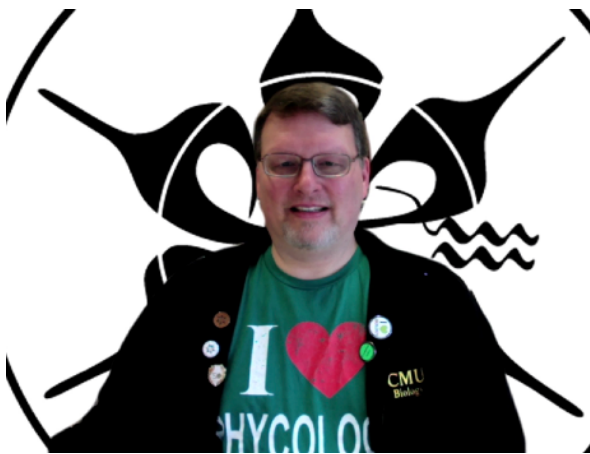


PHYCOLOGICAL NEWSLETTER

MESSAGE FROM THE PRESIDENT



PSA President Eric Linton

Welcome phycologists of all diversity (single, multicellular, cyano (blue-green), brown, golden-brown, green, red, yellow-green, colorless, aquatic, terrestrial, et al.) to a new and better year than 2020. Before I get into this new and better year, I would like to thank the outgoing president **Dale Casamatta** for his leadership during this past trying year, to put it mildly. Whilst I hope to be as informative and humorous as he, I have no hope of keeping up with his prolific use of synonyms — the man is a thesaurus — but I shall try.

Because of the great work of many people last year, especially our past Program Director **Amy Carlile**, we were able to pull off an outstanding 74th annual virtual meeting in a very short period of time. By taking what we learned from that meeting and having more time, we will again have a virtual meeting on this our 75th anniversary. We are living in the future. While this has and will continue to require the help of many, I want to recognize that the charge will be led by our new Program Director **Schonna Manning**. This meeting is scheduled for July of this year so watch the website and your inboxes for more information. We are planning on being back in-person in 2022 with our second Joint Aquatic Science Meeting (JASM) in Grand Rapids, MI, 16–20 May 2022. Then in 2023 we will finally have our meeting in Providence, RI because of the work of our local host **Chris Lane** who, by then, will be the longest serving local host in PSA history.

One of my goals when I sought this office was to expand the membership and get more people, particularly students, to attend the meeting. While not the way I would have planned it, we did increase the attendance of our 2020 meeting with over 500 attendees, and > 150 being students. As there were several reasons for this increase, cost (free) and time (no travel) being

A publication of the PHYCOLOGICAL SOCIETY OF AMERICA

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the biggest factors, I hope that we can increase this even further in 2021. Although, we may not be able to maintain this level once we are back to in-person, I do think we can maintain some of the momentum. Hence, the Executive Committee is looking to have a virtual presence at our future in-person meetings i.e., stay at home but still attend. Please watch for more information as we develop this.

Finally, I would like everyone to think about volunteering to serve on one of the many committees that work to recognize outstanding research, provide educational outreach, and award students money for research, education, and travel. Please look at the [PSA website](#) to see all of the ways to serve. To wrap this back around to my opening, the PSA is a welcoming society that encourages diversity and acceptance. Towards this end we began developing a diversity, equity and inclusivity (EDI) committee that will be formalized this year. Stay tuned for progress on this and more during this new year.

**Until we meet (virtually or live) again, stay safe,
Eric Linton
PSA President 2021**



PSA 2021
Virtual Meeting
July 13,15,20,22, 2021



We look forward to welcoming you to the 75th annual PSA meeting this July, 2021! Given the ongoing pandemic, we will be meeting virtually again this summer, but with a program that includes many of the highlights we all look forward to at an in-person meeting! In an effort to avoid online/zoom fatigue, the meeting will be spread out over two weeks, with sessions held on Tuesdays and Thursdays in mid-July: July 13, 15, 20, and 22. Each day will start at 11am EST and run for approximately 4 hours.

Preliminary Scientific Program:

PSA Presidential Session: Cyanobacteria in the 21st Century: To many, the cyanobacteria represent tiny, annoying filaments that contaminate our cultures and seem to bloom at inopportune times in our freshwaters. Yet recent research has opened up exciting new vistas into the nature of cyanobacteria. Far from merely being nuisances, cyanobacteria are integral to numerous ecosystems. The PSA Presidential Symposium shall illuminate such intriguing questions as what constitutes a cyanobacterial “species” in dryland soils (Nicole Pietrasiak), how do we best articulate the biodiversity of this ancient lineage (Jeff Johansen), what insights have new genomic techniques shed (Jan Mares), and lastly an intriguing case of potentially new, deleterious forms to worry about (Susan Wilde). The Presidential session will start with a plenary talk by Lynn Rothschild from the NASA Ames Research Laboratory.

The 2nd annual Lang Lecture: Started in 2017, the Norma J. Lang Fellowship supports early career phycologists for three years. At the end of their third year of support, fellows are invited to give an extended talk on their work at our annual meeting. This year we are pleased to have our second fellow, Stacy Krueger-Hadfield, give the Lang Lecture.

The Bob Sheath Journal of Phycology co-editor’s symposium: This session will highlight cutting edge research from across our field.

Please submit your abstract to the PSA2021 registration website. Abstracts are due by 23:59 Eastern Standard Time on 1 May 2021. We will be posting more on the [meeting website](#), so please look there for up-to-date information.

PSA 2021 Organizers:

Schonna Manning, University of Texas at Austin (PSA Program Director)

Amy Carlile, University of New Haven

An Interview with 2020 Norma J. Lang Fellow Trevor Bringloe



***Trevor Bringloe, 2020 Norma J. Lang
Postdoctoral Fellow***

Dr. Trevor Bringloe of the University of Melbourne was awarded the fourth Norma J. Lang Fellowship in 2020. Jeff Morris recently had a chance to talk with him about his science, his experiences as an early career researcher, and his plans for his tenure as a Lang Fellow.

JM: Can you tell us a little about your background? What are the big questions that have motivated you as you've come up through the ranks?

TB: My initial training began as an ecologist, but I gradually shifted toward genetic studies of biodiversity during grad school. I have studied dispersal of amphipods, diversity of insects and cyanobacteria, and eventually developed an interest in biogeography and evolution of seaweeds. Today, my main interest is the evolution of biodiversity and the micro- and macroevolutionary forces that drive global biogeographic patterns. I am particularly keen on the application of genomic datasets, and I am fascinated with the diversity of Arctic seaweeds. My current work focuses on ribbon kelp (*Alaria*), using genomic data to unravel phylogeographic patterns and functional differences amongst species and populations.

JM: Would you mind sharing a little insider information about Trevor the person? What do you enjoy doing in your off-time? As a successful early-career scientist, what's your philosophy on balancing your professional responsibilities and your personal time?

