

PHYCOLOGICAL NEWSLETTER



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Happy new year! I'm excited to work with all of you in 2018.

This year our annual meeting will be held on the campus of the University of British Columbia, in Vancouver, BC, Canada, as a joint meeting with the International Society of Protistologists. This will be the first time since 2005 that PSA has met outside of the United States, and the first time since 1989 that we've met in Canada. The meeting will celebrate the rich tradition of phycology in the Pacific Northwest, with phenomenal field trip opportunities and excellent plenary and symposium speakers.

Our Society has been very active in the Consortium of Aquatic Societies since 2014, and this actively growing group of aquatic scientists has proven to be an effective vehicle for communicating issues relevant to the aquatic sciences. As part of this collaboration, the next Joint Aquatic Sciences Meeting is currently being planned for 2022.



PSA Supports Students:

Lang Fellowships

Bold Award

Lewin Award

Croasdale Fellowship

Hoshaw Travel Award

Grants-in-Aid of Research

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We still have a few openings to fill on our regular committees for 2018 – if any of you are interested in serving the Society on one of these, please email me (asherwoo@hawaii.edu); the full list of committees can be found at <http://www.psaalgae.org/committees/>). Committee service is a great way to “give back” to the Society, and to have a voice in the activities of PSA.

A big “thank you” is due to our retiring officers: **Paul Gabrielson**, who finished his Presidential term, **Rick McCourt**, who chaired the Board of Trustees in an extended term over the last decade, **Dale Casamatta**, who served us for a full seven years as Program Director, **Chris Lane**, who served us as PSA Secretary for the past three years, and **Emily Johnston**, our outgoing Student Representative.

I’d also like to welcome our new officers who just assumed office this January: **Kirsten Müller** (University of Waterloo), our new Vice President / President-Elect, **Amy Carlile** (University of New Haven) as our Program Director, **Patrick Martone** (University of British Columbia), as our new Secretary, **Morgan Vis** (Ohio University), as Chair of the Board of Trustees, **Giuseppe (Joe) Zuccarello** (Victoria University Wellington) as our International Vice-President, and **Arley Muth** (University of Texas) as our Student Representative.

If you have any suggestions for how we can improve our Society this year, please don’t hesitate to contact me (asherwoo@hawaii.edu). See you all in Vancouver this summer!

Cheers and aloha,

Alison Sherwood
PSA President 2018



We are pleased to announce that the joint meeting of the Phycological Society of America (PSA) and the International Society of Protistologists (ISOP) will take place at the University of British Columbia, Vancouver, BC, Canada from **July 29 - August 2, 2018**.

The University of British Columbia has long been an important centre for phycological, protistological, and photosynthesis research, as the province of British Columbia is famously rich in biodiversity from nutrient-rich waters and rocky coastlines, to freshwater lakes and streams, to beaches, bogs, forests, and snow-capped mountains. Moreover, the coastal First Nations of British Columbia have an even deeper history of traditional uses of seaweeds dating back thousands of years. Come help us celebrate the local and global diversity of algae and protists (micro-, macro-, autotrophic, heterotrophic, eukaryotic, and prokaryotic), the modern and traditional uses of algae, and the beauty of British Columbia!

Early Registration Deadline: April 2

Abstract Submission Deadline: May 1

We have a fantastic program lined up with many invited speakers, thought-provoking symposia, pre-meeting workshops, and two exciting multi-day field trips to Vancouver Island to experience the beauty of the outer coast and to learn about the scientific and traditional legacy of this special place. (We expect these field trips and workshops to fill quickly, so don't delay). The conference banquet will be at the UBC Museum of Anthropology, where you will dine outdoors overlooking the mountains and the water, and you will have a chance to examine totem poles, long houses, and other important First Nations' artifacts.

Register here: <https://www.sgmeet.com/psa/psa-isop2018/reginfo.asp>

Submit abstracts here: https://www.sgmeet.com/psa/psa-isop2018/submission_overview.asp

Applications for the PSA Hoshaw Travel Award are due April 2: <http://www.psaalgae.org/grants-and-fellowships/>

HIGHLIGHTS OF PSA/ISOP 2018:

FIELD TRIPS! We are offering two fantastic pre-meeting field trips this year. Space is extremely limited on both trips (fewer than 24 spots on each trip), and they are starting to fill up. So if you are interested, sign up soon! The absolute deadline to sign up is June 1, but I suspect they will fill well before this date.

Botanical Beach: In the footsteps of Josephine Tilden and the historic Minnesota Seaside Station (July 26-28)

<http://psa-isop2018.botany.ubc.ca/botanical-beach-field-trip/>

Bamfield Marine Sciences Centre and historic Kiixin village (July 26-29)

<http://psa-isop2018.botany.ubc.ca/field-trips/>

LIGHTNING TALKS! In addition to the regular oral and poster presentations this year, we will be hosting a collection of "Lightning Talks," immediately preceding the two poster sessions. Talks will be timed at precisely 3 minutes, will include no more than 2 slides, and will run back-to-back with no time for questions. This will be an excellent way for poster presenters to advertise their work, for grad students to present new project ideas, for researchers to present unfinished-but-exciting new work, and ultimately to ignite fresh and new conversations at the PSA/ISOP conference!

MID-CONFERENCE EXCURSIONS! Not that anyone could ever get burned out talking about algae and protists, but Wednesday will be open for day trips to any of the wonderful attractions in and around the Vancouver area! Below are some options: from left to right, the Squamish Sea-to-Sky Gondola, VanDusen Botanical Gardens, and the Capilano Suspension Bridge.



THE CONFERENCE LOOKS FANTASTIC! OK, we are biased. But we are really excited about how the 2018 PSA/ISOP conference is shaping up. For example, we have four outstanding and diverse plenary speakers: **Dr. Fabrice Not** will be talking about plankton ecology and symbiosis in oceanic ecosystems; **Dr. Thomas Wernberg** will be discussing the “flattening” of kelp forests around the world due to shifts in climate and herbivores; **Dr. Tom Richards** will be presenting perspectives on gene transfer and the early evolution of eukaryotes; and famed ethnobotanist **Dr. Nancy Turner** will be talking about the cultural importance of marine seaweeds and marine plants to indigenous people of the Pacific Northwest.

