes, and any style of recounting your journey into the algal world.

The Book idea started years ago when a colleague asked me how I got interested in algae and my response was Rugby…… not an easy connection but the basis of my professional life and the start for this new book. If you want to know "the rest of the story" you'll have to read the book.

I am hoping this publication will excite young people into the personal journeys we have all taken and highlight the diverse opportunities and histories that have brought us to the intriguing world of algae. Thank you all in advance for your generosity of time in putting together your stories. Please feel free to reach out to me for additional information.

Ira "Ike" Levine, Ph.D.
Professor, University of Southern Maine
President, Algae Foundation
ilevine@thealgaefoundation.org
207-754-6969

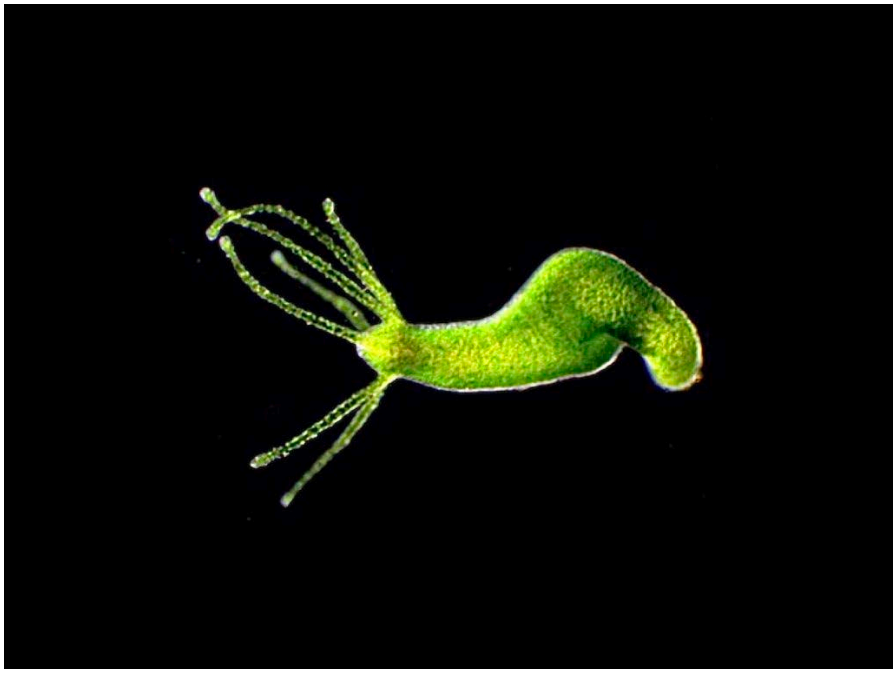
2022 Hilda Canter-Lund Algal Photography Contest Winners

adapted from an announcement by Martyn Kelly

This award was established by the British Phycological Society in recognition of Hilda Canter-Lund, whose stunning photographs will be known to many members. Her photomicrographs of freshwater algae combined high technical and aesthetic qualities whilst still capturing the quintessence of the organisms she was studying. The winner of the 2022 award was Julia van Etten for her micrograph of *Hydra*, and the second prize went to Lucie Novoveska for her photograph of frozen bubbles around *Ulva*.

Julia van Etten is a Ph.D. candidate in the Bhattacharya lab at Rutgers University (USA). She mainly studies the evolution of polyextremophily in the Cyanidiophyceae, an ancient group of red algae. Outside of the lab she spends her free time finding and photographing protists and other microscopic or small organisms for her multimedia project "Couch Microscopy", which has gained a large social media following and has been featured by many news outlets over the years. She is most passionate about communicating all aspects of algal biology to the public and loves to engage with other phycologists!

Luci Novoveska is a self-proclaimed algae nerd. She is passionate about applying her algae background in the biotechnology. Lucie earned her PhD from Dauphin Island Sea Lab (USA) in 2011 and since worked in 4 biotech companies in the USA and UK. Lucie is an associate editor for Journal of Applied Phycology, work group leader for EU COST action Ocean4Biotech and number one fan of Culture Collection of Algae and Protozoa (Oban). In her spare time, Lucie is a keen tennis player, she drives anything electric and enjoys making movies and getting people excited about phycology.



FIRST PRIZE: *Green With Algae*, Julia van Etten

This is an image of many organisms, the animal Hydra viridissima (a freshwater cnidarian) and thousands of symbiotic Chlorella vulgaris cells (a green alga) that give the animal its vibrant green color! More than that, the algae provide products of photosynthesis to the hydra to give it the energy to survive when prey is scarce. In exchange, the hydra provides the algae with a safe and stable environment for long periods of time. Many algae are part of symbioses that are vital to the function of communities and ecosystems. Although we can't see the individual algal cells in this photo, we can still see their impact. This image was taken with an Amscope T340B microscope and MU120 camera, at 20x total magnification, darkfield. The hydra itself was about 3mm long in this photo and at least twice that length when its tentacles were fully extended.

SECOND PRIZE: *Frozen Bubbles*, Lucie Novoveska

This is a photograph of a frozen rock pool by Dunstaffnage castle in Scotland. During our lunch break in February, we wandered around the beach and noticed that not only the rock pools are frozen but that there are bigger bubbles around oxygen-producing Ulva spp. The sudden freeze locked everything in place (including photosynthesis).

News from the PSA Board of Trustees

Hello PSA members,

I hope that all is well with you. The Board of Trustees (BOT) is a nine-member committee – **Steve Murray** (Fund manager), **Paul Gabrielson**, **Alison Sherwood**, **Michelle Wood** (BOT members), **Morgan Vis** (BOT chair), as well as **Deb Robertson** (PSA President), **Patrick Martone** (PSA VP), **Mike Gretz** (Treasurer) and **Heroen Verbruggen** (International VP). The BOT was very active early in the calendar year preparing for the PSA annual meeting in May. One of the primary functions of the BOT is to monitor the endowment and make recommendations to the Executive Committee on expenditures for the following year. When considering expenses, the BOT is focused on the future of the society and as such many of our endowment programs are targeted to Early Career Researchers (ECR) and Graduate Students. We recommended to the EC expenditures of $88,000 for next year (2023), which is similar to our current year distributions. The four endowment lines to highlight are as follows:

- Croasdale Fellowships (for students to attend field courses) - $9,000
- Commemorative Fund: GIAR (for students/ECR research) - $17,500
- Commemorative Fund: Lang (ECR fellowship) - $13,000
- Hoshaw Travel Awards (for students to attend PSA meeting) - $18,000

Please visit the PSA website for more information and deadlines for these programs (www.psaalgae.org/grants-and-fellowships); all student and ECR members are encouraged to apply. The many recipients of this years' awards are featured later in this newsletter. Our endowments are also used to fund PSA awards given annually or bi-annually including the Bold, Lewin, Tiffany, Prescott and Provasoli that you can read about in other parts of this newsletter and more details on the PSA website.

There are many ways to give to the PSA endowment including through our website (www.psaalgae.org) and to either donate items or buy items at our auction during the annual meeting. It was wonderful to be back in person this year with a silent and not so silent auction. Although we were short on time during the packed meeting agenda, we were not short on great donated auction items and people to find new homes for them. We raised over $2400 in just over an hour. Many thanks to everyone!

As many of you are aware, AlgaeBase (www.algaebase.org) is an invaluable resource to our phycological community and beyond. Members of the BOT work with Mike Guiry on the financial resources needed to keep not only the information current but also the code that makes it work. This year a portion of the financing of AlgaeBase is being provided by annual donations from the British Phycological Society, International Phycological Society, Japanese Phycological Society, Korean Phycological Society and the PSA. We will be continuing to work with Mike and other societies to sustain this unique global algal database of taxonomic and nomenclatural information.

An initiative started by Rick McCourt when he was BOT chair is a Legacy Society for PSA. We had a social hour in 2017 when we met at John Carroll University. We are planning another event at our upcoming annual meeting in Rhode Island next year. Please stay tuned for more details.

Lastly, I want to make sure everyone heard the news – Chuck Amsler will be our new BOT chair starting in January 2023. It has been a great honor and pleasure serving the PSA in this role, especially as your auctioneer (never thought I had it in me). I look forward to seeing everyone at future meetings and yes, I will be there with the coolest PSA stickers for all.

On behalf of the BOT,

Morgan Vis, BOT chair 2018-2022

A Message from the PSA Membership Director

My fellow members,

Effective 31 December 2022, I am stepping down as the PSA Membership Director. By vote of the membership, the MD torch passes to **Dr. Karolina Fučíková** in the new year. No doubt Karolina will keep membership glowing bright.