TB: I have two young kids (2 and 5) so its full on all the time. I therefore balance research with my family life. Basically, I try to be as efficient as possible in both realms. I head into each week with an idea of what needs to be accomplished and focus on outcomes rather than trying to strictly partition my family life and research (too often they flow into one another). I do try to dedicate a minimum number of hours towards research, and otherwise try and leave 1-2 hours at the end of the day to "recharge." Whatever time I can muster for just myself is dedicated to running or brewing kombucha.

JM: What do you plan to accomplish in your first year as a Lang Fellow? Give us your “elevator speech” explaining the work you’ve proposed.

TB: Considerable confusion has persisted as to how many species of North Pacific ribbon kelp (*Alaria*) exist. Where several species were recognised historically, gene studies have revealed shallow divergence, lineages on the cusp of speciation, the “grey” zone where things aren’t obviously reproductively isolated but also display clear differences. Genomic data promises to add clarity to the situation. In the first year of my fellowship, I will be generating whole genome sequencing data in several populations of Northeast Pacific ribbon kelp (*Alaria*). I will use these data to compare genomes, first to see how genetically different the lineages are and how they are related to one another, and second to determine how they differ in terms of gene content. This second objective should provide biologically meaningful context as to how these lineages are functionally different from each other, and potentially the sorts of niches they each fulfill in the environment.



Dr. Bringloe heading to the lab

JM: Science almost never works the way you expect. What are some setbacks or failures you’ve had in the last year (or really any time in your career) that stand out to you? How did you cope with them, from a scientific as well as a personal perspective?

TB: I’ve had countless instances that felt like setbacks or failures but that turned out to be crucial learning experiences. Reflecting on the bigger picture, it becomes clear this is part of the scientific process, and a key aspect of life in general. Rejected papers, grants, job applications, lousy talks or lectures, all reveal room for improvement, which is what I focus on. Meditation has been an important tool for developing this sort of perspective (both personal and scientific). Of course, COVID-19 has been a real challenge. Living in Melbourne, I’ve been through two lockdowns, curfews, stuck within a 5 km radius from home, and no access to the lab for several months. The only way to cope with these circumstances was to adjust my expectations research wise and prioritize my family and mental health. That meant paying attention to my mindset, taking days off where needed, going for long bike rides, etc. Research wise I had to adjust my plans, optimize what limited lab time I could get, shift focus, and start new projects. Thankfully I have enough going on I was able to pull through remarkably unscathed, staying on track for generating data and getting some key papers out.

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

TB: I'm currently looking to settle down with a permanent faculty position. I want to continue my genomic investigations of seaweeds, with an emphasis on Arctic species and how they respond to climate change. Specifically, I want to generate baseline genomic data in these species, use transcriptomic data to study responses, and incorporate aspects of the holobiont so that my approach remains holistic and not narrow. Genomic datasets will continue to revolutionize the field and I'm keen to be a part of that movement. So in 10 years I hope to be diving for seaweeds, and analysing networks of genomic information. Providing that all goes according to plan I expect to be at PSA meetings, catching up with fellow phycologists, and presenting exciting new findings!

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

TB: Exposure to PSA members has been a crucial aspect to my career progression so far. Attending PSA and talking to various profs about potential postdoc opportunities set in motion my current position at the University of Melbourne. I also met several early careers scientists that I now collaborate with on various projects. **In short, being a PSA member promoted the connections needed to get where I am now career wise.**

THE NORMA J. LANG EARLY CAREER FELLOWSHIP

In 2021, PSA will select its 5th Lang Fellow. Named in honor of the late Norma J. Lang, this fellowship will grant a one-time payment of \$10,000 to one early career researcher, who will be a Norma J. Lang Fellow for three years. Applications will be accepted from Postdoctoral Fellows, Pre-Tenure Faculty, and others (those not in traditional academic positions) who are members of the society and are within 10 years of completing their Ph.D. Applications from international members are welcome, but all application materials must be in English. Individuals must be employed by a university or other non-commercial entity and be doing research on algae. The purpose of this award is to provide "seed" money for projects, with the ultimate goal of increasing the likelihood of federal or other grant funding for the recipient. It is expected that the Fellow's home institution will cover any indirect costs as an institutional match.

For more information please go to <https://www.psaalgae.org/norma-j-lang-fellowships>

Deadline: April 1, 2021

The Lang Fellowship and PSA's many other student and postdoc awards are sustained by charitable contributions to the Phycological Society of America Endowment. Contributions can be made via Paypal:

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

Ruth Hoshaw Celebrates 100th Birthday with PSA

On Feb. 6, 2021, a group of PSA Executive Committee members and other long-time society members joined the extended family of Ruth Hoshaw to celebrate her 100th birthday. In a surprise Zoom meeting, a group of nearly 40 people wished her a happy birthday and sang to her a somewhat unsynchronized Zoom version of “Happy Birthday.” The Hoshaw Travel Award is named for Ruth and her husband, Bob Hoshaw, who was a PSA life member and served as President and later as first Chair of the PSA Board of Trustees. Ruth was one of the most active organizers of the Headquarters Room, a focal point for PSA Annual Meetings over the years. She and Christine Parker would sell t-shirts and other phyco-memorabilia and replenish a coffee urn as attendees mingled and socialized between (and during) talks and meeting activities.

Ruth grew up in Indiana, where she attended Manchester College to study art and music education. In the fall of her freshman year Germany invaded Poland, and her four years of college were all during the ensuing World War II. Pearl Harbor was bombed during her sophomore year, and many of her male classmates went off to fight. She worked in factories in her hometown of Monticello to replace the absent men, operating a metal clamping machine and using a jigsaw to cut curves out of wood. Ruth had married Clarence Sickler, who was severely wounded in the war in Europe. He survived and returned home, but he died of other causes when he was only 25.

After graduating in 1943, Ruth began teaching music and art in Rensselaer public school, with the war still raging, and rationing of sugar, shoes, gas, tires and many other items making life difficult. Bob Hoshaw, who had interrupted his graduate studies in botany at Purdue to serve in the South Pacific, returned home to finish his PhD in corn physiology. He and Ruth renewed their friendship and married in 1947. Teaching positions were hard to find in those days, but Bob managed to get one at a remote university in the middle of the Sonoran Desert, the University of Arizona. Off they went to Tucson in 1950, where they lived until Bob’s death in 1993. Ruth and Bob raised two sons, Richard and Bill, and a daughter, Ann, each married with two children of their own, and now a bevy of great-grandchildren rounds out the family.