We will also have five exciting and diverse research symposia:

- ***Origins and early evolution of eukaryotes***
- ***Kelp forests in flux***
- ***The phycological legacy of the Pacific Northwest (PSA Presidential Symposium)***
- ***From pharm to table: frontiers in applied phycology (Prof. Milton Sommerfeld memorial symposium)***
- ***Protist responses to environmental stress: resilience to climate change?***



And last but not least, **THE ALWAYS EXCITING PSA BANQUET!** This year to be held at the UBC Museum of Anthropology (left). Wine and dine while we honor our wonderful award recipients.

To learn more about the 2018 PSA/ISOP conference, visit the conference website: <http://psa-isop2018.botany.ubc.ca/>



Hurricane Harvey hits University of Texas Marine Science Institute

Phycologists, whether we study micro- or macroalgae, physiology, taxonomy, or ecology, share a common bond due to our love of all things algal. This bond was never more apparent than after Hurricane Harvey made landfall just east of the UT Marine Science Institute in Port Aransas, Texas. The hurricane destroyed much of our campus. Myself and many of my colleagues were forced to relocate to Texas A&M University-Corpus Christi (TAMUCC), where we were hosted by the Harte Institute and the Center of Coastal Studies. Our group (the Dunton lab) was immediately adopted by the Center of Coastal Studies (CCS), which is led by phycologist Paul Zimba and ecologist Brien Nicolau. This was the first hurricane I experienced and although the devastation was unbelievable, the spirit of giving and support from communities near and far, is what I will always remember.



It was Wednesday, August 23rd when the tropical storm forecast for Mustang Island and the community of Port Aransas was upgraded to a hurricane warning. Students and staff at the Marine Science Institute covered lab benches, secured equipment and planned for hurricane parties and potential power outages. As quickly as noon the next day the nervous energy in the institute was elevated when we heard an updated forecast of a category 3 hurricane and that a mandatory evacuation of Port Aransas would be in effect by 9 p.m. that night. We did final preparations for our laboratories, planned evacuation routes, headed off the island and hoped for the best.



High winds tore solar panels from the roof of the Institute, causing flooding throughout all 3 floors of labs and offices.

On August 25th, 10 p.m., Hurricane Harvey made landfall as a category 4 hurricane. Winds in excess of 140 mph ravaged the island and a 12-ft storm surge practically covered its entirety. Stories of fish stranded in the roads and boats pushed from their slips to parking lots began to trickle in from the few locals that stayed or returned quickly to the island. Many of us students were sheltering in Austin and glued to the television



and hoped for any news of our town and institute. The initial reports from our institute Director, Dr. Robert Dickey, implied substantial destruction. Finally, the barricades were lifted for locals and we were able to return to Port Aransas Monday, August 28th. Every single power line was down and many were in the streets, all structures had some degree of damage and not a street sign was left standing - I found myself getting lost in the small town I had lived in for over a year.

Just four days after the storm, a meeting at our Institute was held in the auditorium where seminars are presented. There was standing water on the floor, the windows were damaged, and as we entered the auditorium it was impossible to miss the large drilling rig vessel that had come loose during the storm and crushed our research pier when a high tide occurred after the storm had passed. It soon became obvious that we weren't going to be living in Port Aransas for a while and that working out of our institute would be impossible for the foreseeable future (<https://www.youtube.com/watch?v=mbqVND4KSCg>).



Students and staff worked together to removed damaged items and sheetrock from affected homes. Mold, mosquitoes, sweltering heat and storm water with unknown contents were among some of the obstacles faced.

Morale was low at this point, but things began to turn around as people from all over the country came into our little town. Hot meals, water, bug spray, first aid and cleaning supplies were readily available. These amenities were all amazing, but as scientists, getting back to our work was the only thing that made sense after losing our homes and many of our belongings. That's when the Aggies from Texas A&M University-Corpus Christi stepped in and offered our faculty and students space at their labs, just 30 minutes from Port

Aransas. TAMU-CC professors, their students, and administrators, took time out of their schedules to create space for us and make sure we had everything we needed to continue to work. Paul showed us microscopes, freezers, and other equipment necessary for us to continue our work and salvage the samples that made it though the storm. Brien could be found running around checking that we all had parking permits, Internet connections and knew where to print documents and make coffee. Bobby Duke included us in office pranks by strategically placing stuffed coyotes in our office to scare us. Theresa Walker invited us to all the CCS gatherings and helped us schedule spaces for lab meetings. Their generosity enabled us to begin working right after the hurricane, which included an intensive survey of the seagrass populations in South Texas and the disturbance effects of the hurricane (see <http://www.caller.com/story/news/local/2017/10/05/ut-marine-science-institute-researchers-assess-harveys-impact-seagrass/732677001/>).

In addition to logistical assistance, the graduate students, technicians and professors from these different institutions came together and over tacos, friendships and future collaborations were born. The devastation to our institute by Harvey was incredible, but the support we received from the people at the Center for Coastal Studies at TAMU-CC was truly amazing and will never be forgotten. On a personal note, a generous donation from phycologist Paul Gabrielson of The University of North Carolina at Chapel Hill and Mary Love May made it possible for our lab to replace an inverted microscope, crucial for time sensitive experiments. This gift not only allowed us to continue our work, but was another reminder of the support we had from the scientific community and beyond. Although this disaster was unavoidable, the support of our colleagues has been a critical part of our recovery from the damage inflicted by this powerful storm.

**Arley Muth
Graduate Student
University of Texas Marine Science Institute**



The Marine Science Institute research pier survived the storm, but was crushed by a drilling rig vessel that came lose in the hurricane.

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

Dr. Thierry Chopin to be inducted as a Chevalier (Knight) in the *Ordre du Mérite Maritime* of France



Dr. Thierry Chopin, Professor at the University of New Brunswick Saint John, was recently awarded this distinction by the Minister of Ecological and Solidarity Transition of France, Mr. Nicolas Hulot, for his work as a researcher, teacher and communicator in the field of marine biology and aquaculture.