My two terms in office have been rewarding, particularly in being able to assist members with numerous concerns like renewal difficulties or online journal access. It has also been a pleasure to serve as member advocate on the PSA Executive Committee and a valuable experience working with the Member Specialists at Wiley. While the membership did not substantially grow on my watch, our phycological fold has remained more or less steady and strong.

I thank each of you for your loyalty to the society through your service and membership. My final official ask of you is that you continue to support PSA by renewing your membership for 2023. The renewal campaign begins (again, already!?) this October. Please renew early to ensure uninterrupted membership and journal access/delivery. Renewal/join rates remain the same as 2022, as do all the great membership perks. A few suggestions to consider:

- Share the joy of algae by sponsoring a fellow algal enthusiast.
- If someone else in your household is a phyco-phile sign on as joint members (two members for the price of one plus $5). Each member in a joint membership has full member rights (journal access, voting privilege, funding eligibility, meeting registration discounts, etc.).
- Early career members may want to consider making a single, one time only payment for a life-long PSA membership.
- Add details to your profile on the society managed member platform (Wild Apricot https://psoa.wildapricot.org/). Consider adding an algal-themed avator!

In closing, I thank you and wish you a phycologically fulfilling fall and an algal-rich 2023,

Maggie Amsler

PSA Annual Meeting 2022
May 14-20, Grand Rapids, Michigan

After two years of online meetings during the COVID-19 pandemic, the PSA finally was able to get together again in-person at the DeVos Center in Grand Rapids, Michigan in May 2022. The meeting was held jointly with the other societies of CASS (Consortium of Aquatic Sciences Societies), so it was a very large and diverse assemblage of scientists young and old. All photographs below were taken by Stacy Krueger-Hadfield.

View down the Grand River towards DeVos Place, the convention center, in which JASM was held

Deb Roberston, PSA President, recognizing out-going Membership Director, Maggie Amsler, for her service

Kirsten Müller, Journal of Phycology Editor-in-Chief, presenting the best student paper award to Danny Wolf via his advisor Morgan Vis for their paper "Stream algal biofilm community diversity along an acid mine drainage recovery gradient using multimarker metabarcoding" published in *Journal of Phycology* February 2020 (Vol. 56: 11-22). Danny was also a former Bold Award winner at the 2018 joint meeting of PSA and ISOP in Vancouver.

Left: Sabrina Heiser presenting her research "What drives the distribution of chemical defense diversity in a sessile macroalga?" at the Bold Award session. Right: Student Awards Committee Chair Matt Ashworth presents Sabrina with the Bold Award for 2022.

PSA Secretary Heather Spalding presents the Norma J. Lang Early Career Fellowship to 2022 Lang Fellow Mohammad Moniruzzaman .

Morgan Vis displays an always-popular Josie Iselin seaweed scarf at the PSA Auction

Recipients of the Ruth Hoshaw Student Travel Awards displaying the must-have fashion accessory of 2020-2022

PSA members from the Vis lab (Ohio University), Amsler, Krueger-Hadfield, and Morris labs (University of Alabama at Birmingham), Spalding lab (College of Charleston), and Fullerton lab (College of Charleston) celebrating being together again in person!

SAVE THE DATE! June 25-30, 2023

77th Annual Meeting of the PSA

Providence, Rhode Island

Join us in the heart of downtown Providence for your next phycological adventure! The PSA2023 meeting will convene – in-person – at the Graduate Providence, formerly the Biltmore, located within walking distance to numerous restaurants and local entertainment.

Graduate Providence
11 Dorrance Street
Providence, RI 02903
+1-401-421-0700

Feeling especially proactive? You may book your stay at the Graduate via the following link:

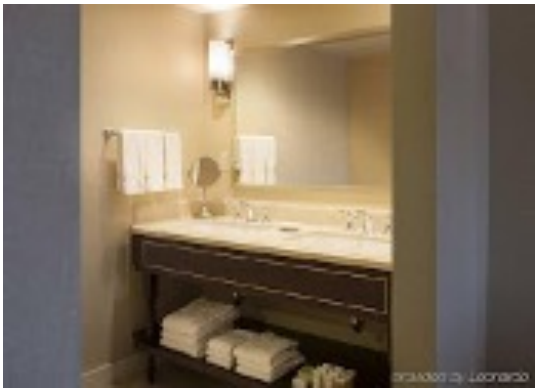
https://www.graduatehotels.com/providence/#/booking/step-1?group=2306PSAANN&arrive=6/25/2023&depart=6/29/2023

GROUP RESERVATION CODE: 2306PSAANN

PHONE: 401-421-0700, choose Option 1. Lines are open 24 hours a day, 7 days a week. Please use the group code or event name when speaking with the reservation agent.

IMPORTANT REMINDER – the cutoff date for booking your room is **May 26th, 2023**.

Rates are $175/night for a King Deluxe room with 1 king bed or a King Deluxe Junior Suite with 2 king beds! Parking is $25/night. Students, plan ahead and coordinate with Soren Schipper (seaweedsoren@gmail.com), PSA Student Member Representative, for potential room-sharing opportunities.



Lastly, thank you to **Dr. Chris Lane, PSA2023 Local Organizer**, for waiting three years so that we can finally meet in Providence! Stay tuned for weekend field trips, workshops, and special events as the program is developed.

We look forward to seeing you there!

Schonna R. Manning
Program Director

THE 2022 PSA AWARD OF EXCELLENCE

It is with great pleasure that we announce the 2022 recipient of the PSA Award of Excellence, Richard Wetherbee. Rick has worked as a teacher and researcher of algae for over 50 years, having served the discipline of phycology, the Phycological Society of America, and his many students with dedication, integrity and innovation.

Dr. Richard Wetherbee
2022 Award of Excellence Recipient

In his nomination letter, Bob Andersen points out, with corroboration from Geoffrey McFadden, Heroen Verbruggen, Michael Guiry and Susan Brawley, that Rick has worked broadly on an astonishingly diverse set of algal groups, from brown, red and green macroalgae, chlororachniophytes, cryptophytes, dino-flagellates, green algal flagellates, haptophytes, and many heterokonts-chrysophytes, diatoms, pelagophytes, phaeosacciophytes, phaeo-thamniophytes, raphidophytes and, the Chrysoparadoxophyceae, a class that Rick described. In fact, Rick has described 1 class, 1 order, 1 family, 11 genera and 26 species, with obviously sweeping contributions to algal taxonomy and systematics. Bob goes on to say, "…however, the techniques and data that generated his new contributions in those fields are among the products of his outstanding career in algal cell and molecular biology." Indeed, Rick Wetherbee has made vast contributions to the cell biology of algae, including a description of the process of flagellar maturation, understanding of the formation and deployment of scales, described the complex system responsible for spine-scale movement, and cell adhesion, diatom motility and biofilm formation, to name just a few. Rick Wetherbee's phycological research has earned him the coveted Provasoli Award an amazing three times over his storied career; in 1997, 2004 and 2020.

Rick has made significant contributions in service to the field of phycology. Rick has served as Associate Editor for the Journal of Phycology for 35 years, since 1987. He served as a member of the Award of Excellence Committee for several years (including as chair), and he has mentored and trained many students, including 14 outstanding PhD students, many of

whom are themselves leaders in the field of phycology. Per Bob Anderson, “Rick passed on his rigor and breadth of interests to these students in full measure.”

Susan Brawley summarized Rick's career with, “The field of phycology has been blessed with many excellent microscopists, but in pondering whether any other scientists may have contributed at the same level as Rick in elucidating the structure and development of so many different types of cells (brown algae; haptophytes; red algae; diatoms, synurophytes, pelagophytes, chrysoparadoxophytes, and other heterokonts; dinoflagellates; cryptophytes; green algae), habitats (freshwater and marine, benthic and planktonic, northern hemisphere and southern hemisphere), processes (adhesion, fertilization, motility, parasitism, secretion), and structures (bristles, coccoliths, flagella, pit plugs, scales, spines, valves), only two candidates come to my mind: Legendary cell biologist and phycologist Irene Manton FRS, FLS (1904-1988) and Jeremy Pickett-Heaps (1940-2021) FRS, FAS, PSA Award of Excellence, and a colleague of Rick’s at the University of Melbourne for ~ 30 years.

From Michael Guiry, “Rick has been a leading light in the world of tiny algae and their neighbors in the “protists". His work has been exact and comprehensive, but most particularly, innovative…”

And lastly, Heroen Verbruggen perhaps put it best with “I cannot think of anyone more deserving of a PSA Award of Excellence than Rick Wetherbee. He's a legend and inspiration.”