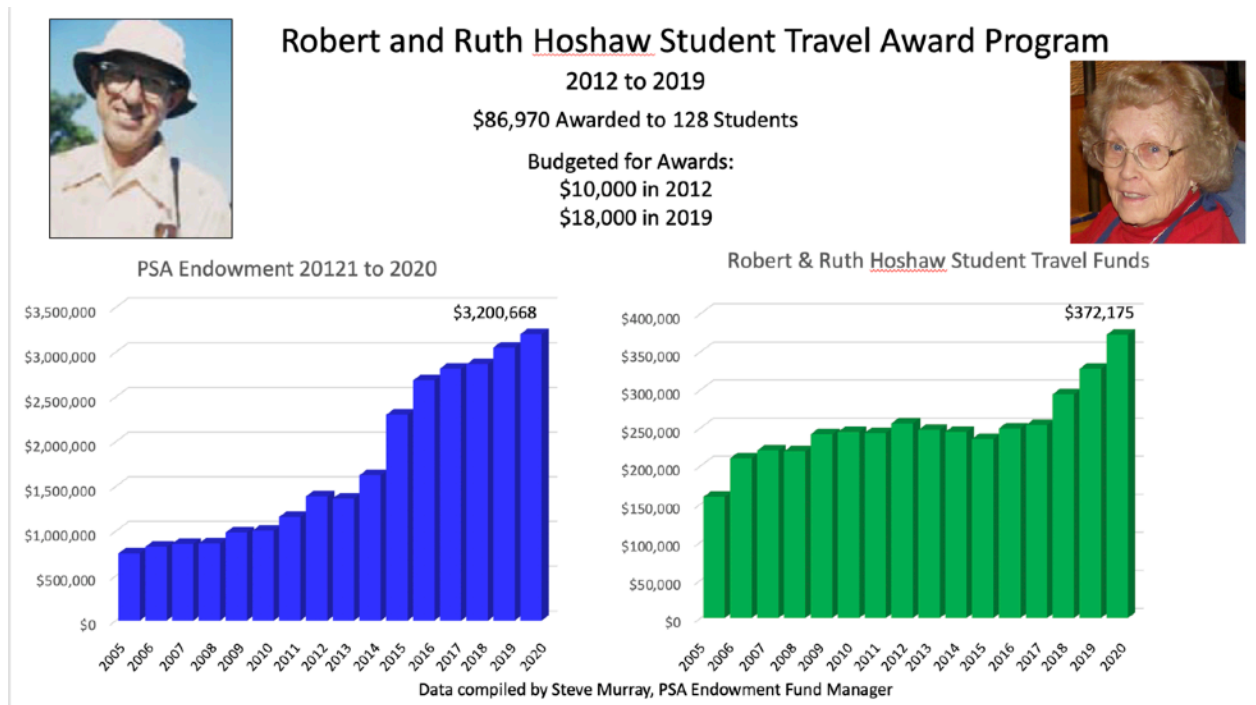
Ruth Lantz Sickler Hoshaw (left, ca. 1939) and (right) in 2018.

This large extended family joined in a Zoom meeting on Saturday Feb. 6th, two days after Ruth’s official birthday. She lives in the same house where she and Bob made their home and hosted many Board of Trustee meetings and visiting phycological researchers. The Hoshaw hospitality was renowned for their generosity, supported by Ruth’s assiduous attention to detail and hard work. Her efforts were also essential (if in the background) for much of the work that went into establishing the Board of Trustees and Endowment Fund, and typing articles for *PSA Newsletters* and Bob’s papers in the *Journal of Phycology*.

Ruth’s family and the 25+ PSA members on the Zoom call wished her well and recounted their many memories of her at the annual meeting and other PSA events. PSA President Eric Linton and BoT Chair Morgan Vis extended their thanks to Ruth for her service to PSA, and Steven Murray presented a graph showing how the Hoshaw Travel Fund has supported hundreds of students over the years (see below). Sabrina Heiser, the current Student Representative, thanked Ruth on behalf of the many students who have benefited from these travel awards. Dennis Hanisak recounted how his daughter Stephanie would help Ruth in the Headquarters Room, and Thierry Chopin, Charlie Yarish, Russ Chapman, Bruce and Christine Parker, and many other long-time friends, also joined in the discussion of many fond memories.

Ruth, who lives on her own and manages her house and garden, was thrilled to see so many old friends. She is managing through the coronavirus pandemic and has had both of her vaccinations! A long-time sports fan, Ruth eagerly follows all the UA Wildcat teams, as well as pro tennis, college and pro football, and basketball. Each month she puts together a jigsaw puzzle of more than 1000 pieces, supplied by friends and family, and also keeps up a lively email and paper correspondence with her Indiana friends and phycology students and colleagues of Bob and her.

The Zoom celebration was taped and a copy will be provided to the PSA archives.



A Scroll of a Sampling Sort

by Stacy Krueger-Hadfield (sakh@uab.edu)

I must first begin by thanking Tom Mumford for telling Sandra Lindstrom about these sample bags. Sandra encouraged me to write up a little scroll-bag-how-to for the wider phycological community. However, the real thanks must go to Christophe Destombe who introduced me to his clever scroll sample bag technique when I was a visiting MS student at the Station Biologique de Roscoff in 2007. Not only did he and Myriam Valero, among others, provide a constant source of inspiration in my fledgeling academic career, his scroll bags have stayed with me to this day.



Christophe and the author sampling *Chondrus crsipus* at the Pointe de Primel in Brittany, France in 2007. (photo credit: Myriam Valero)

The ingenuity of the scroll bags lies in the ease of use: samples are added into slots that are pre-labeled and in order! The chance of losing a sample is small. Note taking is easy as everything is in order and pre-numbered. You roll as you go, so samples are in order when you get back to the lab - a huge time saver.



Pre-labeled, heat-sealed slots make it easier to sample and process, both in the field and in the lab.

What you need:

1. **A heat sealer** - the tabletop poly bag sealer by ULine works great. We use the 12" sealer ([Model No. H-190](#)).

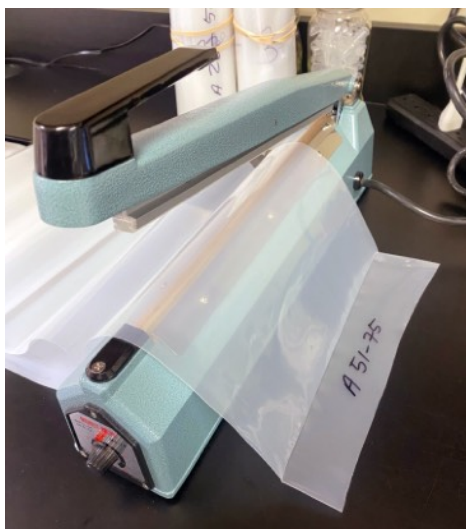
2. **Poly tubing** - when I started my lab at the University of Alabama at Birmingham in 2016, I bought 6 MIL Heavy Duty Poly Tubing (30" x 400' Model No. S-14495). I still have it and have made many sets of scroll bags (you can see how much is left after almost 5 years in the images below!). However, I do wish one could get a slightly heavier weight for cleaning when sampling in mudflats as the 6 MIL can be prone to coming unsealed when stretched while cleaning out muddy corners.
3. **Poly tubing dispenser** - you want this to put the roll of poly tubing on to dispense while heat sealing. We have the 12" roll (Model No. H-28). It seems to be a bit wonky under the weight of a full 400' roll so needs some adjustment when unrolling.
4. **Sharpie** - I used different colors during my PhD to denote different sets of 100. While this was especially useful when sampling more than 100 samples or from different sites in the same day, I've found that only dark blue or black Sharpie stands the test of weather, time, and washing.