The Ordre du Mérite Maritime (Order of Maritime Merit) was created in 1930 to recognize the services rendered by “les gens de mer” (seafarers). The distinction of Chevalier is bestowed on a restricted number of persons each year (280 in 2017).

Dr. Eddy Campbell, President of the University of New Brunswick, commented that “it is fantastic to see Dr. Chopin and his work recognized so highly. His reputation on seaweeds and integrated multi-trophic aquaculture is well established internationally and we are proud to have had him at UNB for the last 28 years.”

Dr. Chopin was born and educated in France. He obtained his Doctorate from the University of Western Brittany, Brest, France. He moved to Saint John in 1989. His research focuses on the ecophysiology, biochemistry, and cultivation of seaweeds of commercial value and the development of Integrated Multi-Trophic Aquaculture (IMTA) systems for increased environmental sustainability, economic stability and societal acceptability. He is an internationally recognized expert in this innovative practice.

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In Memoriam: Joyce C. Lewin (1926-2017)

Joyce Lewin passed away peacefully on December 4, 2017, shortly after her 91st birthday. She was born in upstate New York, received her B.S. in botany from Cornell University, and M.S. and Ph.D. degrees in microbiology from Yale University. She was a researcher at the National Research Council of Canada in Halifax, Nova Scotia, the Woods Hole Oceanographic Institution, Woods Hole, MA, and Scripps Institution of Oceanography, La Jolla, CA, before joining the faculty in the then Department (now School) of Oceanography, University of Washington, Seattle, WA, in 1965 where she remained until taking early retirement in 1982. At that time, she moved to Friday Harbor, WA, where she worked part-time at the Friday Harbor Labs, while still keeping an office in Seattle.

Her primary research interest was the study of marine phytoplankton, especially the biology of marine diatoms. Her interests were far ranging with a series of papers on silicon metabolism that included her now famous finding that germanium dioxide was a diatom growth inhibitor (Lewin 1966). This has proved to be a blessing to anyone growing macroalgae where before the use of GeO_2 , diatoms often outgrew the macroalgae. Another long series of papers, written over a 15-year period, studied the surf zone diatom community on the Washington coast starting with a paper with R.E. Norris (Lewin and Norris 1970) that described a new species *Asterionella socialis* J.C. Lewin & R.E. Norris, [now *Asterionellopsis socialis* (J.C. Lewin & R.E. Norris) R.M. Crawford & C. Gardner] common on the coast of Washington. The series continued with papers on the physiology of the surf diatoms in culture and in nature, their buoyancy, species changes over time, environmental conditions and changes, the diatom's chemical composition, and their clay coat among other features. Many of these papers were done in collaboration with students and colleagues. Several book chapters and review papers about surf diatoms were also published.

Nutrition and chemistry of diatoms were additional interests. Papers included topics on autotrophy and heterotrophy, iron in seawater, boron and vitamins, especially thiamine, in diatoms. She also studied the taxonomy of the diatoms *Phaeodactylum tricornutum*, *Cylindrotheca closterium* and other *Cylindrotheca* species, and *Chaetoceros septentrionalis*, often using electron micrographs to illustrate characters. Colleagues during this time included B.E.F. Reimann, B.E. Volcani, J.A. Hellebust, R.R. L. Guillard, Y. Collos, V.N.R. Rao, and R.E. Norris.

Lewin was also involved in research in the northeast Pacific Ocean. An early paper described an aberrant new coccoid chrysophycean alga *Pelagococcus subviridis* (Lewin et al. 1977). Papers with B. C. Booth and R.E. Norris described for the first time nine types of siliceous nanoplankton cysts, first thought to be part of the life cycle of siliceous



Dr. Lewin, From School of Oceanography files taken in the early 1970s.



*Photo courtesy of Tom Mumford,
August 2013.*

choanoflagellates (Booth, Lewin and Norris 1980). Later, these were described by Booth and Marchant (1987) originally as a new order of marine chrysophytes, the Parmales, but now included in the Class Bolidophyceae and considered to be phylogenetically close to the diatoms (Ichinomiya et al. 2016). She was also a principal investigator in the SUPER (Subarctic Pacific Ecosystem Research) program (Booth et al. 1993) that sought to explain the absence of phytoplankton blooms in the offshore subarctic Pacific (Miller 1993).

She worked with many students over the years, especially during the extensive field work involved with the surf zone study, including T. Hruby, D. Mackas, S. Robertson, J. Eckman, G.N. Ware, C.T. Schaefer, J. Colvin, K. McDonald and J. (Garver) Jijina, some receiving M.S. degrees for their work. C.-h. Chen studied chemical composition of the surf diatoms and razor clams, their primary herbivore; A. T. Chan and C.O. Davis received Ph.D.s for studies on the effects of light on diatoms.

Lewin was among the first woman faculty members in the Department of Oceanography and was adamant they have the same conditions, including salaries, as their male colleagues. A number of her colleagues and former students have commented on their associations with her and remember her for her wide interests and knowledge. Her marine phytoplankton course taught us the skills and techniques used in our own research. She has been described as tough almost sly, but clever, with a sense of humor, and a wry smile. Her contributions to our understanding of marine phytoplankton and her scientific acumen will be long remembered.

**Rita A. Horner
School of Oceanography
University of Washington**

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- Lewin, J. Norris, R.E., Jeffrey, S.W., and Pearson, B.E. 1977. An aberrant chrysophycean alga *Pelagococcus subviridis* gen. nov. et sp. nov. from the North Pacific Ocean. *J. Phycol.* 13:259-266.
- Miller, C.B. 1993. Pelagic production processes in the Subarctic Pacific. *Prog. Oceanog.* 32:1-15.

In memoriam: Greta A. Fryxell, 1926-2017

Greta Albrecht Fryxell died from congestive heart failure on September 24, 2017 at her home in Claremont at the age of 90.

