

# PHYCOLOGICAL NEWSLETTER

## MESSAGE FROM THE PRESIDENT



### Dear PSA Members,

It is with great enthusiasm that I write this message to all of you as the new PSA President. This is an exciting time to be a phycologist: conferences are highlighting sessions on kelp forest conservation and harmful algal blooms, aquaculture initiatives are expanding across North America, new aspects of algal evolution continue to unfold, and dinner conversations naturally turn to algae in the news (without my explicit involvement!). This is also shaping up to be a busy year for PSA, and I'm grateful to have an opportunity to lead the society through some big initiatives.

After a long delay, we are excited to finally host the **Annual PSA Meeting in Providence, Rhode Island (June 25-30)**, thanks to the hard work of **Schonna Manning** (PSA Program Director), **Wade Huang** (Assistant to the Program Director), and our fantastic local organizer **Chris Lane**. We have a number of exciting sessions lined up, including the Bold

symposium, Lang Lecture, IDEA (Inclusivity, Diversity, Equity, and Access) symposium, Presidential symposium, and Student symposium, plus several other fantastic invited speakers. There will also be an early career breakfast spearheaded by Past President **Deb Robertson** and funded by ACCESS+ (Amplifying the Alliance to Catalyze Change for Equity in STEM Success). The breakfast meetup aims to help build community across our diverse early career members and strategize about navigating the meeting and beyond.

Our **PSA IDEA committee** continues to make great strides in helping our society become more inclusive and accessible: advising the PSA Executive Committee on matters related to supporting our diverse and racialized members, sponsoring symposia at our annual meetings, and organizing a workshop through the NSF-funded BIO-LEAPS program at last year's JASM conference. Indeed, IDEA Committee chair **Robin Kodner** has been working overtime with new and exciting initiatives on the horizon, not only for PSA, but for the 20,000+ members of all CASS (Consortium of Aquatic Science Societies). I'm pleased to announce that Robin and her co-PIs have just received a major NSF award to fund a new program called **EVOLVED (Embed a Vision to Operationalize, Lift up, and Value Equity and Diversity)**, which will develop programs to support underrepresented groups,

## Table of Contents

Message from the President  
Pages 1-2

PSA2023  
Page 3

Interview with Lang Fellow  
Mohammad Moniruzzaman  
Pages 6-10

Update from *JPhycol*  
Page 11

Conference Corner: SEPC 2022  
Pages 12-13

Historical Corner: Caroline Cook  
and her book on Dr. Croasdale  
Pages 14-16

PSA Membership  
Pages 17-18

In Memoriam  
Pages 19-28

From the BOT  
Page 29

Tiffany Noms  
Page 30

From the Field  
Page 31

Phycology courses  
Pages 32-35

Book Titles  
Page 36

Job Ad  
Page 37

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examine bias, assumptions, and society culture, and build infrastructure to support and sustain cultural evolution across all CASS societies. In many ways, PSA is leading the charge in this important work with other aquatic societies following suit, thanks to Robin and our IDEA Committee! If you are interested in joining the PSA IDEA Committee, please email [diversity@psaalgae.org](mailto:diversity@psaalgae.org).

Also on the horizon this year is the re-negotiation of our publishing contract with Wiley. The *Journal of Phycology* is one of the most highly-regarded, international phycological journals, and Managing Editor **Kirsten Muller** and the rest of the PSA Executive Committee continue to think carefully about Open Access initiatives and the consequences they might have on our journal and society. There is also much discussion about the value of printed issues, as the world becomes increasingly paperless.

Finally, with the dawn of 2023, there has been a changing of the guard on the PSA Executive Committee. We say thank you and farewell to **Deb Robertson** (Clark University) for all of her hard work and dedication as PSA President, **Jeff Morris** (The University of Alabama at Birmingham) for his years of service as Communications Director, **Maggie Amsler** (The University of Alabama at Birmingham) for keeping track of our numbers as our tireless Membership Director, and **Morgan Vis-Chiasson** (Ohio University) for her leadership chairing the Board of Trustees. Joining the Executive Committee, we have **Stacy Krueger-Hadfield** (The University of Alabama at Birmingham) as our new Communications Director, **Karolina Fucikova** (Assumption University) as our new Membership Director, **Chuck Amsler** (The University of Alabama at Birmingham) as our new Chair of the Board of Trustees, and **Juliet Brodie** (Natural History Museum, London) as our new Vice President/President-Elect. We also say goodbye to **Sarah Jeffries** (Moss Landing Marine Labs), who has diligently supported the *Journal of Phycology* as Assistant Editor for many years, and we welcome **Megan Sherritt** (University of Waterloo) into this important role.

Thank you to our members for giving me this opportunity to lead the PSA. If you have any thoughts or suggestions on the functioning of our society, please feel free to contact me. I wish you all the best in the year ahead, and I look forward to seeing many of you in Rhode Island this summer.

Phycologically yours,  
Patrick T. Martone



# PSA2023

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.

**You may register now!!**

***\*IMPORTANT\****

***Be prepared to submit your properly formatted abstract at the time of meeting registration. See guidelines below.***



PSA has adopted a code of conduct to ensure that our meetings are welcoming and productive for all in attendance. We invite all attendees to learn more about this code [here](#).

## SCIENTIFIC PROGRAM

The theme of this year's meeting is **Phycology in a Changing Climate: Diversity, Blooms, and Beyond**. The program will consist of daily plenary talks from leading scientists in the field of algal monitoring and conservation. We will also have the Bold Award Competition, IDEA Symposium, Student Symposium, Lang Lecture, poster sessions (including the Lewin Award Competition), lightning talks, contributed sessions, and the engaging annual PSA auction. We will conclude the meeting on Thursday evening with the PSA Awards Banquet in the Biltmore Ballroom.



This year, we are sponsoring an Early Career Breakfast, IDEA Lunch and Discussion, and tantalizing your tastebuds for the PSA Business Meeting. Please be sure to check "attending" on your registration form so we may get an accurate headcount for these events.

Also, there are several exciting weekend workshops on seaweed collection and identification, producing publication-quality scientific figures, inclusivity in teaching, as well as an

aquaculture tour and oyster social at Roger Williams University. These spots will be reserved on a first-come basis. Secure your seats today!

*Please note you must purchase tickets for workshops and weekend events separately.*

### **ABSTRACT SUBMISSION**

Please follow the abstract preparation guidelines (see below). These guidelines and procedures must be followed exactly or your abstract will not be accepted. Please submit your abstract to the PSA2023 registration website [here](#). **The deadline for abstracts is 23:59 Eastern Daylight Time on April 30, 2023.**

***\*IMPORTANT\****

*Be prepared to submit your properly formatted abstract at the time of meeting registration.*

Selection of session topics is designed to facilitate assignment of your abstract to members of the Scientific Program Committee for review. Please note that meeting sessions may not match exactly this list of topics; we will make every attempt to group your presentation with those of similar topic. Priority is given to the overall scientific program and, therefore, final placement is solely at the discretion of the organizing committee. Please select your presentation type and session topic from the list of contributed session below:

### **CONTRIBUTED SESSIONS**

Oral Presentation- Applied Phycology  
Oral Presentation- Biodiversity  
Oral Presentation- Biogeography  
Oral Presentation- Cell Biology  
Oral Presentation- Climate Change  
Oral Presentation- Ecology  
Oral Presentation- Evolution  
Oral Presentation- Harmful Algal Blooms  
Oral Presentation- Molecular Biology  
Bold Award Competition (see the PSA Awards page for eligibility criteria)  
Poster Presentation  
Poster Presentation - Lewin Award (see the PSA Awards page for eligibility criteria)  
Lightning Talk

### **HOTEL ACCOMMODATIONS IN PROVIDENCE [Please book your stay at the Graduate](#)**



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, please coordinate with [Soren Schipper](#), PSA Student Member Representative, for potential room-sharing opportunities.

### PSA 2023 ORGANIZERS

Schonna Manning, Florida International University (PSA Program Director)  
Wade Huang, FDA (PSA Deputy Program Director)

### PSA ABSTRACT PRESENTATION GUIDE

Because program abstracts are now being archived along with meeting websites, they have become a resource to be consulted by the psychological community. Thus, the Scientific Program Committee is resolved to pay close attention to all submitted abstracts. An abstract should be informative and representative of the presentation, emphasizing data and results rather than methodology. Abstracts containing text such as "...data will be presented..." or "...conclusions will be discussed..." will be returned to submitters for revision.

All abstracts must be in English, using metric units. Do not include illustrations, figures, or photos. Please prepare your abstract as a Word document (.docx), using Times New Roman, 10-point font, with a single space between sentences.

Adhere to the following format, as demonstrated in the *Sample Abstract* below. Submissions that do not follow this format will be returned to authors for revision or may be rejected for consideration in the Scientific Program.

**Authorship:** Please use initials only for authors' first and middle names. If individuals are authors on multiple abstracts, please be consistent in the formatting of their names (i.e., use of middle initial, suffixes such as Jr., III, etc.). Include contact emails for all authors.

**Title:** The title of the abstract must be in ALL CAPS and must not exceed 160 characters.

**Abstract:** The body of the abstract must adhere to a maximum count of 1600 characters (including spaces), exclusive of title and author citations. Unlike past years, we are NOT using any special HTML coding for italics or special characters. Please prepare your abstracts with these already set up in the text. We do ask that you not use bold or underline formatting.

### SAMPLE ABSTRACT

Krueger-Hadfield, S. A., Marine Biological Association of the UK, United Kingdom, [stakru@mba.ac.uk](mailto:stakru@mba.ac.uk); Roze, D., Station Biologique de Roscoff, France, [roze@sb-roscoff.fr](mailto:roze@sb-roscoff.fr); Mauger, S., Station Biologique de Roscoff, France, [mauger@sb-roscoff.fr](mailto:mauger@sb-roscoff.fr); Destombe, C., Station Biologique de Roscoff, France, [destombe@sb-roscoff.fr](mailto:destombe@sb-roscoff.fr); Valero, M., Station Biologique de Roscoff, France, [valero@sb-roscoff.fr](mailto:valero@sb-roscoff.fr)

#### O FATHER, WHERE ART THOU? PATERNITY ANALYSES IN A NATURAL POPULATION OF THE RED SEAWEED *CHONDRUS CRISPUS*

*Chondrus crispus* follows an isomorphic haploid-diploid life history in which male gametophytes release non-motile spermatia and fertilization is followed by zygotic amplification. The objective of this study was to understand the impacts of haploid-diploidy, male gamete dispersal and the intertidal shorescape on the genetic structure of *C. crispus*. Individual fronds were sampled every 25 cm in two 5m x 5m grids located high and low on the shore. Fronds (N=472) and cystocarps (N=565, excised from 29 female gametophytes) were genotyped using polymorphic microsatellite loci. The maternal allele at each locus can be determined from the haploid female thallus. The remaining allele is the paternal contribution. Large levels of inbreeding detected using indirect methods were supported by the paternity analyses. Larger kinship coefficients were detected between males siring cystocarps on the same female than between males in the entire population. However, only 1 of 424 sires was sampled in the populations suggesting fertilization distances of less than 25 cm. More detailed sampling of genets is necessary to resolve the high levels of inbreeding associated with low levels of genetic differentiation.