Respectfully submitted,

Rick Zechman
Award of Excellence Committee Chair

PROVASOLI AWARD

The Provasoli Award is given every year to recognize the best manuscript published in the Journal of Phycology. It honors Luigi Provasoli, the Journal's first editor. The 2022 Provasoli Award was given to:

Trevor Bringloe, Dani Zaparenkov, Sam Starko, William Grant, Christophe Veira, Hiroshi Kawai, Takeaki Hanyuda, Karen Filbee-Dexter, Anna Klimova, Tatyana Klochkova, Dorte Krause-Jensen, Birgit Olesen & Heroen Verbruggen. 2021. Whole-genome sequencing reveals forgotten lineages and recurrent hybridizations within the kelp genus Alaria (Phaeophyceae). J. Phycol. 57:1721-38.

First Row: Trevor Bringloe, Dani Zaparenkov, Sam Starko, William Grant
Second Row: Christophe Veira, Hiroshi Kawai, Karen Filbee-Dexter, Anna Klimova
Third Row: Tatyana Klochkova, Dorte Krause-Jensen, Birgit Olesen, Heroen Verbruggen
Not pictured: Takeaki Hanyuda

2022 OUTSTANDING STUDENT PAPER AWARD RECIPIENTS:

WINNER

Danny Wolf & Morgan Vis. 2020. Stream algal biofilm community diversity along an acid mine drainage recovery gradient using multimarker metabarcoding. *J. Phycol.* 56:11-22.

Danny Wolf

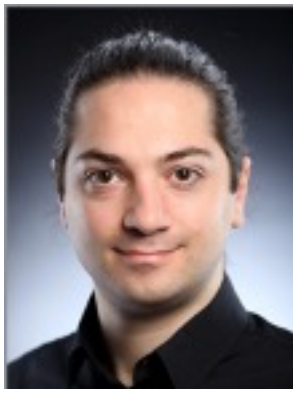
Morgan Vis

2022 OUTSTANDING STUDENT PAPER AWARD RECIPIENTS:

Honorable Mention

David Carrasco Flores, Markus Fricke, Valentin Wesp, Daniel Desiro, Anja Kniewasser, Martin Hölzer, Manja Marz & Maria Mittag. 2021. A marine *Chlamydomonas* sp. emerging as an algal model. *J. Phycol.* 57:54-69.





First Row: David Carrasco Flores, Markus Fricke, Valentin Wesp, Daniel Desiro
Second Row: Anja Kniewasser, Martin Hölzer, Majna Marz, Maria Mittag

BOLD AND LEWIN AWARDS

After two years, The Bold and Lewin Student Presentation competitions were held in person once again this May at the Joint Aquatic Sciences Meeting in Grand Rapids, MI. The pandemic has been a challenge for everyone, but the student members of PSA (and their advisors, of course!) have clearly done their best to power through the struggles and continue their phycological research. It was rewarding to interact directly with the students about their work again, unencumbered by internet network disruptions!

There were seven students participating in the Lewin Poster Award this year, competing for the $500 prize for the best poster presentation. After meeting with the competitors to discuss their posters, the judges decided that **Danielle Hatt** and her poster on **"Short-term Effects of Increased Temperature on the Growth and Photo-physiological Responses of Pelagic Sargassum (Phaeophyceae) Morphoptypes"** deserved the Lewin Award this year. Every judge commented on how much they enjoyed meeting with Danielle and were impressed with the ease at which she was able to break down and explain the various components and elements to her work. Danielle is a Ph.D. candidate in Dr. Justin Campbell's lab at Florida International University, where her interest in environmental effects on drifting Sargassum becomes more relevant with every tangled raft of thalli that piles up on the beaches of south Florida.

Danielle Hatt
Florida International University
2022 Lewin Award Recipient

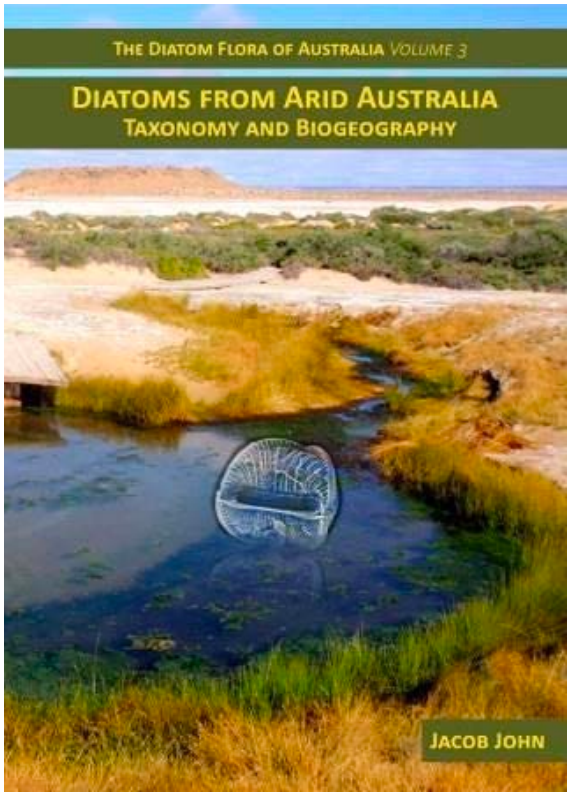
Sabrina Heiser, University of Alabama at Birmingham
2022 Bold Award Recipient

The Bold Award session featured three students this year, competing for the $1000 prize for the best student oral presentation, as well as special consideration for a featured article about their presented work in the Journal of Phycology. Predictably, it was a tough decision for the judges to pick the winner from three strong presentations, but **Sabrina Heiser** was this year's winner for her presentation **"What Drives the Distribution of Chemical Defense Diversity in a Sessile Macroalga?"** While the science of all three projects were strong and the presentations engaging, the judges felt Sabrina gave the most complete presentation of her work on chemical ecology in Antarctic seaweeds, laying out each question to be addressed and answering them in a clear, concise manner. Sabrina is finishing her Ph.D. in Dr. Charles Amsler's lab at the University of Alabama, Birmingham.

Once again, let me thank all of the student presenters in both sessions for sharing their research! And, of course, I have to thank the judges for their time and effort in evaluating the posters and presentations. I can't wait to see what the student researchers bring to the PSA Annual meeting in Providence, Rhode Island next year!

Matt Ashworth
University of Texas
Student Awards Committee Chair

The 2022 Prescott Award



The Gerald W. Prescott Award recognizes scholarly work in the form of a published book or monograph devoted to phycology. This year, the Prescott Award was presented to **Dr. Jacob John** in recognition of his book ***The Diatom Flora of Australia, Volume 3. Diatoms from Arid Australia: Taxonomy and Biogeography*** (2020, Koeltz Botanical Books, Schmitten-Oberreifenberg, Germany. 578 pp., 341 figs. ISBN: 978-3-946583-25-7).

The book describes the diatoms of arid regions of Australia (covering ca. 70% of the inland continent, thus a massive study area). Dr. John explores diatoms found in underrepresented habitats in arid regions thereby making a unique contribution to the study of diatom diversity and biogeography.

Please consider nominating a book for PSA's Prescott Award. We are currently seeking nominations for books (including e-books) or monographs written in English and published between 2021 and 2023. The aim is to present the award at the 2023 Phycological Society Meeting in Providence Rhode Island. Please send nominations to Craig Schneider (craig.schneider.1@trincoll.edu), chair of the Prescott Award Committee.

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 2023 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 package due:

January 31, 2023

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 2022 for nominees who were not selected in 2022 will automatically be reconsidered in 2023. Updates to nomination packages submitted in 2022 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 2022 will not automatically be reconsidered but completely new nomination packages for such candidates will receive full consideration.

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 Rick Zechman, Humboldt State University. All nomination materials should be electronic files submitted by e-mail to rick.zechman@humboldt.edu.

In order to receive full consideration for the award that will be made at the 2023 annual meeting of the PSA, the complete nomination package must be received by January 31, 2023.

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

Deadlines:
GIAR: November 1
Croasdale: Feb 1

The PSA Grant-in-Aid of Research program will be accepting applications due Nov. 1. This program supports graduate and postdoctoral research in any area of phycology. The Hannah T. Croasdale Fellowship deadline has been moved up to Feb. 1 to allow students to better plan for summer field courses. This program supports student attendance at phycology courses held at field stations. If you are unsure if your proposed course meets eligibility, please email Sophie McCoy well ahead of the deadline at sophie.mccoy@unc.edu. Some examples from the last few years include the Marine Botany course at Friday Harbor Labs, Ecology and Systematics of Diatoms or Ecology and Systematics of Algae held at Iowa Lakeside Lab, or similar.

PSA accepts donations through Paypal.

Please support the Croasdale Fellowship and other PSA Grants by following this link:

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

In Memoriam

Susan S. Kilham (1943-2022)

Distinguished diatom ecologist Dr. Susan Soltau Kilham passed away on April 12, 2022. Sue, as she was known by her many friends, had a long and highly significant career in phycological research and education and touched the lives of hundreds of students and colleagues at the University of Michigan and Drexel University in Philadelphia.