How to make the scroll bags:



Step 1: Unfurl the poly tubing and set up the heat sealer.

Inset image shows the tubing - once a roll is ready to go, you'll cut off the top edge to make the slots.



Step 2: Label bag lot and start sealing.

Try out a few tester bags - the level 3 seems to be enough to seal a bag slot without heating all the way through the tubing.

I also do lots of 25 which seems to be the sweet spot for amount of samples and fewest number of scroll bag bundles. I also label as I go to keep count!

I use letters A 1-25, A 26-50, A 51-75, A 76-100, B 1-25 ...





Step 3: Cut off the “top” of the tubing so each bag is a slot into which you can place your algal samples.

After this last field trip in the COLD, we’ve thought about cutting one side of the tubing down lower than the other to facilitate opening when gloved.



Observations:

Hands-down, these were the best sampling bags for working in intertidal rocky shores. Compared to pre-labeled sandwich bags, I never lost a sample.

The down side is they aren’t the easiest things to clean. This never presented a huge problem sampling in rocky intertidal zones as you rarely got the bags that dirty, inside or out.

When we started working in mudflats and were traveling all over the Northern Hemisphere, these seemed like the natural choice. We’d be sampling rapidly and in far-flung places. We needed something efficient and easy to use. I made countless sets of scroll bags, but when you can’t clean them out thoroughly when processing samples in a hotel room or squatting briefly in someone’s lab, already having made a muddy mess, it becomes an olfactory problem! The scroll bags were abandoned at the end of the trip before flying back to home base.

They aren’t exactly light either when you have a couple of sets which can make packing for a flight a tricky business, but I’d still forego something for the ease of use.

I wondered if these scroll bags were a rocky intertidal phycologists delight. Perhaps when sampling muddy environs, sandwich bags were the way to go. I’ve since used both approaches and have finally converted fully to the scroll bag in mud.



I have since been much more diligent about cleaning them and can attest to their survival even in the pluffiest of mud. It does really help to have a hose or a bit of aquarium tubing on a sink faucet to get each slot well rinsed.

Sampling in a mudflat - dish washing gloves kept hands dry and somewhat warm, but made opening the bags a problem I’d not previously encountered. (photo credit: Will Ryan)

ALGAL POSTCARDS

2019 Lang Fellow Sophie McCoy contacted me a month or so ago with an interesting idea: we should include “algal postcards” in the Newsletter, where PSA members can send us quick photos or other images highlighting their work. So I would like to encourage anyone to send us your postcards — a photo and an explanation up to 100 words — for inclusion in the Phycological Newsletter and/or on our Twitter feed. Submissions can be sent to communications@psaalgae.org.

Our first algal postcard was submitted by Research Scholar Gudarjan Singh and features scientists from SGGSWU in Punjab, India collecting freshwater algal samples.



Department of Botany and Environmental Science, Sri Guru Granth Sahib World University, Fatehgarh Sahib, Punjab, India

Questions Concerning Phytoplankton Carbon Processing and Cyanobacteria-Green Algae Competition

Frieda B. Taub (taub@uw.edu), School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA 98195

Could some members point to appropriate literature to clarify the current understanding of phytoplankton carbon metabolism? Do N-starved green algae continue to photosynthesize CO_2 as long as CO_2 and HCO_3^{-2} are available? In natural aquatic communities, can green algae increase the pH and facilitate the dominance of cyanobacteria whereas reducing the pH can decrease cyanobacterial abundance?

My experimental data on green algae did not conform to my initial assumption that 4 X the Redfield Ratio would satisfy their C uptake. The rationale for 4 X was based on the assumption that most algae have a Redfield ratio of 6.625C:1 N with wide variation (Sterner and Elser 2002) that would be covered by a factor of 2 X and that only approximately half of HCO_3^{-} C would be available for algal growth, the rest becoming CO_3^{-2} , which is not available for green algal photosynthesis (Stumm and Morgan 1996, Falkowski and Raven 2007). Contrary to my expectations, the cells took up CO_2 and HCO_3^{-} until pH approached pH 11 and only CO_3^{-2} and OH^{-} were left. Decreasing the N content so that the C:N ratio was 105 still resulted in very high pH (10.25). Increasing the NaHCO_3 concentration was not beneficial to algal abundance (estimated by in vivo fluorescence). I termed this as carbon pseudo-limitation because the cells (a mixture of *Ankistrodesmus*, *Scenedesmus*, and *Selenastrum*) could not use the dissolved inorganic carbon (DIC) that was present as CO_3^{-2} (Taub 2019). Even in cultures open to the atmosphere, these green algal cultures can achieve pH values of 10.5. Do these laboratory results reflect natural aquatic communities?

Schartau et al. (2007) modeled carbon overconsumption and the formation of extracellular organic carbon, much of which was converted to particulate material. Toggweiler (1993) described that marine phytoplankton could remove 40-80% more carbon than explained by the production of biomass. Xiao and Zheng (2016) reviewed extracellular polymeric substances produced by a variety of microalgae. A large number of N-starved phytoplankton are studied for the production of lipids and various products (Becker 1994). ABO (Algae Biomass Organization) has amassed an extensive bibliography describing algal cultures used to produce commercial products. So photosynthesis far beyond the Redfield Ratio has been documented in natural marine ecosystems and large scale production systems, and not just small laboratory ecosystems. But I have not seen carbon overconsumption described for freshwater ecosystems where carbon availability could be more limiting. Also, I have not seen explanations of the physiology of carbon processing after cell biomass is constrained by N and P availability? Am I missing a body of literature?

If green algae can increase pH substantially, perhaps where N and P sources allow dense algal blooms, could this contribute to cyanobacterial dominance? It has long been accepted that carbon availability is not the limiting factor in phytoplankton production (Goldman et al. 1972), but that classical paper also included a literature review on how water chemistry might influence taxonomic dominance, e.g., a report by King (1970) that high pH was associated with cyanobacterial blooms. Shapiro (1973a), citing King, described lake enclosure experiments in which high pH was associated with cyanobacterial blooms and bubbling with CO_2 resulted in a rapid shift to greens. There were subsequent notes in Science where Goldman stated that the form of DIC shouldn't matter because they were interchangeable, and Shapiro stated that Goldman was correct in his calculations, but his experimental results suggested King was also correct (Goldman 1973, Shapiro 1973b). Subsequent publications by Shapiro provided extensive experimental data (Shapiro 1984) and

again reviewed his and other studies (Shapiro 1990) supporting his contention that high pH encouraged cyanobacterial blooms that could be eliminated by decreasing pH by CO₂ or HCl. I suggest that Goldman is correct that the forms of DIC are interchangeable, but only if ions such as H⁺ or OH⁻ are available.