# An Interview with 2022 Norma J. Lang Fellow Mohammad Moniruzzaman



**2022 Lang Fellow**  
**Dr. Mohammad Moniruzzaman**

*Earlier this year, I got a chance to ask 2022 Norma J. Lang fellow Mohammad Moniruzzaman a few questions about his research, his life, and how he became a successful phycologist.*

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

MM: I think algae are fascinating. When you realize that these tiny powerhouses do not only produce a substantial amount of Earth's oxygen, but also form the base of numerous food chains, their coolness becomes so obvious. Despite their small size, algae exhibit remarkable adaptability, thriving in various environments worldwide, even under extreme conditions ranging from Arctic snow to hot springs in the Yellowstone. With their compact genome size and vast functional diversity, they offer a convenient model for laboratory research, enabling us to explore the molecular mechanisms underlying a wide range of biological processes.

**SAKH: What is your favorite alga? (and why?)**

MM: This is a hard question, but I would like to focus on one alga: *Micromonas pusilla*. This green alga is one of the smallest eukaryotic primary producers, only slightly larger than *Ostreococcus*, which is the smallest known eukaryote. As a close relative of the ancestor of all land plants, *Micromonas* serves as an ideal model system for understanding the molecular basis of various physiological processes in plants. During my first postdoctoral position, I studied *Micromonas* for a year and a half and was intrigued by certain peculiar features in its genome. Specifically, a considerable portion of its genome exhibits anomalously low guanine and cytosine (GC) content compared to the rest of the genome. My research revealed that the expression of genes in these regions has a significant impact on the physiology of *Micromonas*, affecting its response to a wide range of biotic and abiotic stressors.

**SAKH: Do you have any advice on how to juggle your academic commitments (classes, research, teaching), your service commitments to the university and professional societies, and still have time (and energy!) to do effective scientific communication?**

MM: As a new faculty member, I am still in the process of learning and may not be in the best position to offer advice on this matter. However, I can share some insights based on my own experiences thus far. The initial months or even the first year can be overwhelming for new faculty as they navigate a complex system with

numerous moving parts. It is crucial not to be too hard on yourself if you fail to achieve a specific goal within the desired timeframe.

During my first few months, I took it one day at a time as I familiarized myself with the existing system. One piece of advice I can offer is to leverage the established infrastructure and seek assistance from experienced colleagues and administrators who have a solid understanding of how things function within an academic institution. This approach can save you significant time and effort. Occasionally, we may not even be aware of the resources and support personnel available to help us.

Over the past year, I have worked on honing my time management skills and delegating numerous tasks to my lab members. This strategy allows me to dedicate more time and energy to scholarly pursuits. I have also learned first-hand that if I do not overcommit myself and take time to rest and recover whenever I have a chance, I am more productive and passionate about my science.

**SAKH: It looks like you've had a recent string of big successes – not only are you a PSA Lang Fellow, but you've also landed a new faculty position. It's easy for young scientists to get discouraged when writing applications and looking for postdocs and faculty slots, since the success rate is very low. Can you estimate what percentage of your applications have been successful? What was your job search experience like? How many applications/interviews did it take before you got an offer? How did you keep yourself sane during the process?**

MM: We are all aware that obtaining a tenure-track faculty position has become increasingly difficult over the years, particularly in biological and biomedical sciences. The number of PhD graduates has grown, while the availability of faculty positions has not kept pace. This situation has given rise to numerous problems in academia, including the 'two-body problem' and 'postdoc hell.' When we consider personal preferences regarding relocation and unexpected personal circumstances that may arise during lengthy training periods (such as postdoc and PhD), this journey can be quite grueling for many of us.

It is important to remember that each academic journey is unique. In my case, as an international student, I faced visa restrictions that did not allow much time after my PhD to search for jobs. I had to find a postdoc position within 2-3 months of completing my PhD, which limited my options. However, I want to emphasize how fortunate I was to find incredibly supportive postdoc mentors, Dr. Alexandra Worden and Dr. Frank Aylward. I developed a passion for algal physiology while working in Dr. Worden's lab and enjoyed complete creative freedom to explore my research ideas in Dr. Aylward's lab. During my transition from Worden Lab, I applied for 8-10 postdoc positions and interviewed for three before accepting Dr. Aylward's offer at Virginia Tech.

I applied for tenure-track faculty positions in 2021, amidst the massive pandemic wave. That year, very few positions were advertised, so I applied for 12-13 jobs that I felt were a good fit for my research and teaching experiences and expectations. Ultimately, I received an offer from the University of Miami.

The limited number of job postings that year may have helped maintain my sanity, as the application process did not overwhelm me. I know many individuals who applied for 30-40 jobs before securing a suitable offer. In my case, that was not an option since there were so few jobs advertised.

**SAKH: I think many PhD students feel like they are just adapting others' work/ideas. Can you pinpoint the first time when your research really started to depart from your advisors' work and became your own? How important do you think "novelty" is for a young scientist trying to make a name for themselves?**

MM: I can relate to this sentiment based on my experience, and I also believe that feeling this way signifies growth as a scientist. During PhD and postdoc periods, we are 'officially' being trained as scientists, although I would argue that training does not end after the postdoc stage. To address your question, I think it's perfectly acceptable for PhD students to adapt to others' ideas. The goal is to achieve gradual independence, as students need sufficient knowledge about the progress and open questions in their field before they can generate their own ideas, which takes time.

During my PhD, I started working on giant viruses, knowing nothing about them initially. My supervisor provided several ideas that I pursued, and after 2-3 years, I had gained enough knowledge to even debate with him about data interpretation. Over the last few years, I have started working on my own ideas, which was partly facilitated by the last two years of my PhD and my second postdoc in Dr. Frank Aylward's lab.

Novelty in research can be defined in many ways, depending on one's perspective. A scientist can develop novel approaches to solve persistent scientific problems, discover new phenomena that spur further research, or find ways to leverage existing data to produce new insights. In that sense, we are all pursuing novelty. However, if we are talking about creating a 'buzz' or publishing in high-impact 'glam' journals, I do not think that should be a deal-breaker for success in academia (but sadly it can be – in many cases). I believe persistence and passion are more important. But we must acknowledge that young scientists require support from peers, financial security, and a good start in a productive and supportive laboratory to maintain persistence in science. Some of these factors are beyond our control, and passion alone may not be sufficient.

**SAKH: Tell me a little about Dr. Moniruzzaman the scientist. What are the big questions that have motivated you as you've come up through the ranks, and which ones do you see yourself addressing in the coming years?**

Since my undergraduate years, I have been captivated by the invisible yet vast realm of microbes. During my PhD, I became intrigued by the notion that some viruses can be as large and complex as cellular life, and I have remained focused on this area ever since. Throughout my career, I have primarily explored the ecological and evolutionary aspects of giant viruses in marine environments. My previous research examined the molecular aspects of giant virus-host interactions and their ecological dynamics in the context of algal blooms, which shed light on the finer details of their interactions with algal hosts.

In my newly established lab, I aim to expand upon this research by evaluating the eco-evolutionary dynamics of these viruses and their hosts in the global ocean. This will allow me to address fundamental questions regarding their impact on the marine food web and the eco-evolutionary dynamics of diverse protist lineages.

**SAKH: Now tell me a little about Dr. Moniruzzaman 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?**



MM: I have not quite figured out a set strategy for balancing my professional responsibilities and personal life yet, but I am actively working on it (laughs). I believe it takes time to determine the strategies that work best for each individual, and I'm still in the process of learning. For now, I am focusing on cultivating a disciplined, slow-and-steady approach to achieving specific goals. It's easy to be overwhelmed by the small challenges and responsibilities that arise daily, such as mentoring my graduate students, managing teaching duties, and handling administrative tasks. However, I am trying my best.

Aside from science, photography is another passion of mine. I have been practicing photography for about 15 years now, and there was even a point in my life when I considered pursuing it as a career instead of microbiology. My camera has helped me navigate many personal struggles, and I am grateful for that. Here is a shameless plug for my work: [www.flickr.com/bacillus](http://www.flickr.com/bacillus)

**SAKH: How has your first year as a Lang Fellow gone? Give us your “elevator speech” explaining the work you’ve been doing.**

My first year as a Lang fellow coincided with my first year as a tenure-track faculty member. During this time, I focused on establishing the primary research directions for my lab over the next few years, recruiting graduate and undergraduate students, and acquiring necessary equipment. Additionally, I began to form collaborative partnerships. Moving forward, my lab will address fundamental questions concerning the role and fate of giant viruses in marine environments through fieldwork, laboratory work, and computational biology approaches.

**SAKH: We all know science often doesn’t go the way we hoped — 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?**

MM: I am generally hesitant to share stories of personal struggles, but I have faced prolonged health issues for several years that significantly impacted my productivity and community engagement as a scientist. In addition, as an immigrant, it has been difficult to stay away from my family for such a long time. Moreover, I believe that transitioning from an extensive training phase to an independent PI position is a challenging journey for many, and I have experienced this struggle as well. I have been fortunate to have strong support from my friends and family, even though most of them live far from me. My previous supervisors have always been available whenever I needed their advice, and I really appreciate that.

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

MM: In the coming years, I aim to establish a research lab that investigates the role of viruses in biotic interactions across diverse marine environments, such as the open ocean, coastal ecosystems, and host-associated microbiomes. A key research focus in the lab will be the interactions between viruses and algae. I fully intend to attend PSA meetings to share our findings and learn from fellow phycologists!

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

MM: I joined the PSA last year and was granted funding to develop a model algal system through my Lang Fellowship. This marked a significant milestone in my career, as it was my first external support as a new PI. At

the most recent Joint Aquatic Sciences Meeting (JASM), I had the opportunity to meet several esteemed scientists whose work I admire, opening up strong potential for future collaborations. I am truly grateful for the support I received from the PSA at such an early stage in my career, and I hope to contribute to the organization's growth in the coming years.

**SAKH: Do you have any advice you'd like to give to young phycologists?**

MM: In today's research climate, rapid technological advancements and interdisciplinary approaches are revolutionizing not only phycology but many other scientific disciplines. This exciting era bridges traditional field and laboratory research with the explosion of big data. I strongly believe young phycologists should take this opportunity and be ambitious in defining the research questions they wish to explore. I think young phycologists should aim to become proficient in computational biology tools and scripting languages that will allow them to forge interdisciplinary collaborations, integrating field and wet-lab research with computational biology to generate valuable insights. Additionally, they should also work on building a robust scientific network by attending both in-person and virtual conferences. Participating in growing scientist communities on social media platforms like Twitter can provide access to resources and opportunities that will enrich their career trajectories.

## THE NORMA J. LANG EARLY CAREER FELLOWSHIP

### Norma J. Lang Early Career Fellowship

In 2023, PSA will select its 7th Lang Fellow. Named in honor of the late Norma J. Lang, this fellowship will grant a one-time payment of \$10,000 USD 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 15, 2023**

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>

## Update from *Journal of Phycology*

Happy new year!

After many years of dedication to the journal, **Sarah Jeffries** has decided to move on to her next adventure. We wish her the best and will miss her steady presence with the journal! I am happy to welcome **Dr. Megan Sherritt**, our new Assistant Editor, who joins us with considerable experience as a managing editor, assistant editor, and copy editor. Sarah and Megan were overlapping for January and February.

There are some big changes coming to the journal including a new journal design in the April Issue. I am very thankful to the Executive Committee and the entire Editorial Team (co-editors, editorial board, and associate editors) for all their feedback on this. By making this change, we will be able to cut six days off the production end for the journal. Megan and I are working on updating the Instructions to authors, and we are going to be trying out a new article type: "Methods".