Born in 1943, Sue went to Eckerd College for her undergraduate work and to Duke University for graduate school, working with Dr. Orrin Pilkey. After receiving her PhD in Zoology and Oceanography in 1971, she embarked on a career in deep sea submersible work, doing research on deep sea clams. But before long she moved to the other hard-shelled creatures that were the focus of most of her work: diatoms. Sue's eclectic approach to ecosystems and organisms enabled her to make significant contributions in a wide range of studies. However, when she received the PSA Award of Excellence in 2019, she noted that Asterionella remained her favorite organism. In addition to PSA's highest award, Sue received many awards over her career, including the Delaware Estuary Jonathan Sharp Lifetime Achievement Award in 2015. At the start of her graduate career, she received an NSF Graduate Research Fellowship, a significant achievement in itself, and even more remarkable given the time (pre-1970) and the dearth of female oceanographers and scientists. As usual, such demographics did not dissuade her and in fact probably motivated her. Over more than 45 years, Sue was a standard-bearer for women in phycology and ecology, and she mentored numerous women scientists and students.

Sue Kilham held many prestigious research and teaching positions at places as diverse as Chesapeake Biological Laboratory, Woods Hole Oceanographic Institution, the University of Michigan, and last at Drexel University, her long-time academic home from 1991 until her passing this year. She was a preeminent researcher in algal ecology, known as widely outside the phycological research community as she was inside of it. Her work on physiological ecology of diatoms played a seminal role in the development of the ecological theory of resource allocation with one of her graduate students at Michigan, Dr. David Tilman. Their research on the relationship of species coexistence to resource utilization was groundbreaking and led to fundamental advances in community ecology theory. Recognizing the value of diatoms as an ecological model system, Sue and her co-workers realized that testing resource theory using algae would be significant in terms of the applicability of principles to aquatic ecosystems, and moreover, be generalizable to other systems. Given the

emphasis on terrestrial plants and animals in ecology generally, Sue's use of algae as test organisms for ecological theory was as prescient as it was brilliant. Her grant productivity was prodigious, matched by a publication record that is remarkable in number and in the quality of the journals in which she has published. With nearly 100 publications, she published in extremely high-profile journals and books such as Ecology, Science, Nature, Annual Review of Ecology and Systematics, the Journal of Phycology, and PLoS One, to name a few. And the pace of publications was consistently high from the very beginning of her career to the end. Along with this level of publication, Sue delivered of invited and plenary lectures, and an even greater number of contributed presentations, including a renowned plenary talk on algae and climate change at the 2015 PSA Annual meeting in Philadelphia.

Throughout her career, Sue was very active in service and education, and she trained several generations of aquatic biologists and phycologists. The numbers alone are mind-boggling. She served on approximately 45 committees for master's degree students, 20 PhD committees as Major Advisor at the University of Michigan and Drexel University, and over 60 PhD committees. In addition, Sue mentored more than 25 undergraduate students at Drexel. Among these are included academics, science administrators, and environmental managers, and a notable member of the National Academy of Sciences (ecologist Dr. David Tilman). Her capacity for work and eagerness to serve was also reflected in the many administrative committees, and positions as Department Chair, search committees, and faculty senate posts--positions that might be considered drudgery by many but to which Sue brought a mission- and goal-oriented attitude. Somehow, amidst all this she taught scores of courses, core and elective, in ecology, evolution, and aquatic science. Early on she was a strident voice about the dangers of climate change and an avid foe of the consumption of mercury-laden tuna. With a colleague at Drexel, she developed an online course on climate change delivered to thousands of undergraduates. In short, Sue was the kind of indispensible faculty member and scholar-researcher that formed the foundation of scientific excellence at all the institutions where she has worked.

Over 100 friends and colleagues attended a memorial service at Drexel University on May 10, 2022, where tributes and tears overflowed the room and zoom assemblage as her career and family life were remembered. Sue was predeceased by her beloved husband, Dr. Peter Kilham in 1989, and two brothers, Edward, and Thomas. She is survived by a brother Ben Kilham, and a bevy of nieces, nephews, and grand nieces and nephews.

Sue established the Susan S. Kilham Research Fund at Drexel to inspire and further the research of graduate students enrolled in the Biodiversity, Earth, and Environmental Science Department at Drexel University. For information, contact Rick McCourt.

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, Michael Gretz.

Phycological Society of America
PSA Business Meeting Minutes
May 18, 2022
In-Person, JASM, Grand Rapids, MI

Prepared by Heather Spalding, PSA Secretary

Start: 3:00 pm

1. Deb Robertson – Welcome and Introduction
2. Kirsten Mueller – Journal of Phycology Awards
    a. Provasoli Award – Trevor Bringloe
    b. Best Student Papers
        i. First Place – Daniel Wolf
        ii. Honorable Mention – David Flores
3. Peter Siver – Book Award
    a. Prescott Award – Jacob John, Diatom Flora of Australia
4. Deb Robertson – Recognition of BOT and EC members
    a. Morgan Vis – BOT chair
    b. Maggie Amsler – Membership director
    c. Jeff Morris – Communications, Elections
    d. Eric Linton – Outgoing President
5. Kirsten Mueller – Journal of Phycology Editor's Report
    a. Updates to ScholarOne
    b. Conducting regular meetings with Wiley, co-editors, Assistant Editor
    c. Instructions to Authors and AE checklist revisions
    d. AE training
    e. New Journal Design
    f. Submission numbers down in 2021 (197) and 2022 (52)
        i. Consistent trend with other journals
        ii. Encourages now as a good time to submit papers
    g. Time to acceptance – 146 days, mainly because of authors
    h. Time to print – 130 days to print, significant delay
    i. Impact factor – 2.9, can share webinar about impact factor
    j. Future plans
        i. Closer connection with PSA meeting and journal
        ii. Expand scope of journal to HABs, applied topics, more freshwater
        iii. Special Issues to increase
        iv. Journal presence at the other algae meetings

v. Welcome thoughts and ideas from PSA membership

6. Morgan Vis – BOT Chair Report
    a. Algaebase update – need to sustain this resource
    b. Legacy Society update – spearheaded by Michelle Wood
7. Paul Gabrielson
    a. Passing of Mrs. Hommersand
    b. Herbarium Portal moved to Arizona State University (Symbiota Support Network Hub)
8. Steve Murray – Fund Manager
    a. Status of the Endowment – about 3 million
    b. 2-6% rate of earnings projected
    c. $187,728 in reserve
    d. Review of market value, income, and expenditures
    e. Will solicit donations to build endowment
9. Michael Gretz – Treasurer's Report
    a. Finances stable - $275,205 total
    b. 2021 closed out for taxes
    c. Member to AIBS and NSC Alliance paid
    d. Legal aspects of donations being worked through
    e. Income – most funding from journal and publisher
    f. Expenses – support for journal, meetings, awards, grants, etc.
    g. MOVE to accept Treasurer's Report, unanimously passed
10. Maggie Amsler – PSA Membership Status
    a. Total membership – 609
    b. Joint membership – 2 people in same household
    c. Dues not increased in 2023
    d. Memberships includes online access to back issues
    e. Tax applied to dues (8%)
    f. Teacher/Pupils at same rate as students
    g. Lifetime Membership available
    h. Renew by Jan 1 to remain active in Wiley
    i. Self-membership management on Wild Apricot
    j. Can use Wild Apricot for networking
11. Sabrina Heiser – Student Report on behalf of Soren Schipper
    a. Review of Student Activities at JASM
        i. Student HQ, Mentor-Mentee networking, Student Social, Interview Workshop, 3 virtual socials
12. IDEA Committee – Gisele Muller-Parker for Robin Kodner
    a. Review of IDEA committee members, just started in Jan
    b. Increased social media to increase diversity

c. Project Biodiversity – will contribute, such as Dr. Isabella Abbott
    i. Will nominate phycologists
    ii. Can be used for algae courses
d. Developing strategic plan
e. Nominated URM Plenary Speakers
f. Trying to connect with more diverse members
g. Review of short, midterm, and long term goals
h. NSF BIO-LEAPS – submitting an implementation grant with CASS and working with ACCESS+ to use other resources for an audit

13. Eric Linton – CASS membership update
    a. CASS = Consortium of Aquatic Sciences, monthly meetings
    b. Goal to increase environmental and political impact
    c. Have 9 society members – wants to increase cohesion
14. Schonna Manning – Meeting Coordinator for PSA JASM
    a. 30 concurrent sessions
    b. Online presentations available for the next 6 months
    c. Review of PSA JASM events
    d. 2023 PSA in Providence, RI
        i. Chris Lane, local organizer
        ii. Dates are either June 4-9 or June 25-30
        iii. Need workshop ideas
        iv. Only a PSA meeting; no other societies
15. Motion to adjourn

WORKSHOPS, COURSES, AND EVENTS

The 3rd Annual California Seaweed Festival is happening October 7th and 8th at the Romberg Tiburon Campus of the San Francisco State University, Tiburon, CA!