I have not found a reference that explicitly states that cyanobacteria can use CO₃²⁻, but given that would be the dominant form of DIC at high pH, can it be assumed? Cyanobacteria are often grown at high pH, above 9.4 and sometimes as high as 11 in large scale commercial cultures, in part to minimize contamination with other phytoplankton (Becker 1994). Some cyanobacteria can grow on mineral carbonates (Guida et al. 2017). Although there are many articles describing increasing occurrences of cyanobacterial blooms, toxic forms being described as CyanoHABS (Harmful Algal Blooms), I do not see much mention of pH, or water chemistry such as hardness, e.g., a recent paper described factors associated with cyanobacterial toxins in a range of lakes, mentioned in the introduction that cyanobacteria tended to be associated with high pH, but did not show any pH or DIC data for the lakes reported in the analyses (Jacoby et al. 2015). An on-going study of cyanobacterial blooms in Washington State does not plan to include pH in their analyses. I have not found any recent tests of Shapiro's hypothesis. Am I missing a body of information?

My modest post-retirement laboratory has been studying how algae and grazers respond in Closed Ecological Systems, with emphasis on community metabolism (Taub and McLaskey 2014). The phytoplankton literature is huge, and in spite of improved search techniques, it is not possible to know all the literature. Although I have worked on aquatic ecology for decades, e.g., (Taub 1997), I have limited understanding of phytoplankton physiology. I would appreciate any assistance Phycologists could provide. If these questions have not been answered in the literature, they may suggest fruitful areas of research.

- Becker, E. W. 1994. *Microalgae: Biotechnology and Microbiology*. Cambridge University Press.
- Falkowski, P. G., and J. A. Raven. 2007. *Aquatic Photosynthesis*. Princeton University Press, Princeton, NJ.
- Goldman, J. C. 1973. Carbon-dioxide and pH - effect on species succession of algae. *Science* **182**:306-307.
- Goldman, J. C., D. B. Porcella, E. J. Middlebrooks, and D. F. Toerien. 1972. Effect of carbon on algal growth - its relationship to eutrophication. *Water Research* **6**:637-679.
- Guida, B. S., M. Bose, and F. Garcia-Pichel. 2017. Carbon fixation from mineral carbonates. *Nature Communications* **8**.
- Jacoby, J., M. Burghdoff, G. Williams, L. Read, and F. J. Hardy. 2015. Dominant factors associated with microcystins in nine midlatitude, maritime lakes. *Inland Waters* **5**:187-202.
- King, D. L. 1970. The role of carbon in eutrophication. *Water Pollution Control Federation* **42**:2035-2051.
- Schartau, M., A. Engel, J. Schroter, S. Thoms, C. Volker, and D. Wolf-Gladrow. 2007. Modelling carbon overconsumption and the formation of extracellular particulate organic carbon. *Biogeosciences* **4**:433-454.
- Shapiro, J. 1973a. Blue-Green Algae: Why They Become Dominant. *Science* **179**:382-384.
- Shapiro, J. 1973b. Carbon-dioxide and pH - effect on species succession of algae. *Science* **182**:306-307.
- Shapiro, J. 1984. Blue-green dominance in lakes: The role and management significance of pH and CO₂. *Int. Revue ges. Hydrobiol* **69**:765-780.
- Shapiro, J. 1990. Current beliefs regarding dominance by blue-greens: The case for the importance of CO₂ and pH. *Internationale Vereinigung für theoretische und angewandte Limnologie: Verhandlungen* **24**:38-54.
- Sterner, R. W., and J. J. Elser. 2002. *Ecological stoichiometry: the biology of elements from molecules to the biosphere*. Princeton University Press, Princeton.
- Stumm, W., and J. J. Morgan, editors. 1996. *Aquatic Chemistry: Chemical Equilibria and Rates in Natural Waters*. 3rd edition. Wiley-Interscience, New York.
- Taub, F. B. 1997. Unique information contributed by multispecies systems: Examples from the standardized aquatic microcosm. *Ecological Applications* **7**:1103-1110.
- Taub, F. B. 2019. Why did carbon become the pseudo-limiting factor in aquatic closed ecological systems? *Life Sciences in Space Research* **20**:30-34.
- Taub, F. B., and A. K. McLaskey. 2014. Oxygen dynamics of aquatic Closed Ecological Systems: Comparing the whole to a subsystem. *Ecological Modelling* **293**:49-57.
- Toggweiler, J. R. 1993. Oceanography - carbon overconsumption. *Nature* **363**:210-211.
- Xiao, R., and Y. Zheng. 2016. Overview of microalgal extracellular polymeric substances (EPS) and their applications. *Biotechnology Advances* **34**:1225-1244.

PSA Membership

Greetings from the Membership Director!

PSA welcomed 87 new members in 2020 and moves into this new, hopefully better year of 2021 with just under 600 members. Categorically individual members make up one third of the total membership followed by a healthy complement of 163 students. The Society also includes 99 life members, 42 retired members, 17 postdocs, 30 editorial members and 26 joint members. Not only is PSA diverse with members spanning career stages, the Society is internationally rich with members representing 42 countries:

Argentina	2	Ecuador	1	Netherlands	5	Slovakia	1
Austria	2	France	6	New Zealand	9	Taiwan	5
Australia	18	Germany	13	Norway	9	Thailand	1
Belgium	3	Greece	1	Peru	1	United Kingdom	21
Brazil	9	Hong Kong	2	Philippines	1	United States	321
Canada	41	Ireland	4	Poland	2	Vietnam	1
Chile	5	Israel	2	Portugal	2		
China	6	India	2	South Africa	1		
Columbia	1	Italy	5	South Korea	16		
Croatia	3	Japan	50	Spain	2		
Czech Republic	3	Malaysia	1	Sweden	3		
Denmark	2	Mexico	6	Switzerland	2		

These membership numbers are based on the monthly Wiley report last received in December 2020. PSA now also maintains an independent member database using a Wild Apricot platform. It has taken quite some time to establish and reconcile Wiley's member accounting with our new system and a few discrepancies remain. It is my hope to have both systems in sync after all the 2021 renewals are submitted. (hint!)

Wiley began the annual Journal of Phycology renewal campaign in October and has already sent out two reminders. Be aware that for members not renewing by the end of January, your print copies of the journal will be put on hold until payment is received. There will be two more notices sent out and by April if no renewal action is taken Wiley will inactivate your digital access to the journal and your account will be deleted. So renew soon!

A few renewal pointers:

- If you would like to change your subscription category or status please contact [me](#) before you renew. I will arrange to have Wiley send you an updated renewal form saving time and hassle and ensuring proper payment.
- Please pay careful attention to your selection when renewing or joining through Wiley Online. There are ten different membership options from which to choose. Note that the first two are for joint members (two members share 1 subscription but both have full membership privileges –it costs \$5 more than an individual/regular membership).
- Please remember that subscriptions to the Journal of Phycology are calendar based, starting in January. If you join in June and selected to receive the print journal Wiley would send any back issues of the year. Wiley will only recognize your membership until the end of the year. PSA, however, will recognize your membership for 12 months.
- Secondary school teacher/pupil category is now lumped with the Student memberships and shares the same great pricing.
- WOL sometimes performs random acts of unkindness – please contact [me](#) for assistance.