For 2023, **Thomas Mock** (co-editor) has spearheaded a series of comment pieces on Algal models. [The first article](#) was written by **Mark Cock** and included an editorial by Thomas in the [February issue](#). We anticipate that there will be two papers per each issue this year. We are hoping to generate interest not only in these papers but in those that are in the same issue in order to draw more potential authors to the journal. In addition, this series will promote algal research and the use of algal models.

We have a [special virtual issue](#) on recent cyanobacteria papers that will be available shortly. Thank you to **Dale Casamatta** and **Sonya Dyhrman**. These papers will be free to view for two months. Please feel free to share widely, and if you are on Twitter, please tag the journal (@JPhycology).

Please feel free to reach out to me or the editorial team at any time. We welcome ideas and suggestions from all PSA members! Wishing you all the best in the new year.

**Kirsten Müller**  
Managing Editor



## CONFERENCE CORNER:

### In October 2022, phycologists gathered at the 44<sup>th</sup> Annual Southeastern Phycological Colloquy at the Belle W. Baruch Institute for Marine and Coastal Science in South Carolina

A few students provided their perspective on attending the Colloquy:



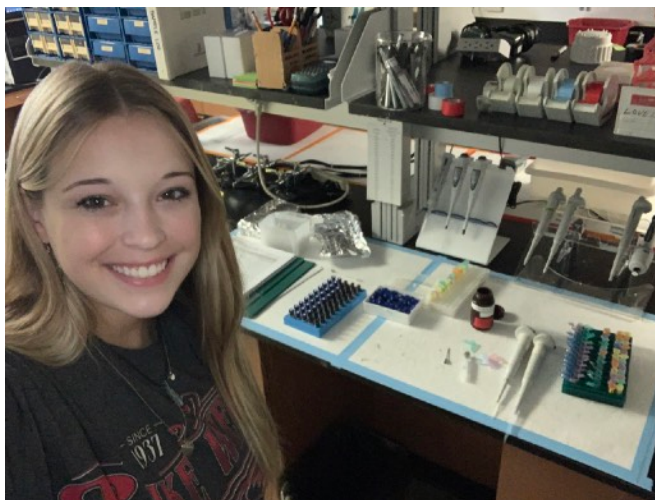
*Claire at her poster at SEPC*

**Claire White - Senior at College of Charleston:** The Southeastern Phycological Colloquy is a great experience for both undergraduate and graduate students seeking feedback on their research projects, the experience of presenting talks or posters, and ultimately the chance to network with other scientists who are interested in the same topics. As an undergraduate student just beginning a year-long senior thesis, I came to the conference with a poster, stating my plans for my project, without any hard data. It was such a great opportunity to be able to get

both questions and feedback on my poster in a smaller, more personal setting. SEPC provided an environment for more intentional discussion and made it easier to form connections with others. I really enjoyed the fact that this conference was mainly students as well, making it a learning experience for most of us!

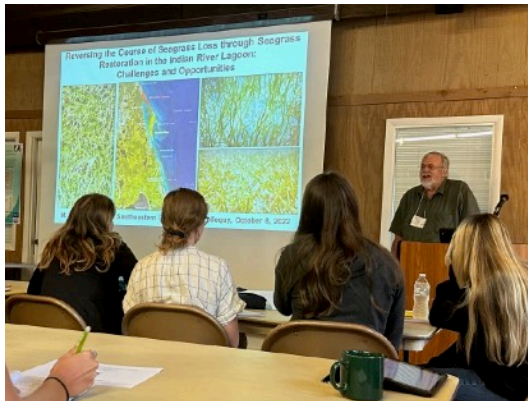
As a student of marine biology, it was so interesting to be able to see another side of phycology, pertaining to freshwater algae. At this particular conference, some of the talks involved discussion about freshwater algae, something that I have very little knowledge on. Whenever I think of algae, the first thing that comes to mind is seaweed, a marine organism, so this provided a great occasion to learn more about algae in different biomes. I will definitely be attending the Southeastern Phycological Colloquy next year, and hopefully with more data on my current project to discuss with others!

**Mikayla Radek - Class of '24 at University of South Carolina:** When I walked up to the podium to give a presentation on cyanobacterial contributions in Lake Murray, SC, I definitely had to shake off some nerves. After all, this was my first experience presenting research in front of



*Mikayla at the bench in the Estuarine Ecology Lab*

others. Afterwards, I received an outpouring of support, half of which came from members of the scientific community, many of whom I'd never met before. The 44th Southeastern Phycological Colloquy was not only a great networking opportunity for someone so early in her career, but it was a unique way to explore another facet of being a member of the scientific community: sharing research. Being able to gather with like-minded individuals and discuss ideas about continued research is the foundation of science. It's what it is supposed to be! This experience was so encouraging and uplifting that, in the following days, I signed up to be a member of the Phycological Society of America. I am so excited to be involved in this organization and I can't wait to participate in future events.



**One of the original SEPC attendees - Dennis Hanisak - presenting work in the Indian River Lagoon** © SA Krueger-Hadfield



**College of Charleston students with Dr. Heather Spalding, PSA Secretary!** © HL Spalding



**Field trip participants before heading out on a boating tour of the North Inlet Estuary.** © HL Spalding



**View of Winyah Bay from Hobcaw House.** © SA Krueger-Hadfield



**College of Charleston, Ohio University, and The University of Alabama at Birmingham phycologists on Debidue Beach.** © HL Spalding

## HISTORICAL CORNER:

In our last [newsletter](#), we highlighted a historical fiction book written by Caroline Cook based on the life of PSA's former president Dr. Hannah Croasdale, founder of our [Croasdale Fellowship](#). I had a chance to meet Caroline and she answered some questions about her book – *Tell Them to Be Quiet and Wait*. You can purchase the book through [Amazon](#) and donate to PSA at the same time!

**SAKH: Tell us a little bit about yourself and your interest in Dr. Croasdale.**

CC: I've always been a very curious person, and thought I'd be a scientist as a kid. What I knew more than anything was that I loved stories. I found Hannah's story my freshman summer at Dartmouth. I was a soon-to-be-declared English major looking for a topic for my fellowship in the college archives, and it was suggested that I might look into the story of Dartmouth's first female professor. I was immediately hooked by her story. Every new thing I learned fascinated me more. She was Hanover's first volunteer firewoman during WWII! She taught herself several languages. She and her friends at Woods Hole bought a boat and sank it on their maiden voyage. It was just all so real to me, who this person was and that she came before me meant I could have the experience I had at Dartmouth so many years later. I couldn't let the story go after that.



*Caroline with her book*

**SAKH: The book recounts the story of the first woman to occupy the position of a professor in a male-dominated world. While there are certainly more female professors in 2023, what are the parallels between then vs. now as seen through the two female characters in the book?**

CC: The parallels between then and now are too many to count! The biggest takeaway I took from Hannah's story was that no one gets anywhere alone. Her community of male coworkers held her career back, but it was also male peers and supervisors that advocated for her eventual promotion. People who lent their reputations, who stood by her. Hannah was making at times 60%

of her male peers' salaries and she supplemented her salary by illustrating textbooks on the side. The need to hustle, and the incredible patience and tolerance required to chase a dream, are very much the same today. The specifics have changed, and thankfully so have our communities.

**SAKH: Turning a real-life person's life and research into a work of fiction requires detailed research and some artistic license to fill in the gaps. Can you tell us a little bit about how you went about this task and some of the highs and lows?**

CC: There's a lot left behind in the archives. You're making sense of someone's life from receipts, letters, photos, newspaper clippings, Christmas cards. I had to fill in these gaps in the archive with other context, other letters, other records. It let me understand, for example, why Hannah was eventually promoted and who campaigned on her behalf. And even then, there's a lot we will never know. Writing fiction, rather than a biographer, allowed me to fill in those gaps in ways that are logical but can't be proven. Writing fiction also allows me to put the reader into the story in an experience that biographies just can't create. So in this way, the mysteries of the archives gave us a great gift.

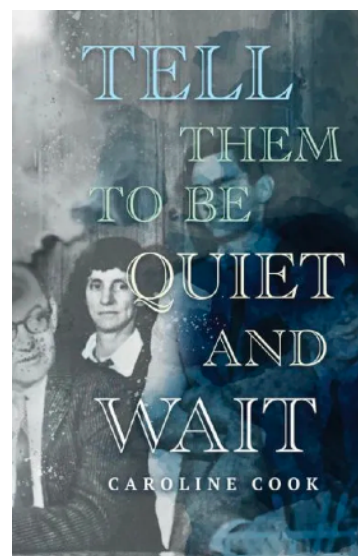
**SAKH: You mentioned you are not a psychologist, nor even a scientist. How did you tackle learning about Dr. Croasdale's research and translating that into a compelling tale?**

CC: I first approached the story as a historian. Hannah majored in biology at Penn at a time when there were only three majors open to women: biology, education, and architecture. So maybe she wasn't "destined" to be a biologist, but her passion for the natural world was so contagious to everyone – especially to her students – that it came to life off the page. I tried to contextualize why someone would care about these organisms *today* and then work backwards. What must it have been like to study anything in a pre-digital world? And beyond that, what did science give Hannah, where she could spend time in the field and with her microscope? I'm a storyteller, and to me, the story that emerged was that the study of algae to Hannah was freedom.

**SAKH: When we spoke, you said you have been asked and maybe even asked yourself: *why someone would care so much about algae?* After immersing yourself in a phycologist's world, I'm sure avid readers of the PSA Newsletter would want to know, are you a phycophile?**

CC: I learned about algae first through Hannah's manuscript collection at Dartmouth -- several boxes were just filled with her preserved samples, which now near 100 years old. Their colors were still vibrant and their shapes still incredibly intricate. I was interested in algae because I had to understand why Hannah was!

What I find so beautiful about these organisms is their ability to survive. They're ancient and incredibly tolerant of different environments and that reminds me so much of Hannah and this generation of scrappy scientists who leave their work behind as their legacy. Algae and this category of life form are a kind of legacy, one that perseveres where others couldn't. It sounds a bit dramatic, maybe, but that's what's always struck me.



## CROASDALE FELLOWSHIP

The [Hannah T. Croasdale Fellowships](#) are designed to encourage graduate students to broaden their phycological training by defraying the costs of attending phycology courses at biological field stations. The purpose of the award is to broaden phycological training and not necessarily to further research goals. Proposals to study at field stations associated with universities other than the student's own are especially encouraged. Fellowship support to attend courses unaffiliated with an academic field station should be requested from the Grants-in-Aid of Research Program. In 1987, the Phycological Society of America established the Hannah T. Croasdale Endowment Fund. Income generated by the fund's endowment supports the Croasdale Fellowship program. This program is designed to encourage graduate students to broaden their phycological training by attending phycology courses at biological field stations. To that end, financial assistance is provided.

**Eligibility:** Applicants must be members of PSA. They must be currently enrolled in a graduate program or formally admitted at the time of the submission of the application.

**Awards:** Fellowship awards are made in the amount of up to \$2,250 and are intended to defray costs incurred in taking the course: tuition, travel, room and board. Awards are made directly to the student or payable to the institution offering the course in amounts up to \$2,250 each. In recent years, success rates for the Croasdale have been ~50%, but vary year to year. The purpose of the award is to broaden phycological training, not necessarily to further research goals. Fellowship support for attending technique courses may be requested from the Grants-in Aid Research Program.

**Evaluation and Selection:** Selection of recipients will be based on the overall fit of the proposed course to the applicant's future career and research objectives, and the potential of the applicant to benefit from attendance. These qualities will be judged from information provided in the completed application, transcripts, and a letter of recommendation from the applicant's major professor. Applications will be evaluated by the members of the PSA Grants and Fellowships Committee, and will be notified of the committee's decision as soon as it is available.