She was born November 21, 1926, and grew up on her family's farm near Tiskilwa, Illinois. She graduated summa cum laude from Augustana College in



1948. After college, she taught math and science for several years at junior high schools in Davenport and Ames, Iowa before settling in College Station, Texas where she began her postgraduate studies at Texas A&M University. Dr. Fryxell was among the first women to enroll at the formerly all-male university. In 1969 she earned a master's degree in education, with a major in earth sciences. A PhD in oceanography followed in 1975.

After postdoctoral studies in Oslo, Norway, she continued her research and taught at Texas A&M, becoming a professor of oceanography, again blazing a trail as one of the school's first female professors. Professor Fryxell was a specialist in marine phytoplankton and took part in research oceanographic cruises in the North Atlantic, Gulf of Mexico and in the waters around Antarctica, working with living cultures as well as with preserved samples from the open ocean. She published widely on her findings in professional journals. Samples were also collected for her project from the equatorial Pacific. Many of these samples are now archived at the University of Texas, Austin, where she and her husband Paul Arnold Fryxell lived in their early retirement years.

Most of her professional career was devoted to open ocean phytoplankton, particularly diatoms, including variation in abundance, life histories and patterns of species succession. In her later career, she became concerned with studies of the sometimes neurotoxic diatoms in the genus *Pseudo-nitzschia*. This genus is often found in ocean waters near the sea coast, apparently stimulated in part by the pollution resulting from increasing populations of people living near coastlines.

Professor Fryxell received many honors, including the Outstanding Doctoral Candidate Award from the Former Students' Association at Texas A&M in 1975 and the Outstanding Achievement Award from Augustana College Alumni Association in 1980. In 1988, she shared **the Provasoli Award** of the Phycological Society of America for a paper published in the *Journal of Phycology* that year with two colleagues, A.M. Wood and R.S. Lande. She also received the 1991 Faculty Distinguished Achievement Award in Research from Texas A&M's Former Students' Association, followed by a gold medal from the Geosciences and Earth Resources Advisory Council in 1992.

She received the Lifetime **Award of Excellence** in Phycology in 1996 from the Phycological Society of America, and was selected as a Fellow of the American Association for the Advancement of Science in 1997.

She is listed in American Men and Women in Science, Who's Who of Professional and Business Women, Personalities of the South, Who's Who in America, Who's Who of American Women, Who's Who in the Frontiers of Science and Technology, Who's Who in the South and Southwest, and Who's Who in the World.

Professor Fryxell felt blessed with excellent students and laboratory assistants, and their lives and achievements continued to be of interest and great personal satisfaction to her. Although she did not begin her research program as early as many, "she accomplished more in half a career than most people do in their entire lives."

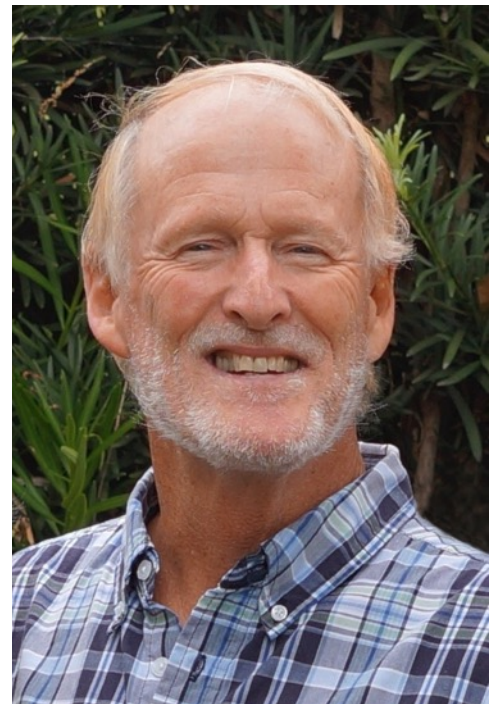
Information on her career and publications is to be in a volume dedicated to her in Beihefte zur Nova Hedwigia, Bd. 133 "Phytoplankton evolution, taxonomy and ecology" edited by Linda K. Medlin, Gregory J. Doucette and Maria Célia Villac (2008).

May she rest in peace.

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Jeffrey S. Prince (1943-2017): A reminiscence and farewell

Jeffrey Sartoris Prince, long-time faculty member in the Department of Biology at the University of Miami, passed away on April 27, 2017 at the age of 74. He became ill on a trip to Morocco and, upon returning to Miami, was diagnosed with glioblastoma. The disease progressed rapidly, and he died about one month after diagnosis. Upon learning of his death, I heard distant tinkling of Petri dishes, faint echoes of Gregorian chant, and waves of high-pitched merry laughter rolling off into the background. These were some of the memories that came back to me from the 1960s when Jeff and I were in the undergraduate cohort swept up by Bob Wilce's infectious enthusiasm for the algae. Our careers had their beginning in the Botany Department of Morrill Hall



Jeffrey S. Prince, taken in 2017.

on the campus of the University of Massachusetts (at Amherst – the only campus at that time) where we inhabited a veritable incubator of (prospective) phycological talent that included Bob's grad students Jim Sears and Bob W. Lee and his undergrads Jeff, Carol Ann Parker, Don Cheney, Jim Byrne, and me.

Once acquainted with Jeff, described by one colleague as the most English American he knew, one was unlikely to forget him. He had a sparkling personality, wild sense of humor, was notoriously irreverent and poured forth a seemingly endless supply of laughter, which was always administered in a kind context. Behind this facade, he possessed an inquiring mind, a penetrating intellect and a strong work ethic. He seemed unchanged from those early days to the last communication I had from him in December 2016.

Jeff was a Bay State boy, having grown up in Wellesley, Massachusetts (his Dad was a teacher at the Rivers School in Chestnut Hill), matriculated into UMass in 1961, and graduated with a Bachelor of Arts degree in 1965. During his tenure as an undergrad, he was on the Dean's List, did Honors research his senior year (inescapably on algae), was a member of the nascent SCUBA Club, and held the somewhat unexpected position of Coordinator of the Newman Club (Catholic) choir, a consequence of his love of song. Jeff periodically recalled our experiences with this group which benefited, even in this unlikely setting, from his riotous humor.