And as a reminder of the benefits of PSA membership:

- All PSA members enjoy the privilege of receiving the digital Journal of Phycology, six times a year. Members can access the Journal of Phycology using the Wiley Online Library. Log in information is sent after joining the Society or renewing a membership. If you experience any access issues please contact [me](#) for assistance.
- PSA members can search and obtain full-text electronic papers from all issues of the Journal of Phycology (back to Volume 1, 1965).
- PSA members are NOT charged page fees when they publish in the Journal of Phycology as communicating authors.
- Members can access the Journal of Phycology through an iPad and iPhone app. Instructions detailing access are available at the PSA website.
- Members receive a pdf copy of the Phycological Newsletter or they can download it from our website. The Newsletter includes upcoming Society activities, colleague highlights, book reviews, information on summer field courses and graduate programs, algal history retrospectives, general articles of interest and much more.
- Postdoctoral and student members of PSA are eligible for grants in support of research.
- Postdoctoral and early career members are eligible to apply to the Norma J. Lang Early Career Fellowships.
- Student members are eligible for grants in support of research, travel to the Annual Meeting, and tuition for field courses.

Finally, and most importantly, the greatest benefit of being associated with the Phycological Society of America is membership in a diverse, algal-embracing community. Spread the word and help culture PSA's growth while continuing to contribute your algal-zeal by keeping your membership current!

**Wishing you a phycologically fulfilling 2021,
Maggie Amsler**

PSA Awards and Grants Deadlines

L.H. Tiffany Award

We are soliciting nominations for the 2021 L.H. Tiffany Award, which was established in 2015 to honor L. H. Tiffany, the third president of the Phycological Society of America (1948-1949) and charter member of the Society whose book “The Grass of Many Waters” informed many about the world of algae and their importance. The initial funding for this award came from a gift from N. Stan Geiger. The winner will be awarded a certificate and monetary prize. Any individual or group who develops or produces an article, book, video, or presentation that enhances the awareness and/or importance of algae during the previous three years is eligible. **Nominations should be sent by email to Schonna Manning.**

The deadline for nominations is MARCH 31 2021. The awardee will be notified at least 40 days in advance of the PSA Annual Meeting and invited to attend to accept the award and provided a presentation opportunity.

PSA accepts donations through Paypal.

Please support the Tiffany Award and other PSA grants and awards by following this link:

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

Shop at AmazonSmile

and Amazon will make
a donation to:
Phycological Society Of
America Inc

Get started

amazon smile

<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.

Bold and Lewin Awards

Attention PSA Undergraduate and Graduate Students!

The prestigious Bold (oral presentation) and Lewin (poster presentation) Student Awards WILL be awarded at the upcoming 2021 virtual PSA meeting, and we encourage all qualifying students to apply! To sign up, students must:

1. Register online for either the Bold or Lewin awards when you register your abstract for the meeting

2. Submit a letter of support from your advisor to the Student Awards Committee Chair (spaldinghl@cofc.edu) by the PSA registration deadline.

A key advantage of the Bold Award is the undivided attention of the entire PSA meeting – this is the best opportunity to present your research to the entire psychological community at the beginning of the meeting, and establish your stellar career (or you can do it for the monetary award...perfectly acceptable). It's the an excellent networking opportunity for your next graduate experience, post-doc, or job. The Lewin Award will be applied to this year's *virtual* poster session, which promises to be a highly interactive event that will also provide opportunities for networking and finding new collaborations.

Bold Award (\$1000) – ORAL presentation: Graduate students who are PSA members, regardless of nationality, are eligible to compete for the Bold Award, as well as former students within twelve months of completion of their degree. The work presented must be that of the student, must be presented orally by the student in English, and should be a complete or nearly complete project. Only one presentation may be made per year and students may enter no more than twice, and not in successive years. More information can be found here: <https://www.psaalgae.org/bold-award>

Lewin Award (\$500) – POSTER presentation: Graduate or undergraduate students who are PSA members, regardless of nationality, are eligible to compete for the Lewin Award, as well as former students within twelve months of completion of their degree. Posters with multiple authors are permitted, but the student competing for the award must be the first and presenting author. Only one poster per student per year may be entered in the competition. If meeting rules allow multiple posters to be contributed by the same presenting author, the student must designate which poster is to be considered for the award. More information can be found here: <https://www.psaalgae.org/lewin-poster-award>

Applications due by END OF ABSTRACT SUBMISSION PERIOD for the Annual Meeting.

Contact PSA Student Awards Committee Chair, Heather Spalding (spaldinghl@cofc.edu) with any questions. See you this summer!

IN MEMORIAM

LUIS ALFONSO VIDAL VELASQUEZ (1950 – 2020)

On November 8, 2020, Professor Luis Alfonso Vidal Velásquez sadly passed away.

Alfonso was a marine biologist, with a Bachelor's from Jorge Tadeo Lozano University, and since then he became the marine phytoplankton authority in Colombia. He graduated a Master in Marine Science at Universidad Nacional of Colombia, and his thesis became a book on estuarine phytoplankton, which is one of the guides commonly used at Colombian Universities.

His main characteristics were his charisma, his gentleness and his humility, which converted him into one of the most beloved scientists in the country, by both students and colleagues.

Alfonso was a free spirit; he never accepted a permanent position because he wanted to be independent, even at the cost of his financial stability. He taught at several Universities in Colombia, dictated several phytoplankton courses and became a mentor to many biologists.

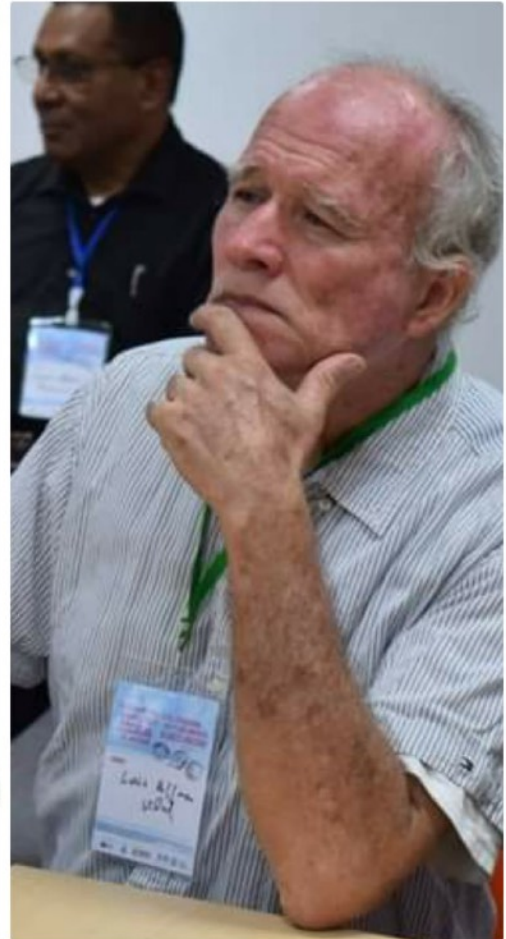
His love for marine microalgae was profound, and he admired the beauty and elegance of their shape and variety. He had a tremendous skill in manipulating microalgae under the microscope, and even started to create his own tools to move them on the slides in order to identify them.