**Application Procedure:** The completed application form should be sent by email to the Committee Chair by February 7 (first Monday in February annually). All applicants must use the fillable application form. A copy of her/his transcript (unofficial copies are acceptable) must be submitted. All application materials (except the letter of recommendation) must be compiled into a single pdf for submission, named with the applicant's Lastname\_Firstname.pdf. The student must request a short letter of recommendation from his/her major advisor. Please have your advisor submit only one (1) copy of this letter to the Committee Chair. The deadline also applies to the letter of recommendation.





# PSA MEMBERSHIP

Happy New Year 2023 to everyone!

It is a pleasure and a privilege to be taking over as membership director from Maggie Amsler. Please know that just like Maggie, I am just an email away – do not hesitate to contact me ([karolina.fucikova@gmail.com](mailto:karolina.fucikova@gmail.com) or [k.fucikova@assumption.edu](mailto:k.fucikova@assumption.edu)) if you have any questions or concerns about your membership.

First, a quick scoop on the current PSA membership: to date, we have 625 active members – a slight decrease from 2021, but still more than in 2020. We have added 74 new members in 2022 and are looking forward to adding more in 2023! Our members continue to represent over 40 countries (42 to be exact), and we continue to support our colleagues from Ukraine by providing gratis membership and access to the journal for 2023.

Below are some practical tips for renewing and managing your PSA membership.

**Renewing:** If you have not renewed your PSA membership for 2023 yet, now is the time – Wiley will otherwise hold your print journal and deactivate your online access (your access will of course resume once you renew). If you did recently renew, or are a lifetime member, you are all set! Similarly, if you are a student with a 3-year membership that is not up for renewal, no action is needed.

One easy way to renew is to follow the link in your Wiley reminder. Alternatively, you can use the following link: <https://www.psaalgae.org/membership-info>. If you are not sure whether you already renewed, do not worry! The system will alert you if that is the case, just be sure to use your member reference number (I can send it to you if you cannot find it). Occasionally, glitches occur – please email me if that happens and I will work with the Wiley representative to solve any issues that arise.

**Using Wild Apricot:** You may recall that we are now using Wild Apricot (<https://psoa.wildapricot.org/>) to manage our member database, run elections, and this year also for registration and abstract submission for our annual meeting. This is a great time to familiarize yourself with the platform. You can search for other members in the directory and contact them, for example. If you have lost your password you can reset it on the website, or let me know and I will send you a new one. One thing to keep in mind is that Wild Apricot is completely independent from the Wiley system. We update the WA database based on monthly updates from Wiley – so WA may not immediately reflect your correct membership status when you renew. It can take a month, sometimes more, so your patience is appreciated.

**Changing your address:** If you have moved or changed institutions, you will want to change your address in the Wiley system and in Wild Apricot. While you can update your Wiley profile/account anytime (top right corner at <https://onlinelibrary.wiley.com/journal/15298817>), these changes do not translate to the Wiley internal system for mailing purposes, unfortunately. Please email me those changes and I will coordinate with the rep to make sure your contact details are up to date in both systems. This is especially important if you receive the printed version of the journal.

**Benefits of PSA membership:** (You probably already know! But maybe you want to tell a friend.)

- PSA members receive the Journal of Phycology six times a year, including electronically and on mobile devices.
- 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 can publish in the Journal of Phycology without page fees, if publishing as communicating authors.
- Members receive a pdf copy of the Phycological Newsletter (also downloadable from <https://www.psaalgae.org/psa-newsletter>).
- Members pay lower registration fees at our annual meetings (including our upcoming meeting in Providence, June 25-29<sup>th</sup>).
- Student, postdoctoral, and early-career faculty members are eligible for a variety of grants – the full list can be found at <https://www.psaalgae.org/> under Awards and Grants.
- And, of course, the best part of your membership is being in great company of other algae enthusiasts!

Thank you for continuing to support our community and best wishes for 2023!

Karolina Fučíková  
Membership Director



## IN MEMORIAM

### Arthur C. Mathieson (1937 - 2022)



Arthur Curtis Mathieson was born in Santa Monica California, and received his degrees (B.Sc. (1960) and M.Sc. (1961 in Botany) from the University of California, Los Angeles, and his Ph. D. (1965 in Botany and Oceanography), at the University of British Columbia. He joined the Department of Botany at the University of New Hampshire (UNH) in 1965 as an Assistant Professor. He was promoted to an Associate Professor in the Department of Botany and Plant Pathology in 1970 and was advanced to Professor in 1974.

**Aquanaut:** During 1970, Art spent 20 days working and living in the Tektite habitat located 13 meters underwater in Great Lameshur Bay, Virgin Islands. Art was one of 50 scientists and engineers who took part in this pioneering project. He was selected for his diving skills and seaweed publications. Art initiated a [“Comparative study of subtidal vegetation in the Virgin Islands and the New England Coastlines”](#).

**Director of the Jackson Estuarine Laboratory (JEL) at Adam’s Point:** The JEL facility of the University of New Hampshire was dedicated in 1970. Art served as Director from early stages in 1972 through 1982. JEL is the only academic laboratory dedicated to the study of estuaries in the Northwest Atlantic.

**Prolific author:** Art distinguished himself as a prodigious scientist and writer, with over 288 publications. One example is the study by Art and his student Richard Fralick “Investigations of New England marine algae. V The algal vegetation of the Hampton-Seabrook Estuary and open coast near Hampton New Hampshire (*Rhodora* 74: 406-435, 1972)”. These investigations were baseline studies prior to the building and commissioning of the Seabrook NH nuclear power plant. Art served as the major or co-advisor for 39 graduate students, including 19 doctoral candidates. Throughout his career at UNH, Art obtained significant grants as the PI or co-PI that allowed him to carry on his research and support his graduate students.

**A Legacy of Collections:** Throughout his career, Art gathered and identified seaweed specimens recording their distributions and seasonalities, producing several volumes and a superb Herbarium collection. The UNH Albion Hodgdon Herbarium has over 75,000 algal specimens from his and his students’ collection. This is the 5<sup>th</sup> largest macroalgal collection in the US (Erin Sigel, Ph.D., Collection Manager Hodgdon Herbarium).

Art was particularly pleased about his role as editor of Volume 24, of Elsevier’s *Ecosystems of the World: Intertidal and Littoral Ecosystems* (1991) and two co-authored books on seaweed flora ([Dawes and Mathieson 2008](#), [Mathieson and Dawes 2017](#)). The latter was the first comprehensive seaweed treatment in the

Northwest Atlantic since William Randolph Taylor's (1957) *Marine Algae of the Northeastern Coast of the North America*.

**Ecology of Seaweeds:** Art devoted a good portion of his career to ecological studies with his student Ed Hehre and produced several monographs of seaweeds from the Gulf of Maine region. From ~2000 through 2015, Art served as a seaweed specialist for the Rapid Assessment Surveys of marine invasive species, in New England and New York (*ICES Journal of Marine Science* 65:730-741; *Biological Invasions* 10:985-988). The surveys, occurring roughly every three years, documented the changing marine flora and fauna of the marine and estuarine environments. The assessments complemented ecological surveys showing enhanced growth of green tides, (e.g., *European Journal of Phycology* 45:230-239), correlated with eutrophication of New Hampshire's Great Bay from inadequate sewage treatment, urbanization and atmospheric nitrogen deposition and climate change (*Rhodora* 115:28-41).

**Mentor and Collaborator:** Art was always ready to step away from his work to listen to research ideas and give advice on how to approach science to improve the estuary, whether it be from a student, assistant or faculty member. His efforts to facilitate research by students and faculty alike speaks to his selflessness in advancing science. As an example, an important contribution to seagrass ecology was part of a team led by Fred Short, but was aided by Art through support of graduate student Jim Kaldy (*Limnology & Oceanography* 40:740-749). That paper has now been cited over 350 times. Jim went on to earn a Ph.D. and is now a leader in understanding seagrass responses to excess nutrients.



During his tenure at UNH, Art taught a variety of undergraduate and graduate courses in botanical and marine science including Aquatic Botany, Marine Phycology, and Marine Ecology. All of these classes included student collecting trips, often early in the morning in mid-winter to catch the best low tides. Collections were followed by careful examination and identification of samples in the teaching lab.

After retirement in 2018, Art continued his research on seaweeds and collaboration with his colleagues at the JEL and the Department of Biological Sciences, and the Center for Coastal and Ocean Mapping. In addition to his scientific success, Art was a warm, friendly, and helpful father, friend, and colleague. As noted at his Celebration of Life, on 1 October 2022, Art was positive force in many lives. He is survived by his wife Myla, his three children, and two grandchildren.

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## Raymond W. Holton



Dr. Raymond W. Holton, greatly loved husband, father, grandfather and scholar departed this life on February 9, 2023, at the age of 93. He grew up in Corona, California, earned his BA from Pomona College and his MS and PhD from the University of Michigan. In 1963, he began his career as a professor of Botany, UT Knoxville, and became acting head of the Botany Department in 1964 and Department Head in 1966. He served in that position until 1985 and retired as an Emeritus Professor in 1997. Ray and Linda also enjoyed many activities together including attending the symphony, Lady Vol's Basketball games, and traveling extensively to see new sights or meander through familiar areas which included many an afternoon along streams in pursuit of Ray's passion for algal collection.

## Xiugeng Fei (14 April 1932 - 22 December 2022)

Professor Xiugeng Fei was an extraordinary leader in the development and success of macroalgal aquaculture in modern China. In this commemoration, we briefly review his early life, recruitment to Professor C. K. Tseng's research group and role in developing large-scale seaweed aquaculture, productive (and fun) scientific exchanges with international scientists after 1978, and enduring contributions to macroalgal aquaculture and phycology. Principal appointments, awards, students, selected publications, and footnotes are listed at the end.

**Early Life and Training in Mariculture:** Fei grew up in Suzhou, near the coastal city of Shanghai. He entered the Department of Aquaculture at Shandong University (Qingdao) in 1950, and found an important and like-minded mentor in Prof. C. K. Tseng (B.S., Xiamen University, 1931; M.Sc., Lingnan University, 1934; Ph.D., University of Michigan, 1942; research associate at Scripps Institution of Oceanography 1943-1946; participant in organization of the Phycological Society of America, 1946; PSA Award of Excellence, 2001)<sup>1</sup>. Tseng returned to China in December 1946 to become Professor and Chair of the Dept. of Botany at the National University of Shandong at Qingdao, where he also co-organized an Institute of Oceanology and Limnology. This Institute became part of the new advanced research institutes formed within the Chinese Academy of Sciences (CAS) in 1949 after the founding of the People's Republic of China; it acquired its current name, the Institute of Oceanology of the Chinese Academy of Sciences (IOCAS), in 1959<sup>1</sup>.

Fei joined Tseng's research group as an intern after graduating from Shandong University in 1954. Over the next 5 years, the research team solved many biological, engineering, and workforce constraints that led to commercial-scale establishment of the kelp *Saccharina japonica* ("haidai") in mariculture<sup>2</sup>. Then, Tseng directed Fei to carry out nutrient analyses, studies of primary productivity, and foundational research on culture techniques and seeding technology as a Research Assistant and Team Leader (1960-1979)<sup>3</sup> to develop red algae such as *Porphyra* (*sensu lato*)<sup>4</sup> and the agarophytes *Gracilariopsis lemaneiformis* and *Gracilaria vermiculophylla* as mariculture crops. These crops were needed to provide food and chemical products (including agar) to the Chinese people and grow the country's economy. Fei continued to travel widely and work with other IOCAS team members to determine how the crops were growing under different conditions and to meet with the fishermen who were expanding macroalgal farming on the Chinese coast.