Following baccalaureate graduation, Jeff entered his doctoral program at Cornell under John Kingsbury, receiving his Ph.D. in 1971. His thesis research encompassed field and lab studies of the red alga *Chondrus crispus* at Plymouth, Massachusetts, partially funded by the resident nuclear power plant. The results were published as three papers co-authored with Kingsbury (Prince and Kingsbury 1973a-c). In 1967 he accompanied Wilce to Greenland to collect seaweeds. He did postdoctoral work at WHOI from 1971-1973 and served a short stint in 1973 at George Mason University before accepting a position as Assistant Professor of Biology at the University of Miami at Coral Gables in 1974, later ascending to Associate Professorship. He was Director of UM's Dauer Electron Microscopy Laboratory from 1979 to 2017. While Jeff remained at UM for the duration of his career (43 years), he spent summers as Visiting Associate Professor at Cornell's Shoals Marine Lab from 1976-1993 and 2007.

Although Jeff's research career began with field and culture studies on *Chondrus*, his taxonomic focus expanded over time to include other algae (*Batophora*, *Caulerpa*, *Codium*, *Crouania* and *Sargassum*; see also Prince 2012, his last paper on phycology), marine invertebrates (particularly *Strongylocentrotus* and *Aplysia*), fish and a variety of model systems. His technical focus shifted to ultrastructure/biochemistry. Starting about 1984, he began studying a remarkable diversity of non-algal non-marine subjects, including a wide variety of biomedical (e.g., Balan et al. 2007) and bioengineering subjects (e.g., Kohen et al. 1989) and seed coat structure in vascular plants (e.g., Zona et al. 2012). By some stroke of irony, a few of his studies dealt with glioblastoma, the disease that led to his death. Jeff would have relished the thought that his research might someday help others by contributing to our knowledge of it. His last first-author paper, on disease in fish, was published shortly before his death (Prince et al. 2016). Several papers appeared posthumously, the most recent being Li et al. 2017 (published November 16).

He had relatively few graduate students, mostly in the early period of his career. Among them were S. W. O'Neal (1980 Ph.D. student, see O'Neal and Prince 1988) and Ernest L. Daly, Jr. (1978 M.Sc. student, see Daly and Prince 1981).

Jeff's teaching career focused mainly on undergraduates. His easy-going charm and boundless energy made him highly accessible to hundreds of students who took his TEM and SEM classes over the years. According to Professor Athula Wikramanayake, Chair of the UM Biology Department, "[Jeff] loved working with undergraduates and getting them involved in research. Many of his former students give credit to Jeff for instilling in them a love for research and discovery that hugely impacted their own careers." It comes as no surprise then that he was presented with the "Outstanding Biology Educator Award" and UMs "Excellence in Teaching Award." His success in inspiring his students followed in the footsteps of his earliest psychological mentor, Bob Wilce, thus harkening back to his own beginnings at UMass.

Jeff was devoted to his two children, raising them single-handedly for many years. After they became adults and formed their own families, Jeff embarked nearly every year on travels to Europe, Asia or central/South America, always giving hilarious accounts of his escapades upon his return. No subject was too mundane and no incident too unexpected to escape his humor. Amidst all this, he found time to fish on his 19' powerboat or cruise on his motorcycle ("Thor"). He is survived by his daughter Katherine, son Graham and their families, including three grandchildren.

A fond farewell to this unique and cherished individual who warmed many hearts and whose academic offspring will carry his scientific legacy into the next generation of informed citizens and scientific companions.

Phil Lebednik
Walnut Creek, CA

plebednik@sbcglobal.net

Acknowledgements/credit

Many thanks to Professor Athula Wikramanayake, Chair of the Department of Biology of the University of Miami, for kindly providing information and other critical assistance in preparation of this paper. Thanks to Mike Wynne for encouraging preparation of this article and providing other assistance. Jim Sears and Bob Lee supplied anecdotes. I thank Kate Prince and Mike Wynne for their comments on a draft manuscript. The photograph is courtesy of Kate Prince.

Selected Publications of Jeffrey S. Prince

- Balan, K., et al. and Prince, J. 2007. Antiproliferative activity and induction of apoptosis in human colon cancer cells treated in vitro with constituents of a product derived from *Pistacia lentiscus* L. var. *chia*. *Phytomedicine* 14:263-72.
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In memoriam: Robert R. L. Guillard (1921-2016)

Robert (Bob) Guillard was a renowned scientist, algal culturist, teacher, and friend. He is best known for his extensive algal culture collection and for the founding of the Provasoli-Guillard National Center for Marine Algae and Microbiota, an important world resource for marine phycological research. He was also an important innovator in the culture of marine algae and shellfish and was involved in several seminal discoveries.



Bob was born in New York City in 1921 and received a bachelor's degree in physics in 1941 from the City College of New York (CCNY). During World War II he worked for the U.S. Navy, and afterward was an instructor at NYU and a tutor at CCNY, but also took courses at CCNY, including a botany course. It was then that he decided to pursue a graduate education in natural sciences. Bob completed his Ph.D. degree in 1954 at Yale University with the famous fresh water ecologist G. Evelyn Hutchinson. He was awarded a summer fellowship at the Woods Hole Oceanographic Institution, which strongly influenced his career, because it changed his scientific focus from freshwater to marine ecology.