Come celebrate all things seaweed in California. There will be workshops, demonstrations, talks, vendors, exhibits and this year, poster and talk sessions highlighting seaweed work in California State University system. See www.californiaseaweedfestival.com for more information or follow us on Instagram.

MARINE BOTANY: Diversity and Ecology

Friday Harbor Laboratories, University of Washington

Dates: 12 June to 14 July 2023

Instructors: Dr. Thomas Mumford (tmumford@uw.edu) and Dr. D. Wilson Freshwater (freshwaterw@uncw.edu)

The theme of the course is principles, methods, and applications of marine algal biodiversity studies with a focus on the macroalgae of marine benthic environments. Students will learn classical and contemporary methods for the identification, classification, and phylogenetic analysis of marine benthic algae (seaweeds); the theories underlying the methods, and the application of biodiversity information in (for example) benthic ecology. They will gain practical experience in such tools as: specimen collection, preservation, microscopy, DNA isolation and sequencing, computational approaches to phylogeny reconstruction, DNA barcoding, and databasing. Fieldwork will be extensive, as the diverse and species-rich habitats around San Juan Island provide ideal sites for the examination of macroalgal diversity.

Students will participate in research projects using morphological, ecological and molecular data to assess the diversity of algal populations and to interpret that diversity in its ecological and biogeographic context. The class will also continue to populate the “Marine Algae of the San Juan Islands” BOLD system database project and publish a new public dataset for the project.

This is a course appropriate for advanced undergraduate and graduate students, as well as, professional marine biologists, botanists, geneticists, and oceanographers with interests in marine biodiversity, conservation biology, and coastal ecology. Course participants will leave with a toolbox of methods to assess these topics in any nearshore ecosystem in the world.

Students receive 9 (quarter system) or 6 (semester system) transfer credits for the course. For information on the Friday Harbor Labs, including how to apply, housing, and financial aid packages, visit: https://fhl.uw.edu/. Specific information on the 2023 classes will be available

on the FHL webpage in October 2022 and applications may be submitted as soon as this information is posted.

There are many Friday Harbor Labs **financial aid opportunities** for those students who can demonstrate financial need or academic merit, visit: https://fhl.uw.edu/courses/financial-aid/

For requirements and how to apply for a **PSA Croasdale Fellowship** that helps defray costs to attend a phycology course at a biological field station, visit:

https://www.psaalgae.org/grants-and-fellowships

44th Annual Southeastern Phycological Colloquy

Will be hosted by the

Belle W. Baruch Institute for Marine and Coastal Sciences

University of South Carolina

Hobcaw Barony, Georgetown, SC

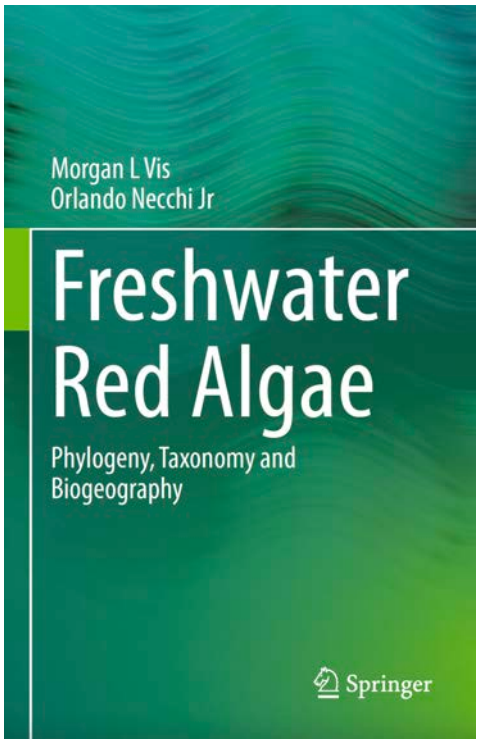
October 7-9, 2022

For 44 years, professionals and students who study algae (freshwater or marine), seagrasses, phytoplankton, or other marine plants have gathered, from all over the southeastern United States (and beyond), to share their research activities and ideas. This year, we will be meeting at the University of South Carolina's Belle W. Baruch Institute for Marine and Coastal Sciences, with Jay Pinckney the host. If you have never been to the Baruch Marine Field Lab at Hobcaw Barony, look at the website and you will see why it will be a great venue for SEPC 2022!

This meeting is open to anyone interested; student contributions are especially encouraged. Contributed paper and poster sessions are planned for the full day of **Saturday, 8 October**.

Additional details on the meeting schedule will be sent to all who send in the registration form. Please contact Jay Pinckney (pinckney@sc.edu) for further registration information including the registration form. Deadline for registration submission is **09 September 2022.**

BOOK TITLES



New Book - Freshwater Red Algae Phylogeny, Taxonomy and Biogeography, by M.L. Vis and O. Necchi Jr. 2022 ISBN-13: 978-3030839697 ISBN-10: 3030839699

We wanted to alert the phycological community that our book *Freshwater Red Algae: Phylogeny, Taxonomy and Biogeography* was published earlier this year. Inspired by Shigeru Kumano's 2002 *Freshwater Red Algae of the World*, we aimed to provide a comprehensive volume that includes all non-marine taxa with morphological characters, DNA sequence data, geographic range and taxonomic notes for this charismatic group. Each chapter provides summarized information on general characteristics for the higher ranks (subphyla to families), descriptions of genera and species including diagnostic characters, habitat, global distribution, and phylogenetic relationships among species as well as a key to species. For each species, details are provided for the type specimen, type locality, description, diagnostic characters, illustrations (mostly photomicrographs), representative DNA sequences in GenBank, distribution, and key references.

Most genera and species have been previously published but there are a handful of new taxa described in this volume. Two new monospecific genera in the Batrachospermales are proposed: *Notohesperus serendipidus* from Australia with DNA sequence data showing it to be distinct and *Genadendalia breutelii* from South Africa, with no sequence data but distinctive morphology, zonately septated carposporangia. New species and combinations in the genera *Lemanea* (*L. occidentalis* and *L. parva*)

and *Paralemanea* (*P. blumii* and *P. deamii*) clarify taxonomy in North America. In the genus *Torularia*, *T. meridionalis* is a new cryptic species from Australia and *T. androinvolucra* a new combination for a North American species. A new combination (*Kumanoa khaoluangensis*) for a species described from southeast Asia adds to this already species rich (41) genus. These new genera, species and combinations add to the known biodiversity in the order as well as clarify the taxonomy and geographic distributions. We hope you will enjoy this new book and that it will serve as a basis for further investigations of freshwater red algae. Please feel free to contact us about the book and any questions about freshwater red algae.

Thanks,
Morgan and Orlando

Balogh International - New Summer Algae Books

Nova Hedwigia, Beiheft 152

Early Paleocene-Late Eocene diatoms from the Blake Nose Western North Atlantic Ocean. Jakub Witkowski. 2022. ISBN: 978-3-443-51077-0. 381 pp., 2 figures, 7 tables, 156 plates. Paperback. $230.00

The Blake Nose area (western North Atlantic; approximately 350 km east of Florida, USA) represents the longest currently available single-locality record of diatom evolution, spanning approximately 30 million years of the early Cenozoic Era.

This study provides a detailed taxonomic account of the diatom assemblages found in the lower Paleocene through upper Eocene deep-sea sediments recovered by Ocean Drilling Program Leg 171B from the Blake Nose. The main study sites are Holes 1050A, 1050C and 1051A. For comparative purposes, materials from other deep-sea holes and onshore sites are included as well.

A total of 137 taxa representing 60 genera are examined using scanning electron and/or light microscopy. Two new combinations are performed (*Psammodiscus praenitidus* (Fenner) J. Witkowski, n. comb. and *Sheshukovia castellifera* (Grunow) J. Witkowski, n. comb.), and ten species are proposed as new (*Brightwellia plana* J. Witkowski, n. sp.; *Detonia wadeae* J. Witkowski, n. sp.; *Distephanosira gleichiae* J. Witkowski, n. sp.; *Euodiella beatae* J. Witkowski, n. sp.; *Hemiaulus curvatuloides* J. Witkowski, n. sp.; *Hemiaulus imperator* J. Witkowski, n. sp.; *Hemiaulus jordani* J. Witkowski, n. sp.; *Hemiaulus oreshkinae* J. Witkowski, n. sp.; *Medlinia? subtriangularis* J. Witkowski & P.A. Sims, n. sp.; and *Triceratium harwoodii* J. Witkowski, n. sp.).