The period of the Cultural Revolution (1966-1976) in China was very difficult for scientists; most research stopped<sup>1</sup>. Fei became a janitor at the Institute, and was also sent out to coastal communities to do manual labor alongside the villagers<sup>5</sup>. Fei said<sup>5</sup> that he learned a lot from the villagers, was treated kindly, and made friends. Indeed, when Fei developed stomach cancer in 1990, fishermen whom he had served before, during, and after the Cultural Revolution raised the money needed to support production of monoclonal antibodies in



**Plate 1.**

1. Mr. Xiugeng Fei (1982) studying *Macrocystis* gametophytes with fluorescence microscopy at the University of California Santa Barbara with Dr. Michael Neushul (background) (Photo courtesy of Peter Neushul).
2. Xiugeng Fei and Susan Brawley at the top of Taishan (1984), a few hours after viewing the sunrise (Photo credit: X. G. Fei's tripod).
3. Prof. Xiugeng Fei (left) and Prof. C. K. Tseng having one of many discussions about research, papers, and laboratory business at the Institute of Oceanology of the Chinese Academy of Sciences (IOCAS), Qingdao (1985) (Photo credit: Susan Brawley).
4. Prof. Xiugeng Fei (1989) with IOCAS colleague Mr. Shaoxing Lian (left) and a *Gracilaria* fisherman (right) in Lianjiang, Fujian Province. Mr. Lian is holding a cultivated line of *Gracilaria*, an important source of agar. Fei and his team introduced *Gracilaria* mariculture to southern China (Fujian Province) in 1988. (Photo courtesy: Shaoxing Lian).
5. Prof. Xiugeng Fei (1997) lecturing at the IOCAS (Qingdao) (Photo credit: Shan Lu).

sheep against his cancer. Fei's cancer went into remission following the surgery and the experimental monoclonal treatment.

As the Cultural Revolution ended, the Institute's research to develop *Porphyra*<sup>4</sup> as a major aquacultural industry on the Chinese coast resumed. Fei was the team leader<sup>3</sup> for these efforts at the Institute of Oceanology. Over two decades (~1967-1987), he led talented colleagues and co-workers at the IOCAS in experimental laboratory and ecological work that resulted in coastal farms growing *Porphyra*<sup>4</sup> from northern Liaoning Province to southern Jiangsu Province. Subsequent improvements in yields and other characteristics of *Porphyra*<sup>4</sup>, benefited from Prof. Fei's "*Porphyra*<sup>4</sup> Seeding Project", begun in 1987. The Seeding Project collected many different strains of *Porphyra*<sup>4</sup> to form a large culture collection of the diploid, filamentous stage ("conchocelis"<sup>6</sup>) in the life

history<sup>6</sup> of each strain (See Enduring Accomplishments, below). These strains were then used in experimental selection experiments by Fei, his colleagues, and students. Prof. Fei was so happy that their research had improved the coastal economy and the lives of so many fishermen. These efforts won national prizes for the Institute of Oceanology and some of its scientists by name, including Fei<sup>7</sup> (see Selected Awards, below). As the collection grew, it became the basis for establishment of the National Seed Bank of *Porphyra*<sup>4</sup> (Institute of Marine Fisheries Research, Jiangsu Province).

**International Collaborators and Travel:** Associate Professor Fei began to visit researchers overseas with Prof. Tseng's encouragement after the Cultural Revolution ended. Professor Emeritus Yusho Aruga (Tokyo University of Fisheries) recalled meeting Fei in the mid-1970s when Fei visited the Yamamoto Nori Research Laboratory with two other Chinese scientists: "One evening, we (Drs. Yusho Aruga, Akio Miura, Tsuyoshi Ohfusa, Osamu Imada) and the Chinese scientists had dinner together in Shinagawa. We exchanged information on seaweed cultivation in Japan and China, and discussed its future"<sup>8</sup>. This would have been a good time to have been a "fly on the wall", because of the important roles that some of these men would play in seaweed aquaculture in Japan and China.

Following Prof. Mike Neushul's visit with Prof. Tseng in Qingdao in the 1970s, Fei's first research visit to the US (1981- 1983) was arranged. Fei spent a year in Neushul's lab at the University of California, Santa Barbara and then a half-year at the State University of New York at Stony Brook (with Dr. Bud Brinkhuis). Fei's research visits were sponsored by the US Gas Research Institute and New York Sea Grant Institute (NOAA). He quickly got his California driver's license, which allowed him to explore his new surroundings, maps in hand! Fei collaborated on kelp cultivation and seeding technology during these visits and published several papers on *Macrocystis* growth in different experimental conditions with Prof. Neushul (see Selected Publications). Returning to the IOCAS, he was made Dean of Botany, and promoted to Professor (1986); his research still spanned kelps, *Porphyra*<sup>4</sup> and *Gracilaria*.

Fei began to host international researchers at the IOCAS. Susan Brawley (Vanderbilt University), a 1984 Grantee of the US National Academy's Committee on Scholarly Communication with the Peoples' Republic of China, came to Qingdao for 5 months of experimental research to test whether some kinds of amphipods could serve as biocontrol agents to remove algal epiphytes from *Gracilaria* and *Gracilariopsis*. The field experiments were done in Fei's experimental mariculture farm in Qingdao City. She returned in summer 1985 (National



#### Plate 2.

6. A "power team" on a site visit (March 2010, Haian coast, Jiangsu Province), following Dr. Xu's request that they evaluate the qualities of new cultivars in the trial grow-out. Among individuals in the photo are two generations of Chinese professors who supported the *Porphyra*<sup>4</sup> (*Neopyropia*) industry in China: (from left): Profs. Qinqin Lu (Jiangsu Marine Fisheries Research Institute, current Director, National Seed Bank), the late Pu Xu (first Director, National Seed Bank, Nantong; Changshu Institute of Technology), Peimin He (Shanghai Ocean University), Xinghong Yan (Shanghai Ocean University), Chaotian Xie (Jimei University), Xiugeng Fei (IOCAS), Daling Shen (Fudan University), Jiahai Ma (Shanghai Ocean University), Xuecheng Zhang (Ocean University of China) (Photo courtesy of Peimin He).

7. Profs. Charles Yarish, Xiugeng Fei, and Ms. Jing Xiong Zou (Fei's wife) at a Labor Day Parade in Newtown, CT during Prof. Fei's 1995 research trip to Yarish's laboratory at the University of Connecticut Stamford (Photo courtesy of Charles Yarish).

8. Nicolas Blouin (then a UMaine Ph.D. student), Xiugeng Fei, and Peng Jiang (Fei's assistant from Qingdao) at Eastport, ME in 2005 during Prof. Fei's research at the University of Maine with Susan Brawley (Photo credit: Susan Brawley).

Geographic Society funding) to continue this work (see Selected Publications). Brawley greatly appreciated Fei's encouragement to bike and explore, a much different experience than that of most American scientists visiting China in the mid-1980s. On her arrival in Qingdao, Fei took her to a bicycle shop. The next day, he walked her to Zhongshan Gongyuan (a large park) and taught her to say her first three words of Chinese ("Two tickets, please"). Fei's wife, Jing Xiong Zou, was also from Suzhou, and she became an Accountant in the Equipment and Material Supply section of the Institute of Oceanology. Her young colleague, Ms. Cao, wanted to learn some English, so Prof. Fei and Ms. Zou instigated "swapped" lunch lessons between Brawley and Cao. Fei immediately bought Brawley textbooks for learning Chinese.

Fei was an expert dizi (Chinese flute) player, and proud of Chinese history and culture, which he liked to share. Keen to have Brawley visit Taishan, a half day's train trip from Qingdao and the most important of China's

"sacred mountains", he arranged a

trip. Fei and Brawley hiked to the top, stayed overnight in the temple complex after renting thick, long coats for the next morning, and viewed the sunrise from Taishan with about a hundred other Chinese tourists. Brawley says she'll never forget it, including the long, steep staircase called "Horses Cannot Pass". Fei hosted Brawley

and marine phycologist/ecologist Jane Lubchenco (Oregon State University, NSF funding) for a 2-month study in 1987 of human impacts on the marine intertidal zone. Brawley also visited Prof. Fei in 2004 (with student Nicolas Blouin), 2009, and 2019 during trips to lecture, to visit aquaculture farms and product processing companies, and to attend meetings of the Chinese Society of Phycology.

Charles Yarish (University of Connecticut) began collaborating with Xiugeng Fei at the IOCAS in 1989, and made multiple return visits in the 1990s and early 2000s for research on kelps, *Porphyra*<sup>4</sup>, and *Gracilaria*. Prof. Fei wanted Yarish to spend time with fishermen in villages where seaweeds were being cultivated, in order to learn their techniques and see how hard they worked. He dropped Yarish off after warning the fishermen that Yarish was allergic to peanuts. Yarish fondly remembers his cot and the many simple, delicious dishes---cooked without peanut oil. Fei was always concerned about Yarish's allergy; they ate Kentucky Fried Chicken, because they knew the KFC food was free of peanut oil. In late 1997, however, when Fei was giving

Yarish and Ike Levine a grand tour of Beijing, and his favorite Peking duck restaurant was closed, the inevitable happened at a French bakery. As Yarish started to go into anaphylaxis, they got a taxi to the hospital and located the ER, but the room was too dark for the doctors to see well. Fei came to the rescue by climbing a ladder and fixing the fluorescent fixture; he always carried a small tool kit!



**Plate 3.**  
**9.** Prof. Fei (2001) with a boatman enroute to a macroalgal farm in Lianyungang (Photo courtesy of Shaojun Pang).  
**10.** A celebration in Qingdao (1997) just after the Ph.D. defense of Fei's advisee Xiaorong Tang (Front Row, left). **Back row:** Committee member Charles Yarish (right) and Visitor (Prof. Michael Stekoll); **Front Row** (right): postdoc Dr. Shan Lu, graduate student Junxue Mei (far right) (Photo courtesy of Shan Lu).  
**11.** Profs. Pu Xu (Professor, Changshu Institute of Technology), Charles Yarish, and Xiugeng Fei at a Chinese Society of Phycology meeting (2005) (Photo courtesy of Charles Yarish).  
**12.** Prof. Fei's individual Olympics' Sailing Gold Medal and certificate, awarded to him by the Qingdao City government and Olympics Committee for meritorious advice contributing to successful sailing competitions in Qingdao (2008) during the 29<sup>th</sup> Beijing Olympics.  
**13.** Mr. Yide Yu (Fei's research assistant, left), Fei, and Mr. Jingpu Zhang (assistant) inspecting an experiment (2006) at the IOCAS in a raceway they built (Photo courtesy of Shaojun Pang).

financial support from the National Oceanic and Atmospheric Administration (NOAA) International Program's Office and the Connecticut Sea Grant Program. Fei was accompanied by his wife, Ms. Zou. Fei, Yarish, and other researchers from several New England universities and a Maine company participated in a major NOAA grant aimed at development of nori farming in New England. Fei shared his vast experience with *Porphyra*<sup>4</sup> crops with all members of the team, which included Yarish, Arthur Mathieson, Christopher Neefus, Anita Klein, Don Cheney and others.