Bob briefly worked as a Research Associate at the University of Hawaii where he studied the primary productivity of phytoplankton in nearby ocean waters. Then in late 1955 he was recruited to fill a new position at the U. S. Fish and Wildlife Service's Laboratory in Milford Connecticut to culture algal food for the rearing of clams and oysters. Earlier attempts to raise larval shellfish in nutrient enriched seawater had failed and a new approach was needed, namely the isolation and culturing of viable algal food species. This turned out to be a fortuitous hiring for both Bob's career in marine phycology and for the development of a whole new industry of shellfish mariculture. At Milford Bob isolated numerous algal species into axenic culture, many of which became fixtures in future algal research, including *Thalassiosira pseudonana* (clone 3H, now CCMP 1335), which was the first algal clone to have its genome sequenced. Bob's success in isolating and culturing diverse algal species formed the basis of his now famous algal culture collection, and allowed for careful testing of the nutritional value of different algal species in the rearing of shellfish. Indeed two initial papers (Guillard, 1957 and Davis and Guillard, 1958) provided the basic methods used for the establishment of a mariculture based shellfish industry and for countless culture studies on the physiological ecology of shellfish and other planktivorous marine species. Bob was honored for these contributions with his induction as an honorary lifetime member of the National Shellfisheries Association and the World Aquaculture Society.

In 1958 Bob and his culture collection were recruited by John Ryther to the Woods Hole Oceanographic Institution (WHOI). This turned out to be an ideal marriage, given Bob's expertise in isolating and culturing diverse algal species and the need at WHOI for a dedicated culture facility for the study of phytoplankton. The ensuing 23 years at WHOI was an extremely productive period, accounting for 60% of Bob's 116 scientific publications. Some of these were highly influential. An early paper, describing the now widely used culture medium f/2 (Guillard and Ryther 1962) has been cited an astounding 6310 times. Two other papers (Sunda and Guillard 1976, 962 citations and Anderson, Morel, and Guillard 1978, 259 citations) established the importance of chemical speciation in regulating the cellular uptake and effects of trace metals. They paved the way for the development of chemically defined, chelator-based, trace metal ion buffer systems in culture experiments, which could be used to regulate and quantify the availability of critical trace metal nutrients (Fe, Zn, and Mn; Brand, Sunda, and Guillard 1983, 456 citations) and toxins (Cu and Cd; Brand, Sunda, and Guillard 1986; 484 citations). Another important discovery was the widespread distribution of the cyanobacterium *Synechococcus* (Waterbury, Watson, Guillard, and Brand 1979; 836 citations), which is estimated to account for ~18% of net primary production in the ocean.

Bob's culture collection continued to grow during his tenure at Woods Hole (1958-1981) from his own isolations, cultures obtained from colleagues, and those isolated by his students and postdocs. Ed Carpenter wrote: "I still remember the first words that Bob said to me as I nervously entered his lab and started my postdoctoral fellowship with him in September 1969. He said "Do you have any bugs?" I thought he was asking if I had fleas or bedbugs, but he was really asking if I had brought any phytoplankton cultures with me." He was not the only one who received that question.

Although Bob was to isolate numerous clones himself, he was afflicted with acute

seasickness, which greatly curtailed his seagoing activities. A post doc, Diane Stoecker noted "Bob could get seasick at the dock. My first cruise was a short one to Georges Bank with Bob as chief scientist. Bob got sick soon after leaving the dock, and we did not see him for the rest of the cruise. I remember him commenting after the cruise that what he liked in a Captain was a good bedside manner." She further noted "It is ironic that although he did not go to sea, he knew phytoplankton more intimately than sea going oceanographers because he knew how to make them grow."

In 1981, Bob was recruited to the Bigelow Laboratory of Ocean Sciences, Boothbay Harbor, Maine to initiate a national culture collection for marine phytoplankton based largely on his own very large culture collection and that of Luigi Provasoli at Yale University. In 1985 the culture



Bob Guillard at sea in Hawai'i,

collection became a culturing center and was renamed the Provasoli-Guillard Center for the Culture of Marine Phytoplankton. Bob served as the first director of the culture collection/center until his retirement in 1989.

During his tenure as director Bob continued to publish significant research findings. The most important of these came from the use of the culture collection to survey the content of DMSP in 123 diverse species of marine phytoplankton (Keller, Bellows, and Guillard, 1989; 677 citations). DMSP was of interest not only because of its numerous important cellular functions, but also because it was the precursor of the volatile compound dimethyl sulfide (DMS), which helps regulate climate through its oxidation in the atmosphere to sulfur aerosols that seed clouds. The survey showed that the DMSP content in phytoplankton was highly variable with some containing little or no DMSP while others, such as prymnesiophytes, dinoflagellates, and chrysophytes, containing high intracellular concentrations. Thus, the species diversity of a phytoplankton community was of major importance in determining the production of DMS and its influence on climate, and that diversity is exactly what Bob had spent his life studying.

Bob formally retired in 1989, and was honored by former students, post docs, and colleagues by a Bobfest celebration, part of which included nine papers dedicated to Bob in the journal *Biological Oceanography* (vol. 5/6, 1988/89). But the retirement was mainly from his director duties, and Bob remained quite active in science well into his eighties.

“I thought he was asking if I had fleas or bedbugs, but he was really asking if I had brought any phytoplankton cultures with me.” — Ed Carpenter

After two brief marriages, Bob married Ruth Stimson in 1963, a partnership that was to last until his death 53 years later. Ruth had three young boys, which Bob raised as his own. Bob and Ruth had many common interests including Renaissance and Baroque music, Transcendental Meditation, and folk dancing.

Bob was also an avid gun collector, and an excellent marksman. He loved target shooting, but surprisingly never hunted, likely due to his great love of nature and wildlife. Diane Stoecker noted “He was careful never to cut wood or disturb the forest and trees on his farm in Bourne when birds or mammals were nesting.”

Bob was an early environmentalist and had no use for the throwaway society. He was a notorious recycler and hated throwing anything away that might one day prove useful. He never used disposable pipets, and after leaving his lab in 1975, I was surprised to find that this was not the norm.

Bob was an excellent teacher and mentored six PhD students, including Ken Haines, Dottie Swift, Alan White, myself, Larry Brand, and Mark Wells. He also had numerous post docs including Ed Carpenter and Diane Stoecker who provided comments for this piece. He wrote beautifully and I once said to him that it must be nice to have such a natural ability with writing, something that like most students, I was struggling

with. He answered that any ability he had came not from any innate gift, but from years of hard work and practice. He also noted that writing was no more than organized thinking and that if you thought clearly, you also could write clearly.