Both inside and outside the laboratory, Alfonso always marveled at the wonders of this world: he was able to see hidden beauty in every little thing, and celebrated it. When it came to people, it was the same: he could appreciate the best characteristic of every person he met, and valued it.

The death of Luis Alfonso leaves a huge void in the Colombian scientific community.

We have lost a great scientist, but mainly, a wonderful person. All the people that had the luck to know him will remember him for a long time. His scientific work will last and be a reference point for many years to come.

Our condolences to his wife Ligia, his daughter Anayanci and his son Josué.



Kyle D. Hoagland, Ph.D. (1951-2020)

Kyle Dean Hoagland Ph.D., freshwater algal ecologist, passed away on 12 August 2020 at the age of 69 after a long battle with Parkinson's Disease. Kyle received a B.S. at Michigan State University, an M.S. from Eastern Michigan University and his Ph.D. at the University of Nebraska. He went on to a post-doctoral appointment at the University of Maine and faculty positions at Louisiana State University and Texas Christian University. In 1990, Kyle returned to his native Nebraska, taking a position at the University of Nebraska Lincoln. During his 25-year tenure there he mentored many undergraduate and graduate students, and served as Director of the Nebraska Water Center.



Kyle made impactful research contributions to periphyton ecology. His visual documentation and analysis of periphyton community development in lentic systems using Scanning Electron Microscopy revealed similarities to terrestrial communities, and influenced many future studies of periphyton succession. Over the course of his career, subsequent research foci included the influences of light on periphyton communities in reservoirs and streams, wave disturbance/light interactions, structure and function of diatom extracellular polymeric substances, a large body of work on the effects of herbicides on aquatic systems and algal toxins associated with harmful algal blooms.

He was in his element in the aquatic ecosystems of the Nebraska Sand Hills and his enthusiasm in the field and lab was contagious. I was fortunate enough to serve as his TA in Limnology at Cedar Point Biological Station during the first summer after I started my Ph.D. program at the University of Louisville. I returned the next two summers working with him in Lake McConaughy on research that would comprise one half of my dissertation. Those years were formative for me. Kyle was so comfortable to work with; he was a mentor but also, immediately, a friend. Kyle's droll, sometimes sarcastic, often self-deprecating sense of humor made him approachable to all and a ton of fun to be around.

Kyle was extremely generous with his time and always willing to lend assistance to others, without hesitation, regardless of the circumstances. He is fondly remembered by many as an excellent mentor, colleague, friend, and teacher. He made the world a better place through his decency, care for others, humility, and his dedication to forwarding scientific advancement in aquatic ecology.

A link to his obituary can be found here: <https://www.wherrymortuary.com/obituary/Kyle-HoaglandPhD>

**Respectfully Submitted,
Chris Peterson
School of Environmental Sustainability
Loyola University Chicago**



I would like to remember **Dra. María Esther Meave de Castillo** of the Department of Hydrobiology and Phytoplankton from Universidad Autónoma Metropolitana (UAM) (Mexico city) passed away on December 6, 2020. She wasn't my immediate tutor, but I knew her as she was working in the lab next to mine and she got along well with my tutor. She became president of the Mexican Society of Planctology (SOMPAC) between 2004-2006 and was also an editor for the journal "Hidrobiológica". She participated in and organized many different conferences, the most important of which was the international congress organized by SOMPAC in 2006 in Morelia, Mexico. She was a determined person who was always trying to give the best to students and mainly to Phycology. We'll always remember her.

— **Gustavo Luna**



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, Julie Koester.

Second Circular



Northeast Algal Society 59th Annual Symposium

NEAS STRIDE 2021 (surviving the “rocky intertidal” during extremes) will be held as a virtual meeting on **Saturday, April 10, 2021**. The conveners are Louise Lewis (louise.lewis@uconn.edu) and Peter Siver (pasiv@conncoll.edu), with assistance from many others!

NEAS STRIDE 2021 will feature excellent research by our student and professional members and allow us to share ideas about science and teaching. All presentations will be short in duration and posted on-line in advance of the meeting to give everyone time to view and digest the work presented. On Saturday, we will broadcast the student oral award presentations, with live Q&A, hold an afternoon poster session and discussions, have time for socializing and reconnecting, and perhaps even to bid on/win one of Craig Schneider’s coveted mini plant presses! A tentative schedule is shown on the last page of this circular.

NEAS STRIDE 2021 is FREE to all NEAS members (dues are \$10)! Members will have access to the virtual meeting and can submit abstracts. Student members can apply for presentation, book, and research awards. You can sponsor memberships for your students or others, too!

Important deadlines

- March 1: registration, dues payment, abstract submission (http://northeastalgae.org/future_ac.php)
- March 9: meeting organizers notify student presenters about oral versus poster presentations
- March 15: student book and research award applications (http://northeastalgae.org/future_ac.php)
- April 3: submission of recorded oral presentations and poster files (submission links forthcoming)
- April 5-10: presentations available for viewing (details on how to connect forthcoming)
- April 10: NEAS 2021! (details on how to connect forthcoming)

Student Grants in Support of Research: The NEAS Development Committee is continuing its small grants program to facilitate student research. Up to \$500 in funding for these undergraduate and graduate grants is provided through monies raised by the Development Committee and through the establishment of the “Ron Hoham NEAS Undergraduate Research Grant”. Get your application here (http://northeastalgae.org/future_ac.php) and apply by March 15th, 2021.

Student Book Awards: Students and post-docs are encouraged to apply for the annual society book awards for books in their field of phycological study. Get your application here (http://northeastalgae.org/future_ac.php) and apply by March 15th, 2021.

Annual NEAS Auction: Craig Schneider will hold a virtual auction this year, but it will be pared down to include about approximately 10 of the most select items. If you would like to make an auction donation, please contact Craig (Craig.Schneider.1@trincoll.edu), preferably by April 1.



The 24th International Seaweed Symposium will be held for the first time in Australia.

It will take place in **Hobart, Tasmania**, Australia's most southern state, from **Sunday 13th to Friday 18th February 2022.**

The 24th ISS committee has chosen the theme 'Seaweeds in a changing world', to focus on ongoing changes in seaweed aquaculture practices, industrial processing, future products and markets, local and global environmental change, and scientific advances that will change our understanding of how seaweeds function at all levels of organisation.

Planning for the Symposium is proceeding for February 2022 as scheduled. In light of the COVID-19 pandemic we anticipate the conference will be of a hybrid nature. We will plan to have some face-to-face sessions where possible, but we will be incorporating online attendance as well.