Prof. Fei and Ms. Zou visited the University of Maine in Orono for two months in 2005 (Maine Technology Institute and Maine Sea Grant funding). Fei was accompanied by an assistant, Mr. Peng Jiang, and they collaborated in research that Brawley and her graduate student Nicolas Blouin were doing to develop grow-out



techniques for nets seeded with neutral spores of *Porphyra umbilicalis* (“laver”) (see Selected Publications). Raceway construction was one of Fei’s many specialties; he, Brawley, Blouin, and Jiang spent 3 weeks building a large one at the University of Maine’s Center for Cooperative Aquaculture Research. Spore-seeded nets were cultured in the raceway before transporting them to Cobscook Bay at Eastport, ME. During this visit, Ms. Zou taught everyone to cook delicious new dishes with our local *Porphyra* spp., including with a demonstration in the test kitchen of the University of Maine’s Food Sciences Department. Zou considered *Porphyra linearis* to be the most delicious *Porphyra* on the Maine coast.

**Enduring Accomplishments:** Prof. Fei and his Chinese and international colleagues and students published over 80 papers, and Fei received 15 patents. A particularly important contribution to Chinese aquaculture was the comprehensive 1978 book on seeding technology and cultivation (see Selected Publications, *The Artificial Cultivation of Porphyra*<sup>4</sup>). The *Porphyra*<sup>4</sup> Seeding Project that Fei began in 1987 was the beginning of the National Seed Bank of *Porphyra*<sup>4</sup> (Institute of Marine Fisheries Research of Jiangsu Province); the late Prof. Pu Xu, one of Fei’s Ph.D. students, was its first Director. The National Seed Bank has continued to expand and support production of *Porphyra*<sup>4</sup> crops with traits adapted to regional conditions. Prof. Fei and his team collaborated with fishermen to introduce these cultivars into farming practice over many years, resulting in major improvements in commercial production. He also carried out laboratory experiments and field trials to examine the potential for “free-conchocelis seeding”<sup>9</sup> in cultivation of *Porphyra*<sup>4</sup> species in China; however, at farm production scale, it is easier for fishermen to obtain conchospores for net seeding from conchocelis-inoculated molluscan shells, the standard technique for more than a half-century in Asia. The free-conchocelis technique, however, is important for germplasm stocks and for breeding of new cultivars.

Fei and his team started cultivation and strain selection for the agar-producers *Gracilaria*<sup>6</sup> and *Gracilariopsis* (“jiangli”) from wild material in Qingdao in 1984. Fei and his team then introduced these species into commercial cultivation by fishermen in southern China (Fujian Province) in 1988. Today, the size of the mariculture industry for these crops in China is second only to the kelp crops.

In 1984, Fei visited the kelp seedling production unit of the Fujian Sansha Fishery Co. Ltd. At that time, all of the kelp seeding enterprises used palm fibers as the substrate for attaching meiospores<sup>6</sup> of the kelp *Saccharina japonica* (“haidai”). Kelp meiospores germinated into gametophytes on the palm fiber-seed string (twine) to establish juvenile sporophytes<sup>6</sup>, but toxic substances sometimes leached from the palm fiber to harm the juvenile stages---and even cause failure of the hatchery. Mr. Zhenhui Jin was a technician in 1984 at Fujian Sansha Fishery Co. Ltd, and is now the Manager of Fujian Xinhai Aquaculture Seed Co. Ltd. He remembers that Fei designed experiments with him in 1984 in indoor tanks using synthetic fiber as substrate in parallel to palm fiber in a flow-through seawater system<sup>10</sup>. The experiments showed that the synthetic fiber was suitable for seeding. After this successful trial, the hatchery company enlarged the number of collectors using twines made with synthetic fiber. Within a few years, synthetic twine had replaced palm fiber in all hatcheries in Fujian Province. Fujian now produces more than half of all the kelp grown on the Chinese coast<sup>11,12</sup>.

Fei was concerned about the environment, and he advocated for more seaweed aquaculture to reduce coastal eutrophication from anthropogenic sources, including carrying out experiments to test the efficacy of particular species (See Selected Publications). Fei’s expertise as an ecologist led to him being consulted by the Qingdao City Government and the Olympics Sailing Games organizers when a large green tide (*Ulva* spp.) threatened the sailing competitions of the 29<sup>th</sup> Beijing Olympics (2008), which were held in Qingdao. Fei advised on the nature of the algae in the bloom, actively participated in a national public television program (“Libing interview”), and with other colleagues and experts devised procedures that prevented cancellation of the sailing competition. For his role, Prof. Fei received an individual award for outstanding contribution and an Olympics Sailing Games’ Gold Medal from the Qingdao City Government and the organizers of the Olympics Sailing Competition.

Fei was a member of the International Phycological Society (1991-2001), the Asia-Pacific Society for Applied Phycology (1994-2005), and served as Secretary (1979-1990) and President (1990-1995) of the Chinese Society of Phycology. He made active contributions to management of the 11<sup>th</sup> International Seaweed Symposium (1983) in Qingdao<sup>8</sup>, convened by Prof. Tseng, even though he had just returned from 1.5 years in

the US. Professors Fei and Tseng were co-conveners of the 5<sup>th</sup> International Phycological Congress in Qingdao in 1994<sup>13</sup>.

From the time he was an undergraduate at Xiamen University<sup>1</sup>, Tseng was fascinated by the algae and the potential to farm them in China by developing new techniques. The seaweed aquaculture industry in China developed rapidly in the 1950s because of the multifaceted innovations developed by Tseng and other researchers, and China became the world's largest producer of seaweeds through aquaculture (FAO, 2022)<sup>12</sup>. Many fine scientists, technicians, and fishermen were involved in this accomplishment, but a significant amount of credit for the accomplishment belongs to Xiugeng Fei.

All who knew Professor Fei will remember his consistent optimism, strong and collegial leadership, dedication to doing basic and applied research to improve the lives of ordinary Chinese, deep curiosity, and delight in his family, students, and colleagues. Fei played ping pong expertly; even as a retiree, he played an hour/day for at least 5 days/week until a couple years before his death. Ms. Zou and Professor Fei were happily married for 63 years, and they were very proud of their two sons and 5 grandchildren.

We will also remember that Professor Fei always needed the latest (best) laptop, and often wore a fisherman's jacket that held, among other things, a small tool kit and at least two different cell phones! Fei was the product of an Institute that would foster high quality marine biology and oceanography while doing science that improved peoples' lives and contributed greatly to the Chinese economy. The phycological and aquacultural communities will long remember him, and many of Fei's former students and colleagues in China and other countries are carrying on his work.

This remembrance is also a testament to the many friendships that the algae have inspired among international researchers. They make the world a better place.

Written by:

Susan H. Brawley\* (School of Marine Sciences, University of Maine, Orono, ME 04473 USA; [brawley@maine.edu](mailto:brawley@maine.edu))

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Charles Yarish\* (University of Connecticut, Stamford, CT 06901 USA; Woods Hole Oceanographic Institution, Woods Hole, MA 02543, USA; [charles.yarish@uconn.edu](mailto:charles.yarish@uconn.edu))

\*listed alphabetically

#### Xiugeng Fei's Principal Appointments:

1. 1954.7- 1960.7: Research Intern with Prof. C. K. Tseng, Institute of Oceanology, Chinese Academy of Sciences (Qingdao) (=IOCAS, hereafter)
2. 1960.7-1979.7: Research Assistant and Team Leader under Prof. C.K. Tseng, IOCAS.
3. 1979.7-1981.8. Associate Professor and Lead Researcher for basic and applied research on *Gracilaria* and *Porphyra*, IOCAS
4. 1981.9-1983.6: Visiting Researcher, University of California, Santa Barbara and New York State University, Stony Brook.
5. 1983.6-1986: Associate Professor and Dean of Botany (1984), IOCAS, Qingdao.
6. 1986-2005: Professor, IOCAS.
7. 1987.10-1991.10: Vice Director of Chinese Academy of Sciences' Key Laboratory of Experimental Marine Biology (EMBL), IOCAS.
8. 1990.11-2005: Ph.D. Advisor, IOCAS.
9. 1991.10-1996.4: Director, Chinese Academy of Sciences' Key Laboratory of Experimental Marine Biology (EMBL).
10. 1996.4-2001.6: Director of Academic Committee, CAS Key Laboratory of Experimental Marine Biology.
11. 2001.6-2005.4 IOCAS Professor, Member of Academic Committee for CAS Laboratory of Experimental Marine Biology.
12. 2005.4-2012. Retirement (2005.4); Advisor, Academic Committee, CAS Key Laboratory of Experimental Marine Biology.

#### Selected Honors and Prizes:

1. 1978 National Science and Technology Conference, a First Prize to the Institute of Oceanology of the Chinese Academy of Sciences/Xiugeng Fei: "*Porphyra* Seaweed Experimental Ecology Research".
2. 2000 Science and Technology Advancement Award (Chinese Academy of Sciences), a First Prize to the Institute of Oceanology of the Chinese Academy of Sciences: "*Porphyra* Seeding Project".
3. 2000 Marine Innovation Achievement Award (State Oceanic Administration), a First Prize to the Institute of Oceanology of the Chinese Academy of Sciences: "*Porphyra* Seeding Project".

4. 2002 State Science and Technology Progress Award, (Ministry of Education, Science & Technology), a First Prize, Advancement Category, to Xiugeng Fei (IOCAS) & Xuecheng Zhang (Ocean University of China, Qingdao) for development of *Gracilariopsis lemaneiformis* strain "981".
5. 2002 National Science and Technology Advancement Award, a Second Prize to Xiugeng Fei, Pu Xu, Yide Yu, Shaoxing Lian, Xiaorong Tang, Xuejun Mei, and Ying Bao, "Porphyra Seeding Project".
6. 2008: Certificate and Olympics Sailing Gold Medal (Qingdao City Government & Olympics Sailing Competition Organizers), Individual Award to Xiugeng Fei for his scientific contribution to a successful Sailing Competition.
7. 2012: "Zeng Chengkui (C. K. Tseng) Ocean Science and Technology Prize" (career award to Xiugeng Fei), 10<sup>th</sup> National Congress of the Chinese Society for Oceanology and Limnology, Qingdao.

**Graduate Students:** Duan Liu (M.Sc., 1988), Yongxu Wang (M.Sc., 1991), Xiaorong Tang (M. Sc., 1993, Ph.D., 1997), Guohong Peng (Ph.D., 1993, co-advised by C. K. Tseng), Delin Duan (Ph.D., 1994), Pu Xu (Ph.D., 1997), Junxue Mei (Ph.D., 2000), Shan Lu (postdoctoral researcher, 1997, co-advised by C. K. Tseng). (Fei trained many students and technicians before degree programs were reinstated, and he became a Ph.D. advisor).

**Selected Publications of Xiugeng Fei (of ~ 80 total) in chronological order:**

Institute of Oceanology Chinese Academy of Sciences<sup>7</sup>. 1978. *The Artificial Cultivation of Porphyra (=Neopyropia yezoensis)*. Beijing: Science Press (in Chinese).

**Fei XG.** 1983. Macroalgal culture in California and China. In: *Seaweed Raft and Farm Design in the United States and China*. pp. 301-308. (Ed:Laura McKay). New York Sea Grant Institute.

**Fei XG,** Neushul M. 1984. The effects of light on the growth and development of giant kelp. *Hydrobiologia* 116-117(1): 456-462.