Emphasis in this study in on stratigraphic and geographic distribution of the diatom taxa encountered in the Blake Nose cores, and on documenting their morphological variability. The overall aim of this work is to provide a reference for future biostratigraphic and paleoceanographic studies involving early Paleogene marine diatoms.

Diatoms of Montana and Western North America: Catalog and Atlas of Species in the Montana Diatom Collection. Volume 1. Loren Bahls. 2021. ISBN: 978-1-60483-000-2. 512 pp., 204 b/w plates. Paperback. $55.00

This is the first volume of the diatom flora of Montana and adjacent areas that Loren Bahls put together to illustrate his collection, which will reside at the Diatom Herbarium of the Academy of Natural Sciences, Philadelphia (ANSP) and at the at the University of Montana Herbarium in Missoula (MONTU). Loren has been passionately studying diatoms of the Northwestern US for several decades but could only devote his undivided attention to diatom taxonomy and floristic research after retirement. He published a great number of taxonomic papers and books and meticulously assembled his collection of diatom materials mostly originating from aquatic surveys conducted by the Montana Department of Environmental Quality, but also collected by volunteers and by himself.
“Diatoms of Montana” is an example of a compendium of fine light microscope illustrations accompanied by well-documented collection data and physical materials deposited in public herbaria that can enable future investigations in diatom ecology and biogeography. This book summarizes a great deal of the current knowledge of freshwater diatoms of Montana. More volumes to follow.

The Freshwater Algal Flora of the British Isles: An Identification Guide to Freshwater and Terrestrial Algae. 2nd Edition. 2021. ISBN: 9781108478007. 896 pp., illustrated. Hardcover. 196.00

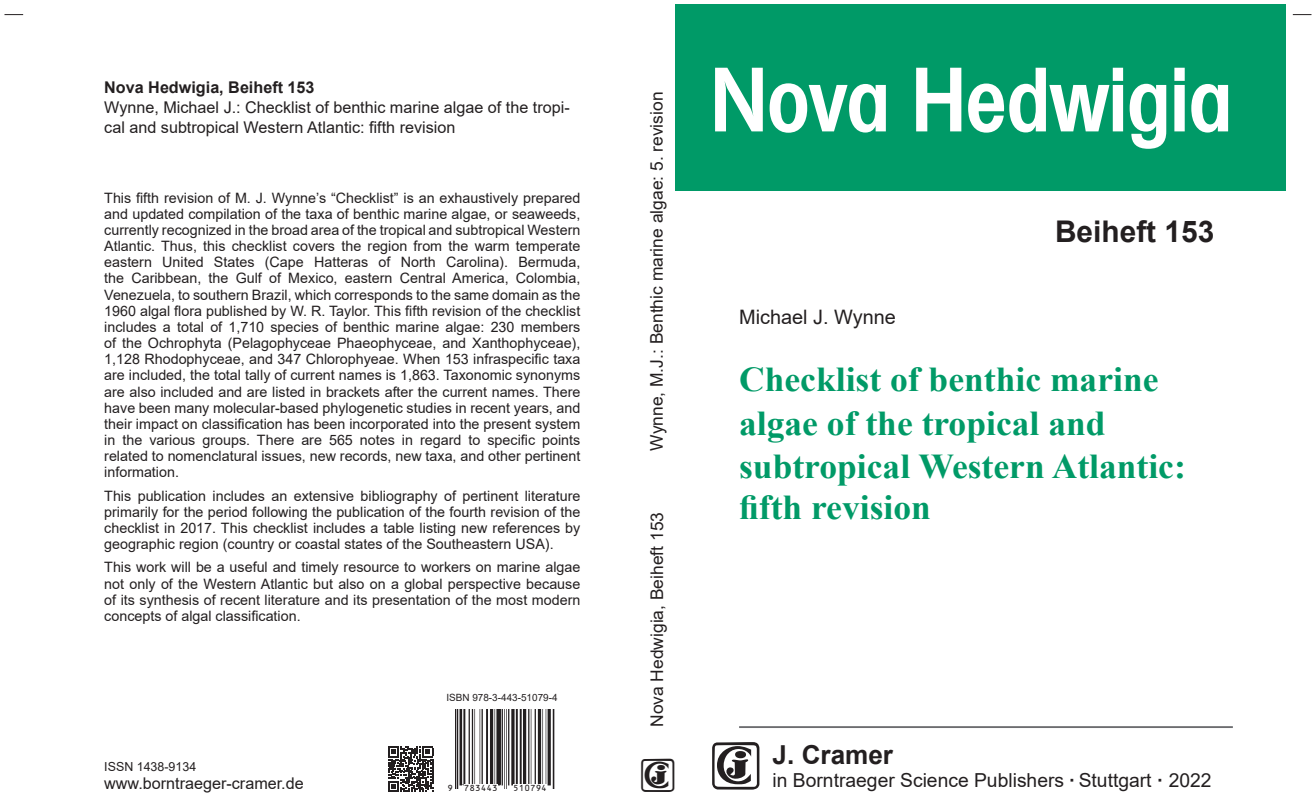
Building on the success of the first edition and featuring contributions from leading experts in the field, this expanded and thoroughly revised second edition provides an indispensable guide to the freshwater and terrestrial algae of the British Isles. It is an up-to-date account of and identification tool for more than 2400 algal species (excluding diatoms), highlighting their wider distribution around the world. Detailed descriptions are fully illustrated with clear line drawings and photographs including 190 full-page plates, eight of which are full colour. In addition, user-friendly keys enable the accurate identification of specimens to the level of genus and species. This edition includes expanded information on ecology and the implications of recent molecular research, along with coverage of 200 extra species. The accompanying online material provides a colour photo catalogue, highly illustrated articles and video clips, making this the comprehensive reference tool for both researchers and professionals in the field.

Scott Balogh
Balogh International Inc
1911 N. Duncan Rd
Champaign, ILLINOIS 61822
http://www.balogh.com ; scott@balogh.com 217-355-9331; fax: 217-355-9413

Jakub Witkowski: Early Paleocene-Late Eocene diatoms from the Blake Nose Western North Atlantic Ocean. 2022. V, 381 pages, 2 figures, 7 tables, 156 plates (Nova Hedwigia, Supplements No. 152). ISBN 978-3-443-51077-0, paperback, 179.00 Euro

Bank Beszteri; Richard W. Jordan (Editors): Diatoms and Chrysohytes - Unravelling their mysteries through light and electron microscopy: A lifetime dedicated to microalgal research: Richard M. Crawford. 2021 (will be published September/October), ca. 310 pages (Nova Hedwigia, Supplements No. 151) Paperback, 119 Euro ISBN 9783443510749

Wynne, Michael J.: Checklist of benthic marine algae of the tropical and subtropical Western Atlantic: fifth revision. 2022 (will be published August), ca. 180 pages (Nova Hedwigia, Supplements No. 153). ISBN 978-3-443-51079-4, paperback, 99 Euro



Order information:
www.schweizerbart.com
order@schweizerbart.de

A new 4th edition of the digital book Algae is now available at https://www.ljlmpress.com/algae.html

New Features of Algae 4th Edition:

- Literature citations include many new references and 85 new images, reflecting prolific and exciting research progress made since the previous edition. New literature, much of it openly accessible, includes articles published in 2022. At the same time, older literature citations have generally been retained to illustrate the history of discovery and encourage citation of fundamental literature.
- A new overview phylogeny illustration, generally at the class level, is presented at the beginning of most chapters that introduce eukaryotic algal phyla (Chapters 6 and 8-20). When branching patterns vary among studies, branching is shown as an unresolved polytomy, and dots indicate branches having highest support, consistent with this display convention in research articles. The new phylogeny diagrams also note some of the key structural or reproductive innovations that define eukaryotic algal groups.
- Chapter 1 includes a new text box on photosynthesis, to aid comprehension of aspects of algal photosynthesis presented throughout the text.

- Chapter 2 coverage of carbon concentration mechanisms employs a bulleted list, which may help readers to more readily navigate this important but complex material.
- Chapter 3 contains more discussion of new analytical methods, such as those used to detect algal toxins in food products or to investigate algal microbiomes.
- Chapter 4 discussion of culture collections now includes brief description of methods used to obtain new algal isolates. Updated topics include finished vs draft genomic sequence; algal transcriptomics, proteomics, and metabolomics; and genetic modification methods such as CRISPER.
- Chapter 5 now begins with an enhanced coverage of biological classification concepts and conventions, providing better background for subsequent chapters focused on taxonomic groups.
- Chapter 7 incorporates a new color illustration (Figure 7.7) that emphasizes the relationships of plastid-bearing eukaryotic algal groups to heterotrophic protists.
- Chapter 21 mathematical modeling problems have been revised for clarity, discussion of allelopathy has been increased, and global change impact topics have been updated.
- Chapter 22, which in earlier editions contained both marine macroalgae and periphyton of marine and freshwater environments, now focuses on marine macroalgae. This change allows increased attention to global environmental change impacts on marine macroalgae, a rapidly expanding field of study.
- Chapter 23 now focuses on periphyton, with expanded coverage of both marine and freshwater systems and increased attention to global environmental change.
- Chapter 24 includes new material on aerial transport of algal propagules among terrestrial environments, and the impacts of increasing wildfires on algal populations in arid and semiarid lands.