Bob was extremely generous with about everything: his time, knowledge, ideas, lab space, equipment and cultures. In his years at WHOI Bob mailed out countless cultures to scientists all over the world for free. His only request was that the mailers be returned to his lab so they could be used again. I visited his new lab in Bigelow in the early 1980s and was admiring a large lighted culture table with a thermostated circulating water bath that Bob and his student Larry Brand had constructed. Bob said "Take it, I don't need it now that Larry has left for Miami." So I hauled the culture table back to my lab in Beaufort, NC and used it in my culture studies for the next 20 years.

So that was Bob. His insight, kindness, and generosity will be sorely missed. But he has left us with a tremendous legacy in his culture collection, his culture methods, and his teaching, mentoring, and scientific discoveries.

William G. Sunda
Department of Marine Sciences
University of North Carolina

*This is a condensed version of a memoriam that appeared in *Phycologia* (2016, vol. 56, 354-358). I am grateful to Diane Stoecker, Ed Carpenter, Mark Wells, and Larry Brand, who sent me written remembrances of Bob, parts of which are cited here and all of which greatly aided in the writing of this memoriam. I also thank Bob Andersen for providing photographs of Bob Guillard.*



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

Upcoming PSA Award Deadlines

Norma J. Lang Early Career Fellowship

In 2018, PSA will select its second **Lang Fellow**. Named in honor of the late Norma J. Lang, this fellowship will grant a one-time payment of \$10,000 to one early career researcher, who will be a Norma J. Lang Fellow for three years. Applications will be accepted from **Postdoctoral Fellows, Pre-Tenure Faculty**, and others (those not in traditional academic positions) who are members of the society and are within 10 years of completing their Ph.D. Applications from international members are welcome, but all application materials must be in English. Individuals must be employed by a university or other non-commercial entity and be doing research on algae. The purpose of this award is to provide "seed" money for projects, with the ultimate goal of increasing the likelihood of federal or other grant funding for the recipient. It is expected that the Fellow's home institution will cover any indirect costs as an institutional match.

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

Application Deadline: MAY 1, 2018

PSA Student and Postdoctoral Grants

Each year over \$25,000 is awarded to support student and postdoctoral members in furthering their research (**Grants-in-Aid of Research**), education (**Croasdale Fellowship**), and travel to the annual PSA meeting (**Hoshaw Travel Award**). Competition for these awards is high, so the committee recommends that students have their advisors review their application before submission. Also, the committee would like to remind applicants that all incomplete (i.e. not addressing all of the required points of each award, missing letter(s) of recommendation) or late applications will not be reviewed.

For more information see <http://www.psaalgae.org/grants-and-fellowships/>. The committee looks forward to reviewing more great applications this year!

All grant applications should be sent to Dan Thornton (dthornton@geos.tamu.edu).

DEADLINES:
HOSHAW TRAVEL AWARD: April 1, 2018
GRANTS-IN-AID: November 1, 2018
CROASDALE FELLOWSHIP: March 1, 2019

The Bold Award

Students are invited to participate in the **Harold C. Bold Award** competition, awarded for the outstanding student research presentation at the Annual PSA Meeting. This award, named in honor of the late Professor Harold C. Bold, has been awarded at PSA Annual Meetings since 1974. The winner will be awarded a certificate and monetary prize.

Bold Award Eligibility: Graduate students who are PSA members, regardless of nationality, are eligible to compete for the Bold Award, as well as former students within twelve months of completion of their degree. The work presented must be that of the student, must be presented orally by the student in English, and should be a complete or nearly complete project. Only one presentation may be made per year and students may enter no more than twice, and not in successive years. Previous Bold Award recipients and those who have failed to give a scheduled Bold Award paper without valid reason are ineligible.

Deadline:
April 3, 2018
For Both Awards

The Lewin Award

The **Ralph A. Lewin Poster Award** competition will be held at the annual PSA meeting. The Lewin Award was established in 2009 by colleagues of Ralph A. Lewin, former president of The Society and a distinguished teacher and researcher at The University of California at San Diego, Scripps Institution of Oceanography. The Lewin Award shall consist of a certificate and a monetary prize.

Lewin Award Eligibility: Graduate students who are PSA members, regardless of nationality, are eligible to compete for the Lewin Award, as well as former students within twelve months of completion of their degree at the time of the meeting where the work is presented. Posters with multiple authors are permitted, but the student competing for the award must be the first and presenting author. Only one poster per student per year may be entered in the competition. If meeting rules allow multiple posters to be contributed by the same presenting author, the student must designate which poster is to be considered for the award.

Please see the PSA Website (<http://www.psaalgae.org>) for more information or contact Dr. Patrick Martone, Award Committee Chair (pmartone@mail.ubc.ca).



Information on all of these awards and fellowships can be found under the PSA Awards and grants tab at the PSA website:

<http://www.psaalgae.org>

PSA Membership

Greetings from the Membership Director:

If you were a member in 2017, you will have received an electronic renewal notification from Wiley Membership Services. The Society appreciates that, despite following the approved motion for a slight dues increase at the Society's 2017 business meeting in Monterey, CA., most members have renewed. In case Wiley's first message was misplaced or unanswered, Wiley conveniently obliged by sending out not one more but two more renewal notices. It is never too late to renew but do so soon and not miss receiving the latest issue of Journal of Phycology! If you have any trouble renewing do not hesitate to contact your kindly Membership Director (mamsler@uab.edu).

I am pleased to report that PSA is off to a Happy New Year welcoming 27 new members in January. Nineteen of the new members are students who will enjoy the Society perk of ***the second and third years of their membership at no additional cost***. PSA's reach and reputation of algal excellence extend beyond 'the Americas' evidenced by nine of our new members hailing from distant shores (velkommen, benvenuto, bienvenue, bienvenida, dobrodošli). There was also a mentor-sponsored membership. This is a great way to encourage a promising phycologically-minded student or assist an early career scientist.