Brawley SH, **Fei XG.** 1987. Studies of mesoherbivory in aquaria and in an unbarricaded mariculture farm on the Chinese coast. *Journal of Phycology* 23, 614-623.

**Fei XG,** Lu S, Bao Y, Wilkes R, Yarish C. 1998. Seaweed cultivation in China. *World Aquaculture* 29 (4): 22-24.

Tang XR, **Fei XG.** 1998. Development of suspended conchocelis of *Porphyra haitanensis* (Bangiales, Rhodophyta). *Chinese Journal of Oceanology and Limnology* 16(4): 339-345.

Yarish C, Wilkes R, Chopin T, **Fei XG,** Mathieson AC, Klein AS, Friel D, Neefus CD, Mitman GG, Levine I. 1998. Domesticating indigenous *Porphyra* (nori) species for commercial cultivation in Northeast America. *World Aquaculture* 29 (4): 26-29, 55.

**Fei XG.** 1999. Biology basis of germplasm in *Porphyra*. In: Tseng CK *et al.* (Eds.). *Biology of Germplasm and Seedlings in Economic Seaweeds*. Shandong Science and Technology Press, Jinan, pp. 50-88 (in Chinese).

**Fei XG,** Bao Y, Lu S. 1999. Seaweed cultivation: traditional way and its reformation. *Chinese Journal of Oceanology and Limnology* 17(3): 193-199.

Yarish C, Chopin T, Wilkes R, Mathieson AC, **Fei XG,** Lu S. 1999. Domestication of nori for Northeast America: The Asian experience. *Bull. Aquacult. Assoc. Canada* 99-1: 11-17.

**Fei XG,** Tseng CK. 2003. Large scale seaweed cultivation for nutrient removal – a possible solution to the problem of coastal eutrophication. In: *Status of Aquaculture in China* (Eds., Cheng-Sheng Lee and Andria Ventura), The Oceanic Institute at Hawaii. pp 89-97.

**Fei XG.** 2004. Solving the coastal eutrophication problem by large scale seaweed cultivation. *Hydrobiologia* 512(1-3): 145-151.

Tang XR, Jiang HX, **Fei XG,** Yarish C. 2004. New life cycles of *Porphyra katadai* var. *hemiphylla* in culture. *Journal of Applied Phycology* 16(6): 505-511.

Mei JX, **Fei XG,** Duan DL. 2005. Observation of female gamete (carpogonia) germination of *Porphyra yezoensis* and *P. oligospermatangia*. *Chinese Journal of Oceanology and Limnology* 23: 414-417.

Yang Y-F, **Fei XG,** Song JM, Hu HY, Wang GC, Chung IK. 2006. Growth of *Gracilariopsis lemaneiformis* under different cultivation conditions and its effects on nutrient removal in Chinese coastal waters. *Aquaculture* 254, 248-255.

Blouin NB, **Fei XG,** Jiang P, Yarish C, Brawley SH. 2007. Seeding nets with neutral spores of the red alga *Porphyra umbilicalis* (L.) Kützing for use in integrated multi-trophic aquaculture (IMTA). *Aquaculture* 270, 77-91.

Wang JF, Xu P, Zhu JY, Zhou W, Xu JR, Fei XG *et al.* 2009. The characterization of color mutations in Bangiaceae (Bangiales, Rhodophyta). *Nineteenth International Seaweed Symposium* (Eds: Borowitzka MA, Critchley AT, Kraan S, Peters A, Sjøtun K, Notoya). Springer-Dordrecht.

## Footnotes

- <sup>1</sup>Tseng, C. K. 1994. My research life for the past sixty-three years. IN: *Selected Works of C. K. Tseng (Vol. 1)* Eds: Yunshan Qin (Editor) & Baicheng Zou (Associate Editor), Beijing: Ocean Press. pp. 1-25.
- <sup>2</sup> Wu, C.Y. & C. K. Tseng. 1962. *Kelp ("Haidai") Cultivation*. Beijing: Science Press. (in Chinese).
- <sup>3</sup> Fei, X. G. 2010. Curriculum Vitae (copy held by SHB will be sent to PSA Archives).
- <sup>4</sup> The *Porphyra* species developed for aquaculture in China are currently classified as *Neoporphyra haitanensis* and *Neopyropia yezoensis*, with common names of "zi-cai" (Chinese), "nori" (Japanese), and "gim" (Korean). See [algaebase.org](http://algaebase.org)
- <sup>5</sup> Multiple conversations between Fei and S. H. Brawley (1984-2019) and Fei and C. Yarish (1999-2013).
- <sup>6</sup> Readers who are unfamiliar with the life histories and ecological and economic importance of the algal genera *Gracilaria*, *Saccharina*, and *Porphyra* will find informative and interesting **free** videos in: Yarish C, Kim JK, Redmond S, Neefus CD, Green L. 2014. Part 1-6. *Seaweed Culture in New England*. <http://s.uconn.edu/seaweedplaylist> (English Language) <https://seagrant.uconn.edu/2014/01/01/new-england-seaweed-culture-handbook-nursery-systems/> 93 pp. (Part 3, *Saccharina*, Part 4, *Gracilaria*; Part 6, *Porphyra*).
- <sup>7</sup> Early publications and awards were given to organizations, not individuals of those organizations who had done the relevant research; it was the custom at that time in China. However, the 2002 Second Prize for the Seeding Project is archived at the website of the Ministry of Science and Technology of the People's Republic of China with recipients listed as: Xiugeng Fei, Pu Xu, Yide Yu, Shaoxing Lian, Xiaorong Tang, Junxue Mei, and Ying Bao (line 32 of list of second prizes for this award). Similarly, A *Guangming Daily* newspaper article in 2005 ("Remembering Zeng Chengkui, a famous marine biologist", available online from the Chinese Academy of Sciences' website ([https://www.cas.cn/jzt/yszt/zyzckys/xwbd/200507/t20050719\\_2671425.shtml](https://www.cas.cn/jzt/yszt/zyzckys/xwbd/200507/t20050719_2671425.shtml))) reports, in part: "The current Professor (Chinese Academy of Sciences) and Ph.D. student advisor, Xiugeng Fei, after university graduation in 1954, has long engaged in seaweed cultivation and other economic seaweed experimental ecology and biotechnology research under guidance from Zeng Chengkui (C.K. Tseng). In the past 50 years, under the leadership of Zeng Chengkui, he successfully developed a series of laver artificial seedling cultivation and grow-out production technology systems with Chinese characteristics. His research achievements won the 1978 National Science Conference Award and the 2002 National Science and Technology Progress Award."
- <sup>8</sup> Email from Prof. Yusho Aruga (Professor Emeritus, Tokyo University of Fisheries) to S. Brawley, 29 January 2023.
- <sup>9</sup> For a review of the developments in free-conchocelis seeding in China and Fei's contributions, please read the Introduction in: He P, Yarish C. 2006. The developmental regulation of mass cultures of free-living conchocelis for commercial net seeding of *Porphyra leucosticta* from Northeast America. *Aquaculture* 257, 373-381. Also see Selected Publications: Fei, 1999.
- <sup>10</sup> Phone interview between Prof. Shaojun Pang (IOCAS) and Mr. Zhenhui Jin (Manager, Fujian Xinhai Aquaculture Seed Co. Ltd.), 9 February 2023.
- <sup>11</sup> See Li XD, Zhong CH, Jin ZH, Lin Q, Shan TF, Pang SJ. 2023. Genetic structure, major chemical component contents and agronomic characters of the principal cultivars of the kelp *Saccharina japonica* in the largest kelp production province in China. *Journal of Applied Phycology* <https://doi.org/10.1007/s10811-023-02905-4>.
- <sup>12</sup> FAO. 2022. *The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation*. Rome FAO <https://doi.org/10.4060/cc046/cc0461en>. China produced 21 billion tonnes of seaweed, fresh weight (59.8% of the world's production), in 2020; see Table 7, p. 30, in FAO, 2022).
- <sup>13</sup> International Phycological Society: Locations of past Congresses and conveners (<https://intphycsociety.org/Past-Congresses>)

**Acknowledgments:** We thank the many individuals who contributed photographs and/or information, including Peimin He (Shanghai Ocean University), Fei Lan (Prof. Fei's son), Senjie Lin (Univ. of Connecticut; Xiamen University), and Li-En Yang (Jiangsu Marine Fisheries Research Institute of Jiangsu Province). We appreciate comments on the draft from Ms. Anne Davison, Ms. Mazie Hough, Mr. Paul Schroeder, and Dr. Patricia Tester. Thanks to Mr. Jerry Lund (UMaine Library), Ms. Margaret Nagle (UMaine Public Relations), and Dr. Joshua Kelley (Molecular & Biomedical Science, UMaine) for help preparing the illustrations.



**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.**

# From the Board of Trustees

Hello PSA members,

I hope your 2023 is off to a good start. At the beginning of the year, I have turned over the duties of Board of Trustee Chair to Chuck Amsler who will be leading the Board for the next five years and I look forward to reading about ongoing initiatives and well as potential new plans. In addition to Chuck Amsler (Chair), the BOT is comprised of Steve Murray (Fund manager), Paul Gabrielson, Alison Sherwood, Michelle Wood (BOT members), as well as Patrick Martone (PSA President), Juliet Brodie (PSA VP), Julie Koester (Treasurer) and Heroen Verbruggen (International VP).

In the [previous newsletter](#), I reported that the BOT recommended expenditures of \$88,000 from the endowment for 2023. I also highlighted four of the programs for Early Career Researchers (Croasdale Fellowships, Grants in Aid of Research, Lang Fellows and Hoshaw Travel Awards). I invite everyone to read more about these opportunities on the PSA website. In addition to these awards, I would like to highlight in this newsletter some of the PSA awards given annually or bi-annually including:

- Harold C. Bold award for best graduate student presentation at the annual meeting (\$1,000)
- Ralph A. Lewin poster award for best graduate student poster at the annual meeting (\$500)
- L.H. Tiffany award for a work (book, film, other) that raises public awareness and communicates the importance of algae to humankind (\$500)
- Gerald W. Prescott award for book or monograph devoted to phycology (\$1,000)
- Luigi Provasoli award for outstanding article in the Journal of Phycology (\$3,000)

There are many ways to give to the PSA endowment including through our website ([www.psaalgae.org](http://www.psaalgae.org)) and to either donate or buy items at our auction during the annual meeting. If you have items that you would like to donate for this year's action at our annual meeting in Providence RI June 25-29, please contact Chuck Amsler ([amsler@uab.edu](mailto:amsler@uab.edu)).

As reported in the last newsletter, members of the BOT continue to work with Mike Guiry to support AlgaeBase ([www.algaebase.org](http://www.algaebase.org)), an invaluable resource to our phycological community and beyond. Annual donations from the British Phycological Society, International Phycological Society, Japanese Society of Phycology, Korean Society of Phycology the PSA helped keep this unique global algal database of taxonomic and nomenclatural information functioning and up to date. In this coming year, you will hear more about ongoing plans for sustaining this resource into the future.

Lastly, I want to express my appreciation to all the members of the BOT and EC over the past five years. It has been a pleasure and honor to serve PSA in this role. I am grateful to everyone for their support. In particular, I appreciate so much the help and guidance I received from Steve Murray. I want to let everyone know what an outstanding job he has done and continues to do as our Endowment Manager. Numerous processes have improved greatly under his watch and most importantly he has been providing the BOT with forecasting (as best as one can) of the Endowments so that we can continue to spend wisely and expand our support of our next generation of PSA superstars (yes, graduate students and early career researcher I am looking at YOU!).