We thank colleagues who contributed photos, and (as for past new editions) will acknowledge their help by making a substantial financial contribution to aid student travel to international conferences.

Linda Graham

Glushchenko, A. M., Kutznetsova and Maxim S. Kulikovskiy
The Diatoms of Southeast Asia. 2021. 1396 figs.(1358 LM & 38 SEM). 96 tabs. (4 in the text & 92 in the appendix). 2 maps. 317 p. gr8vo. - In Russian with Latin nomenclature. EUR 139,00
(The price is tentative and might change slightly)

The monograph is a result of a 7-year investigation of diatom flora from waterbodies and watercourses in Laos. Cambodia and Vietnam (Southeast Asia).

Unlike the fauna and flora of vascular plants, the diatom flora of Southeast Asia has been poorly studied. The history of diatom investigation from Southeast Asia is considered in detail, an analysis of the fundamental works in the region is given, and a detailed annotated list is compiled. The representatives from the orders Eunotiales Silva 1962 were studied, with the exception of the genus Eunotia Ehrenberg 1837 (considered by the authors earlier), Mastogloiales D.G. Mann 1990, Cymbellales D.G. Mann 1990 and Naviculales Bessey 1907.

140 species and varieties have been identified. Diatoms are illustrated by 1358 original light and 38 scanning electron micrographs. The morphology and phylogeny of some taxa of diatoms are discussed

KOELTZ BOTANICAL BOOKS
www.koeltz.com
Booksellers, Publishers and Distributors in the Field of Botany
Kapellenbergstr. 75, D - 61389 Oberreifenberg / Germany
E-Mail: koeltz@t-online.de

http://smile.amazon.com

When you shop @AmazonSmile <http://smile.amazon.com/ch/43-0898177>, Amazon will make a donation of 0.5% of the purchase price to the Phycological Society Of America Inc. Support us every time you shop.

Help spread the word by Liking and sharing the link on our

EMPLOYMENT

Postdoctoral Research Position at the Water School, Florida Gulf Coast University

This Postdoctoral Research Associate will provide an excellent opportunity for an early career researcher to work collaboratively with a FGCU scientist and agency collaborators using molecular approaches (metagenomics, metatranscriptomics and phylogenetics), to understanding the Cyanobacterial phycobiome, responses to nutrient addition and HAB formation.

In particular, the candidate will: 1) be deeply involved in genetics research, include metagenomics and phylogenetics project; 2) coordinate the isolation and maintenance of cyanobacterial cultures for experimentation, taxonomic studies and determine if they have the ability to produce toxins from various freshwater habitats; 3) perform laboratory experiments on natural communities to trigger inorganic and organic nutrient uptake.

A team of scientists working across various institutions are participating in these efforts and there is substantial room for creative approaches by the postdoctoral research associate to propose original research to understand and improve our knowledge of species and their potential to cause harm to humans and wildlife. The research is expected to result in widely-distributed databases and publications of toxin-producing cyanobacteria species, nutrient uptake and the relationship between cyanobacteria and their heterotrophic partners. The postdoctoral researcher's contributions are expected to provide insight into the less common species found in blooms, contribute data to genetic repositories, and advance our understanding of cyanobacterial bloom dynamics.

https://fgcu.wd5.myworkdayjobs.com/eaglejobs/job/Main-Campus/Postdoctoral-Research-Associate--The-Water-School_R0002954-1

UNIVERSITY OF WATERLOO

PhD opportunity: 'Ecology and impacts of viruses of harmful algae'

The Environmental Virology and Ecology Research Group (i.e., ENVERG; https://uwaterloo.ca/environmental-virology-ecology-research-group/) led by Dr. Nissimov is recruiting a PhD student to investigate the interactions between harmful algal bloom-forming species and their viruses.

Project Scope: Aquatic viruses are viewed as major drivers of biogeochemical cycles and as crucial components that shape microbial food webs. Our main understanding of these viruses derives predominantly from their study in marine habitats. To that end, it is widely accepted that they can control the abundance of dominant microbial communities, decide the faith of algal blooms, and affect the diversity of microorganisms in coastal and oceanic environments. Nevertheless, despite the ecological and societal importance of freshwater environments, our understanding of the role of viruses in freshwater habitats is at its infancy. The PhD student will work in a collaborative and cross-disciplinary environment to identify and isolate from Canadian lakes novel microalgal/cyanobacterial hosts and their viruses, investigate their diversity and co-occurrence *in situ*, and conduct infection-dynamics experiments in the laboratory. Collectively, these will begin to unravel the ecological significance of virus infection of harmful algal blooms in lakes and start to pin down whether virus infection of HAB formers have a net positive or negative effect.

Academic Environment: The student will join Dr. Nissimov's research group (ENVERG) in the Department of Biology (https://uwaterloo.ca/biology/graduate-studies) at the University of Waterloo and will conduct research in the laboratory and in the field. The PhD candidate will conduct molecular biology and microbiology research, and bioinformatics analyses of data obtained from both laboratory experiments and *in situ* observations.

Funding: The current stipend for graduate students at the Department of Biology is $25,104/year. Additional details on funding breakdown and program requirements can be found in the Biology graduate handbook (https://uwaterloo.ca/biology/graduate-studies/biology-graduate-handbook). Eligible students are also encouraged to apply for external funding (NSERC, OGS, QEII) as this will be viewed favorably during the application process.

Essential Qualifications:

1. Successfully complete a thesis-based MSc in Biology, Biotechnology, Aquatic Sciences, or a related field, prior to the PhD proposed start date.
2. Have meaningful laboratory experience in microbiology and molecular biology, and an interest in limnology, algal biology/ecology and/or environmental virology (e.g., taken upper year/graduate level classes and/or labs on these topics, or completed a relevant BSc/MSc thesis, or work experience in these areas). Prior experience in filed work and bioinformatics will be looked upon favourably.
3. Have strong verbal and written communication skills.
4. Be able to work independently and collaboratively.
5. Be able to embrace challenges and not afraid to ask questions.
6. Be a self driven and motivated individual.

Starting Date: May 2023 (flexible)

Instructions: E-mail Dr. Nissimov (jnissimov@uwaterloo.ca) using the subject line "PhD Viruses and HABs 2023" and include: **1)** Cover letter that outlines your research interests and how they align with the project, and how your experiences meet the stated essential qualifications; **2)** Curriculum vitae; **3)** Contract information of three references (must include name, affiliation and email address); and **4)** Unofficial transcripts. Review of applications will begin October 1st, 2022 and the posting will remain open until the position is filled. All qualified applicants are encouraged to apply; however, preference will be given to Canadian citizens and permanent residents.

The ENVERG strives to be an equitable, diverse, inclusive, collaborative, and stimulating research environment that supports and encourages each individual to cultivate their potential and attain their professional goals. We welcome applications from women, Indigenous, Black, and other under-represented individuals.

UNIVERSITY OF WATERLOO

PhD opportunity: 'Characterisation of the physiological and metabolic costs associated with microalgal and cyanobacterial resistance to infection'

The Environmental Virology and Ecology Research Group (i.e., ENVERG; https://uwaterloo.ca/environmental-virology-ecology-research-group/) led by Dr. Nissimov is recruiting a PhD student to investigate the costs of virus resistance in microalgae and cyanobacteria.

Project Scope: Aquatic viruses are viewed as major drivers of biogeochemical cycles and as crucial components that shape microbial food webs. They can control the abundance of dominant microbial communities, decide the faith of algal blooms, and affect the diversity of microorganisms in aquatic environments. However, the metabolic response of microalgae and cyanobacteria to virus infection and the physiological costs associated with resistance are poorly understood. This project will work in a collaborative and cross-disciplinary environment to elucidate the potential mechanisms and metabolic costs associated with microalgal and cyanobacterial resistance and determine if resistance is affected by environmental conditions. Of particular focus will be experiments that will aim to reveal whether specific physicochemical factors related to climate change and eutrophication affect microalgal and cyanobacterial host fitness and whether they can unlock resistant host phenotypes to infection, allowing "specialist" viruses to expand their host range.

Academic Environment: The student will join Dr. Nissimov's research group (ENVERG) in the Department of Biology (https://uwaterloo.ca/biology/graduate-studies) at the University of Waterloo and will conduct research in the laboratory using molecular biology and microbiology techniques, flow cytometry and flow sorting instrumentation, and transcriptome analysis of hosts and their viruses.