We have also changed the symposium format to embrace new technologies that allow actual and virtual delegates to attend and interact, and we expect a vibrant and exciting new style of conference. The organising committee feels the opportunity to have part of the Symposium hosted online presents an opportunity for us to reach a broader audience than the traditional Symposium and will also give us the opportunity to include different presentation formats. As such, we see 2022 as being a new and positive direction for the Symposium.

For more information: <https://www.iss2022.net/>

MARINE BOTANY: Diversity and Ecology

Friday Harbor Laboratories, University of Washington

Dates: 13 June to 16 July 2021

Instructors: Dr. Thomas Mumford

(tmumford@u.washington.edu) and Dr. D. Wilson

Freshwater (freshwaterw@uncw.edu)

Applications due by 1 March 2021 **BUT LATE****APPLICATIONS WILL BE CONSIDERED;**

Review of applications begins: 1 February 2021

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, and will receive 9 University of Washington credits.

To learn about taking courses at Friday Harbor Labs (FHL), including how to apply and costs, visit <https://fhl.uw.edu/courses/>. Courses are being held in-person under FHL’s COVID-19 prevention procedures; current procedures at <https://fhl.uw.edu/about/covid-19-response/>. For further information on the Marine Botany course, visit <https://fhl.uw.edu/courses/course-descriptions/course/marine-botany-diversity-and-ecology-2/>.

Opportunities for financial assistance from FHL are available for students who demonstrate financial need or academic merit. 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:

<http://www.psaalgae.org/hannah-t-croasdale-fellowship>

BOOK TITLES

Announcement Re: *Algological Studies* Journal

Since the foundation of *Algological Studies*, all attempts to obtain an IF have inexplicably failed, despite good quality papers and great interest in them. Because we understand the importance to publish in indexed journals to our authors, Schweizerbart has decided to interrupt further publication of *Algological Studies*. Instead, we recommend to our algae authors to submit their algae manuscripts to our indexed journals *Fundamental and Applied Limnology* (www.schweizerbart.de/journals/fal) and *Nova Hedwigia* (www.borntraeger-cramer.de/journals/nova_hedwigia) instead of *Algological Studies*. *Nova Hedwigia* preferably accepts taxonomic treatises, while *Fundamental and Applied Limnology* is preferable for applied and freshwater algae manuscripts. Your manuscripts will be handled by the editors of *Algological Studies*, who see your paper through review for *Nova Hedwigia* and *Fundamental and Applied Limnology*. We invite you to consider these two renowned journals for your algae/algal ecology/phycology-related papers.

Fundamental and Applied Limnology offers an electronic submission system (www.schweizerbart.de/submit/fal), for *Nova Hedwigia* please directly send your manuscript to one of the editors covering the respective research field (www.borntraeger-cramer.de/journals/nova_hedwigia/editorialboard).

We welcome your original papers and assure the same quality production and publication as you experienced with *Algological Studies*.

In the name of all *Algological Studies* editors, supported by the editorial teams of *Fundamental and Applied Limnology* and *Nova Hedwigia*,

The publishers

Dr. Andreas Naegele
E. Schweizerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller)
OHG, Science Publishers
Johannesstr. 3A, D-70176 Stuttgart, Germany
Tel. ++49-711-351456-0 FAX ++49-711-351456-99
mail@schweizerbart.de



Josie Iselin, Loving Blind Productions

<https://www.josieiselin.com/>



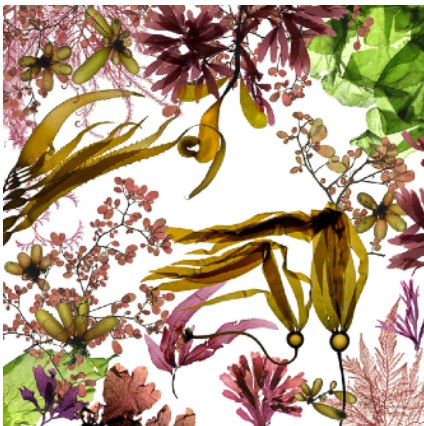
Josie Iselin, author of Tiffany award winning art book *An Ocean Garden* and follow-up *The Curious World of Seaweed*, has some exciting new offerings. Check [Josie's website](https://www.josieiselin.com/) for the most recent information.

The Curious World of Seaweed is now available in an audiobook format from Audible:

<https://www.audible.com/pd/The-Curious-World-of-Seaweed-Audiobook/>

New Art Website: ArtSpring goes LIVE! Please explore this curated collection of large, limited edition prints (see examples below) produced by our wonderful friends at **LightsourceSF**:

<https://artspring.co/collections/josie-iselin#oceans-edge>



PSA Education Committee Update — a big year for online education outreach!

2020 was a big year for the Education Committee's digital outreach efforts. During the spring and summer transition to online teaching, we took the opportunity to revamp the PSA Educational Materials webpage with three key initiatives: 1) the Teach Algae contest recruited lessons, syllabi and other classroom resources, primarily aimed at undergraduate and graduate-level courses; 2) a crowd-sourced spreadsheet of 100+ algae-related online teaching resources was created, and 3) the Phycologists helping Phycologists in the Classroom event connected over 150 educators and algae experts from across career stages and fields in order to facilitate classroom outreach efforts.

Have our efforts been a success? We think so! Since July 31 2020, the 18 lessons and course syllabi from the Teach Algae contest have been collectively downloaded over 1,400 times and our spreadsheet of online algae resources has been accessed via the PSA website 604 times! The reach is global too, with several dozen countries represented (the US, Canada, Brazil the highest followed by India, Chile and others). We are excited to explore more opportunities to share algae education in the future. **Anyone interested in accessing these teaching resources can find them at the updated PSA Educational Materials site (<https://www.psaalgae.org/educational-materials>).**

Bridgette Clarkston
University of British Columbia
PSA Education Committee Chair



EMPLOYMENT

Postdoctoral Opportunities at Station Biologique de Roscoff

The European Union will soon launch a specific call for **2-year postdoctoral positions** in laboratories located in Brittany (France) and the **Biological Station of Roscoff** is one of the 8 laboratories eligible to this program (cf. <https://cordis.europa.eu/project/id/899546/fr>). 25 postdoc grants will be available early 2021 and two other calls will follow in 2022 and 2023 for 'highly talented scientists' who should not have spent more than 12 months in France in the last 3 years. The first call has an application deadline **mid-March 2021**. Results will be in July and the contract could start as early as September 2021.

Successful candidate(s) who come to our laboratory will work on the functional genomics, genetics and/or biochemistry of marine picocyanobacteria. Interested candidates should provide us with a CV and a motivation letter.

For details on our main current research projects, see:

<https://www.researchgate.net/project/ANR-CINNAMON>

<https://www.researchgate.net/project/ANR-EFFICACY-2020-2024>

<http://tonga-project.org/web/>

Yours sincerely,

Drs Laurence Garczarek and Frédéric Partensky



**Submit your contributions to the next
Phycological Newsletter by August 15, 2021**

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

Please forward this information to

Jeffrey Morris

communications@psaalgae.org