Can't wait to see everyone in Rhode Island. If you don't know me, I will be the one with the cool PSA key chains and fun stickers bidding for lots of loot at the auction.

**On behalf of the BOT,  
Morgan L. Vis, Chair 2018-2022**

## Tiffany Award nominations!

PSA is now accepting nominations for the 2023 L.H. Tiffany Award!

The Tiffany Award is an initiative by the Phycological Society of America to identify and promote work that raises public awareness and communicates the importance of algae to humankind. This award is administered by the Algae and Human Affairs Committee (Schonna Manning, Rick McCourt, Robert Andersen, Erik Ask, Katherine Perri, Trisha Spanbauer, Stan Geiger, Arley Muth).

The L. H. Tiffany Award 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 comes from a gift from N. Stan Geiger. The winner will be awarded a certificate and a monetary prize. Announcement of the winner will occur at the PSA Awards Banquet June 29, 2023, at the annual meeting in Providence, RI.

Nominations should be sent by email to Schonna Manning: [psaappliedphycol@gmail.com](mailto:psaappliedphycol@gmail.com). The deadline for nominations is **April 30, 2023**.

Please see the eligibility requirements at: <https://www.psaalgae.org/lh-tiffany-award>



## From the Field

The Peruvian phycologists Dr. Martha S. Calderon and Dr. Danilo E. Bustamante were recently awarded by the Peruvian National Council for Science and Technology (CONCYTEC), through the FitoAlga Project N° PE501079919-2022, to study the microbiota associated with marine macroalgae of the Peruvian coast using metagenomics. The research will be performed in the Molecular Biology and Genomics Lab at Universidad Nacional Toribio Rodriguez de Mendoza (northern Peru) and will include macroalgae with ecological and economic importance in the southwestern Pacific to understand how microorganisms shape their development and physiology. Among the macroalgae to be studied are *Chondracanthus chamissoi*, *Phyllymenia* spp., Rhodomelaceae (red algae); *Lessonia*, *Macrocystis* (brown algae); *Ulva* spp. and *Caulerpa* sp. (green algae).



# Phycology courses

## FRESHWATER ALGAE IDENTIFICATION WORKSHOP - SUMMER 2023!

**May 22 – June 2, 2023**  
**Louis Calder Center –**  
**Biological Field Station,**  
**Fordham University**

**There is still time to**  
**Register!**

We are pleased to again offer our summer freshwater algae field course. We focus on all groups of freshwater algae from diverse aquatic habitats. Students and professionals can gain proficiency in (or sharpen up on) using taxonomic keys, examining ecological factors influencing algal biodiversity, and collect high-resolution algal images and voucher specimens.

**Instructor:** Dr. John Wehr  
 ( [wehr@fordham.edu](mailto:wehr@fordham.edu) )

We are located in southern New York state in a wooded preserve that includes a 10-acre mesotrophic lake. We are less than an hour from New York City, and a short distance from the Appalachian Trail, the Hudson River, and many pristine and human-influenced aquatic ecosystems. We will sample a diverse range of lake, pond, and river habitats. We provide a full array of sampling gear, microscopy facilities, and an extensive taxonomic library.

Algal images from our lake: <https://www.fwa-biodiversity.org/algae-of-calder-lake>

About the field station: [https://www.fordham.edu/calder\\_center](https://www.fordham.edu/calder_center)

Housing at the field station, as available, by request ( [aperrone@fordham.edu](mailto:aperrone@fordham.edu) ).

**Registration is now open:** [www.fordham.edu/FWalgaeID](http://www.fordham.edu/FWalgaeID) **Deadline: 15 April 2023.**

- Registration Fee: \$1,800. Cost includes on-site housing (limited number). Meals not provided.

- Transportation costs to and from the field station must be arranged by the student.

**Interested or Questions?** Contact John Wehr ( [wehr@fordham.edu](mailto:wehr@fordham.edu) ) or Alissa Perrone ( [aperrone@fordham.edu](mailto:aperrone@fordham.edu) ).



Freshwater Algae Identification Workshop 2023!  
 A Field Course at Fordham University: May 22 - June 23, 2023

At the Louis Calder Center – Biological Field Station  
 Fordham University, Armonk, New York

A field course on the shore of Calder Lake, studying algae from diverse freshwater habitats

- Gain proficiency with algal identification using modern taxonomic keys.
- Create a high-resolution images of algal specimens and voucher specimens.
- See some of our past collections: <https://www.fwa-biodiversity.org/algae-of-calder-lake>





I would like to announce the publication of the Algae Foundation's third Massive Open Online Course. Algal MOOC #3, Introduction to Seaweeds, has gone live today, February 1, 2023, on Coursera.org. Our first two MOOCs, Algal MOOC #1, Introduction to Algae, and Algal MOOC #2, Algal Biotechnology, have attracted over 33,000 students from around the globe and have earned a 98% approval rating. Algal MOOC #3 is the third of five courses developed by the Algae Foundation and Scripps Institution of Oceanography, University of California, San Diego. This course was co-produced by Ira Levine, Ph.D. and Jen Smith, Ph.D. and funded by the U.S. Department of Energy's Bioenergy Technology Office. We invite you all to take this free course by going to the [Introduction to Seaweeds course page](#) on Coursera.org.

Algal MOOC #3 is a free course, however, if you require an official certificate of completion, Coursera.org will charge \$ 49 for the certificate.

If you have any questions, please contact me at your leisure.

Cheers to all,

Ira "Ike" Levine

CEO, Algae Foundation

[ilevine@thealgaefoundation.org](mailto:ilevine@thealgaefoundation.org)



## Phytolab Control Environmental Services

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### [EN] Benthic diatoms and phytoplankton Proficiency Tests

Dear colleagues,

We invite you to participate to the 2023 **Phytolab Control** Benthic Diatoms and Phytoplankton Proficiency Tests. This kind of exercises aims to contrast and evaluate the results obtained among laboratories working on ecological assessment of continental surface waters, in reference to diatoms and phytoplankton analyses.

Both, benthic diatoms and phytoplankton, are biological quality indicators considered of a big relevance on the assessment of the Ecological Status of continental surface waters by the European Water Framework Directive (WFD). So, it is crucial to estimate the accuracy and reliability of results of these analyses obtained from different specialized laboratories that use the same standardized procedures.

We offer to colleagues who are involved in freshwater ecological assessment of rivers, lakes and reservoirs to benchmark their results against other laboratories following standard procedures of ISO Quality Guides. Previous tests included analysts from more than 15 countries like Spain, France, Portugal, Germany, UK, Latvia, Denmark, Croatia, Chile, Perú, Canada...

If you are interested to participate, fill in the registration form before **30th April 2023** at our website [www.phytolabcontrol.com](http://www.phytolabcontrol.com) (same deadline for *diatoms* and for *phytoplankton*).

Contact us at [info@phytolabcontrol.com](mailto:info@phytolabcontrol.com) if you have any questions or would like more information.

Feel free to forward this e-mail to other interested colleagues. Kind regards,

Pepita Nolla i Querol

+34 93 182 44 84

*Phytolab Control Environmental Services*

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## 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](mailto:tmumford@uw.edu)) and Dr. D. Wilson Freshwater ([freshwaterw@uncw.edu](mailto: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 is available at <https://fhl.uw.edu/courses/course-descriptions/course/marine-botany-diversity-and-ecology-2023/> 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>

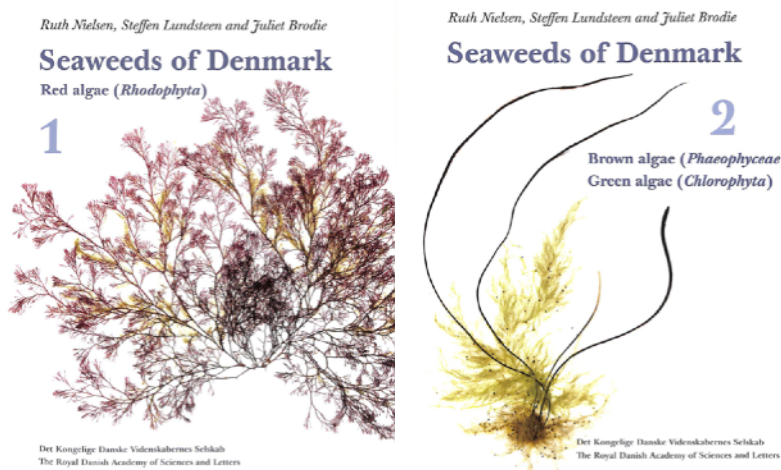
## BOOK TITLES

**Seaweeds of Denmark 1**, Red algae (Rhodophyta) & **Seaweeds of Denmark 2**, Brown algae (Phaeophyceae) and Green algae (Chlorophyta), below, Scientia Danica, Series B · Biologica 10 & 11 was published on 22 December 2022.

Forlag: Videnskabernes Selskab i kommission hos Gads Forlag

This comprehensive two-volume beautifully illustrated book reveals the richness of the seaweed flora of Danish waters. Covering the 373 seaweed species recorded from Danish waters, including 165 red, 125 brown and 83 green algae, the flora reflects the region's habitats such as the distinctive rocky shores with mobile gravel and sand, coupled with the particular environmental conditions including a range of salinity gradients. Lavishly illustrated in colour and black and white.

Available from <https://gad.dk/seaweeds-of-denmark> Price: 600,00 KR (about €80) and about 29,00 KR delivery costs.



Freshwater Algae in Northwest Washington, Volume III. Desmids, Part A is now available at <https://cedar.wvu.edu/cedarbooks/14/> (540 MB) or as an optimized version (100 MB) on AlgaeBase ([https://www.algaebase.org/search/bibliography/detail/?biblio\\_id=71497](https://www.algaebase.org/search/bibliography/detail/?biblio_id=71497)). This is a free online e-book with over 1500 high resolution DIC and SEM images and active links between the keys and images.

**An Ocean Garden**  
The Secret Life of Seaweed  
JOSIE ISELIN

Available for preordering from Oregon State University Press  
Use Promo Code SP23 for 20% off and free shipping  
<https://osupress.oregonstate.edu/book/ocean-garden>  
**Order online or call 800-621-2736**  
Paperback 978-0-87071-239-5 \$24.95

## JOB ADS

### Postdoctoral Research Associate

This postdoctoral research associate will provide an excellent opportunity for an early career researcher to work collaboratively with Florida Gulf Coast University scientists and agency collaborators using molecular approaches to understanding Cyanobacteria and Harmful Algal Blooms and molecular responses of microbial communities to nutrient stimulation. In particular, the candidate will: 1) oversight of genetic research team, include metagenomics, metatranscriptomics 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) process isolates for toxin genes and analyses and phylogenetics; 4) perform laboratory experiments on the triggers for toxin production/control through culturing experiments. A team of scientists working across various institutions are participating in this effort and there is substantial room for creative approaches by the postdoc 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 visual database and publications of toxin-producing cyanobacteria species. 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.

### REQUIRED QUALIFICATIONS

- Ph. D. in Aquatic Biology or related field
- Experience with molecular techniques related to genetics
- Strong laboratory skills

Dr. Barry H. Rosen

brosen@fgcu.edu

World Class Scholar and Full Professor

Ecology and Environmental Studies

Florida Gulf Coast University

Ft. Myers, FL 33965

239-745-4589



**Submit your contributions to the next  
Phycological Newsletter by August 15, 2023**

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

**Stacy Krueger-Hadfield**

**[communications@psaalgae.org](mailto:communications@psaalgae.org)**