Funding: The current stipend for graduate students at the Department of Biology is $25,104/year. Additional details on funding breakdown and program requirements can be found in the Biology graduate handbook (https://uwaterloo.ca/biology/graduate-studies/biology-graduate-handbook). Eligible students are also encouraged to apply for external funding (NSERC, OGS, QEII) as this will be viewed favorably during the application process.

Essential Qualifications:

1. Successfully complete a thesis-based MSc in Biology, Biotechnology, Aquatic Sciences, Bioinformatics, or a related field, prior to the PhD proposed start date.
2. Have meaningful bioinformatics and laboratory experience in microbiology and molecular biology, and an interest in limnology, algal biology/ecology and/or environmental virology (e.g., taken upper year/graduate level classes and/or labs on these topics, or completed a relevant BSc/MSc thesis, or work experience in these areas). Prior experience with working with transcriptome data and the ability to conduct microbial infection experiments will be looked upon favourably.
3. Have strong verbal and written communication skills.
4. Be able to work independently and collaboratively.
5. Be able to embrace challenges and not afraid to ask questions.
6. Be a self driven and motivated individual.

Starting Date: May 2023 (flexible)

Instructions: E-mail Dr. Nissimov (jnissimov@uwaterloo.ca) using the subject line "PhD Cost of Resistance 2023" and include: **1)** Cover letter that outlines your research interests and how they align with the project, and how your experiences meet the stated essential qualifications; **2)** Curriculum vitae; **3)** Contract information of three references (must include name, affiliation and email address); and **4)** Unofficial transcripts. Review of applications will begin October 1st, 2022 and the posting will remain open until the position is filled. All qualified applicants are encouraged to apply; however, preference will be given to Canadian citizens and permanent residents.

The ENVERG strives to be an equitable, diverse, inclusive, collaborative, and stimulating research environment that supports and encourages each individual to cultivate their potential and attain their professional goals. We welcome applications from women, Indigenous, Black, and other under-represented individuals.

UNIVERSITY OF WATERLOO

MSc opportunity: 'Cyanobacterial antiviral discovery and characterisation'

The Environmental Virology and Ecology Research Group (i.e., ENVERG; https://uwaterloo.ca/environmental-virology-ecology-research-group/) led by Dr. Nissimov is recruiting a MSc student to investigate the potential for bioactive compounds from toxic cyanobacteria to act as antivirals.

Project Scope: The COVID-19 pandemic revealed an urgent need to develop therapeutics for emerging diseases. To that end, cyanobacteria have been shown previously to exhibit antiviral properties. However, the extent to which antiviral compounds from cyanobacteria can inhibit viruses that range in their genomic structure and composition (ssDNA, ssRNA and dsDNA), and a detailed characterization of the responsible chemistry, is lacking. Levering of access to hundreds of strains through the Canadian Phycological Culture Centre located at the University of Waterloo, this study will provide an interdisciplinary approach to characterise the chemistry that underpins these understudied microorganisms and accelerate our understanding of their antiviral potential.

Academic Environment: The student will join Dr. Nissimov's research group (ENVERG) in the Department of Biology (https://uwaterloo.ca/biology/graduate-studies) at the University of Waterloo and will conduct research in the laboratory using microbiological techniques and state of the art culturing facilities.

Funding: The current stipend for graduate students at the Department of Biology is $25,104/year. Additional details on funding breakdown and program requirements can be found in the Biology graduate handbook (https://uwaterloo.ca/biology/graduate-studies/biology-graduate-handbook). Eligible students are also encouraged to apply for external funding (NSERC, OGS, QEII) as this will be viewed favorably during the application process.

Essential Qualifications:

1. Successfully complete a thesis-based BSc in Biology, Biotechnology, Aquatic Sciences, or a related field, prior to the MSc proposed start date.
2. Have meaningful laboratory experience in microbiology and/or molecular biology, and an interest in limnology, algal biology/ecology, drug discovery, and/or environmental virology (e.g., taken classes and/or labs on these topics, or completed a relevant BSc thesis, or work experience in these areas). Prior experience with cultivating algae, cyanobacteria and their viruses will be looked upon favourably.
3. Have strong verbal and written communication skills.
4. Be able to work independently and collaboratively.
5. Be able to embrace challenges and not afraid to ask questions.
6. Be a self driven and motivated individual.

Starting Date: May 2023 (flexible)

Instructions: E-mail Dr. Nissimov (jnissimov@uwaterloo.ca) using the subject line "MSc Cyanobacterial Antivirals 2023" and include: **1)** Cover letter that outlines your research interests and how they align with the project, and how your experiences meet the stated essential qualifications; **2)** Curriculum vitae; **3)** Contract information of three references (must include name, affiliation and email address); and **4)** Unofficial transcripts. Review of applications will begin October 1st, 2022 and the posting will remain open until the position is filled. All qualified applicants are encouraged to apply; however, preference will be given to Canadian citizens and permanent residents.

The ENVERG strives to be an equitable, diverse, inclusive, collaborative, and stimulating research environment that supports and encourages each individual to cultivate their potential and attain their professional goals. We welcome applications from women, Indigenous, Black, and other under-represented individuals.

UNIVERSITY OF WATERLOO

MSc opportunity: 'Environmental effects on aquatic algal- and cyanobacterial-virus infection dynamics'

The Environmental Virology and Ecology Research Group (i.e., ENVERG; https://uwaterloo.ca/environmental-virology-ecology-research-group/) led by Dr. Nissimov is recruiting a MSc student to investigate the impact of different physicochemical factors on aquatic algal- and cyanobacterial-virus infection dynamics.

Project Scope: Aquatic viruses are viewed as major drivers of biogeochemical cycles and as crucial components that shape microbial food webs. It is widely accepted that viruses can control the abundance of dominant microbial communities, decide the faith of algal blooms, and affect the diversity of microorganisms in coastal and oceanic environments. However, despite the significance of climate change and eutrophication for ecosystem health and growing recognition that environmental parameters related to these processes can affect virus infectivity, direct empirical evidence on the isolated effect of these parameters on aquatic host-virus infection dynamics is lacking. The MSc student will use a targeted approach to begin to identify and characterise the importance of specific physicochemical factors that may influence the success of key aquatic viruses of natural systems and, by extension, their potential biogeochemical impact. The work will include virus infection experiments using resistant and susceptible to infection microalgal and cyanobacterial strains under various ecologically relevant conditions.

Academic Environment: The student will join Dr. Nissimov's research group (ENVERG) in the Department of Biology (https://uwaterloo.ca/biology/graduate-studies) at the University of Waterloo and will conduct research in the laboratory using microbiological techniques and state of the art photobioreactor systems and controlled environment growth chambers.

Funding: The current stipend for graduate students at the Department of Biology is $25,104/year. Additional details on funding breakdown and program requirements can be found in the Biology graduate handbook (https://uwaterloo.ca/biology/graduate-studies/biology-graduate-handbook). Eligible students are also encouraged to apply for external funding (NSERC, OGS, QEII) as this will be viewed favorably during the application process.

Essential Qualifications:

1. Successfully complete a thesis-based BSc in Biology, Biotechnology, Aquatic Sciences, or a related field, prior to the MSc proposed start date.
2. Have meaningful laboratory experience in microbiology and molecular biology, and an interest in limnology, algal biology/ecology and/or environmental virology (e.g., taken classes and/or labs on these topics, or completed a relevant BSc thesis, or work experience in these areas). Prior experience with cultivating algae, cyanobacteria and their viruses will be looked upon favourably.
3. Have strong verbal and written communication skills.
4. Be able to work independently and collaboratively.
5. Be able to embrace challenges and not afraid to ask questions.
6. Be a self driven and motivated individual.

Starting Date: May 2023 (flexible)

Instructions: E-mail Dr. Nissimov (jnissimov@uwaterloo.ca) using the subject line "MSc Infection Dynamics 2023" and include: **1)** Cover letter that outlines your research interests and how they align with the project, and how your experiences meet the stated essential qualifications; **2)** Curriculum vitae; **3)** Contract information of three references (must include name, affiliation and email address); and **4)** Unofficial transcripts. Review of applications will begin October 1st, 2022 and the posting will remain open until the position is filled. All qualified applicants are encouraged to apply; however, preference will be given to Canadian citizens and permanent residents.

The ENVERG strives to be an equitable, diverse, inclusive, collaborative, and stimulating research environment that supports and encourages each individual to cultivate their potential and attain their professional goals. We welcome applications from women, Indigenous, Black, and other under-represented individuals.

Submit your contributions to the next Phycological Newsletter by January 15, 2022

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

PSA Communications Director

communications@psaalgae.org