To date, while the Society boasts most 2017 members paid for 2018 **there are about 300 who have not yet renewed**. So if you know any of the students now in the unpaid category as their third year expired, please encourage them to renew and continue enjoying the many benefits bestowed upon students of PSA. Same too for those in the post-doc/transitional category, **who as renewed members would be eligible to apply for the generous Norma Lang Fellowship**. While the future of PSA is to be built by the Society's incoming members, the strong foundation established by its regular members cannot be overlooked. I encourage those long-standing members who have not yet renewed to do so with your choice of receiving the Journal of Phycology online only or online and in print.

As a reminder of the Society's marvelous membership benefits:

- All PSA members enjoy the privilege of receiving the Journal of Phycology, six times a year. Members can access the Journal of Phycology using the Wiley Online Library. Log in information is sent after joining the Society or renewing a membership. If you experience any access issues please contact cs--membership@wiley.com for assistance.
- PSA members can search and obtain full--text electronic papers from all issues of the Journal of Phycology (back to Volume 1, 1965).
- PSA members are NOT charged page fees when they publish in the Journal of Phycology as communicating authors.
- Members can access the Journal of Phycology through an iPad and iPhone app. Instructions detailing access are available at the PSA website.
- Members receive a pdf copy of the Phycological Newsletter or they can download it from our website. The Newsletter includes upcoming Society activities, colleague highlights, book reviews, information on summer field courses and graduate programs, algal history retrospectives, general articles of interest and much more.
- Members receive a 35% discount on all Wiley publication.
- Postdoctoral and student members of PSA are eligible for grants in support of research.
- Postdoctoral and early career members are eligible to apply to the Norma J. Lang Early Career Fellowships.
- Student members are eligible for grants in support of research, travel to the Annual Meeting, and tuition for field courses.

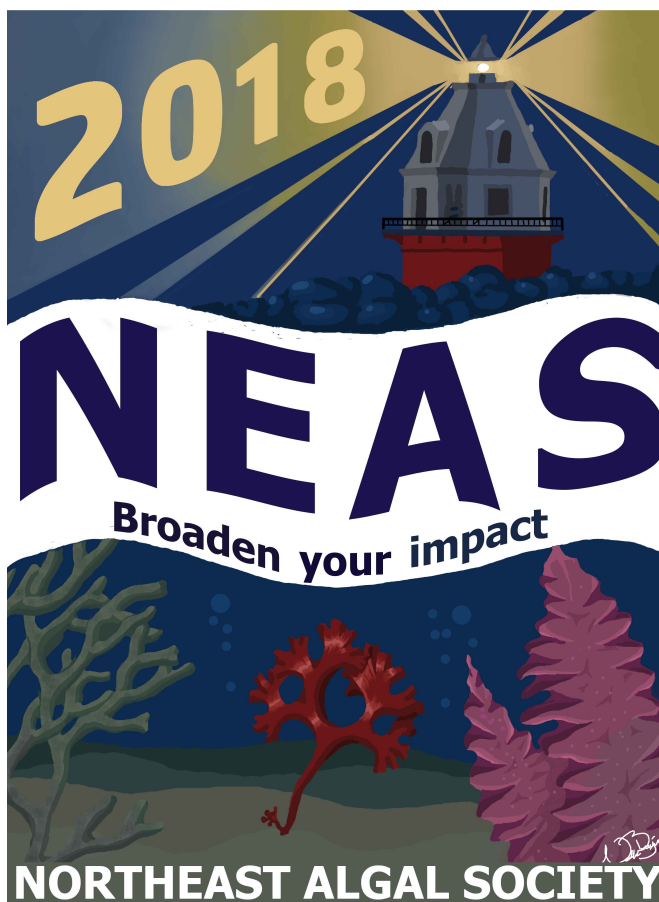
Finally, and most importantly, ***the greatest benefit of being associated with the Phycological Society of America is membership in a vibrant, algal-embracing community.*** Please continue to contribute your vitality and algal-zeal by keeping your membership current!

See you all in beautiful Vancouver, B.C. for the 72nd Annual PSA meeting this summer!

Meetings

Northeast Algal Society

57th Annual Symposium: April 13-15, 2018



NEAS Meeting Logo kindly provided by Mr. [Nicholas Bezio](#), Biologist by day and Artist by night.

NEAS 2018 will be held at the University of New Haven, (<http://www.newhaven.edu/>), West Haven, CT from April 13-15th 2018. This year's meeting co-conveners are **Amy Carlile** (acarlile@newhaven.edu) and **Brian Wysor** (bwysor@rwu.edu).

The theme for the 2018 symposium is *Broaden your Impact*, a nod to the National Science Foundation's grant proposal evaluation criterion to document the broader impacts of scientific research. We hope to generate discussion on how we can communicate our work to the public, which is especially important in this era of "fake news" and suspicion of science. To this end, we have invited Dr. Sunshine Menezes, Josie Iselin, and Bruce Barber. Sunshine is Director of the Metcalf Institute for Marine & Environmental Reporting (<http://metcalfinstitute.org>) and an expert on training scientists to be effective communicators. Josie is a photographer and author of books focused on forms in nature, such as *Ocean Garden: The secret life of seaweed* (<http://www.josieiselin.com/books/>). Bruce Barber is the radio station manager at the University of

New Haven's WNHU and an avid podcaster (<http://wnhu.org/bruce-barber/>). We look forward to a truly inspirational meeting, complete with the usual phycologically-focused science talks!

Student Book Awards and Student Research Grants: Details on these opportunities for students will be in the second circular. Some details and application materials from past awards are available on the NEAS website: (<http://www.e-neas.org/students.html>).

Field Courses and Workshops

Freshwater Algae

Course costs: £650 for sole occupancy, £495 for a shared room, and £380 for the course and dinner each day but no B&B.

Monday 9 July 2018 to Sunday 15 July 2018, Kindrogan, Scotland



This course provides an introduction to the diversity and identification of freshwater algae and involves informal lectures, field collection from a variety of sites and microscope work. **A basic knowledge of biology is required.**

Course Description

The area around Kindrogan provides a diversity of habitats for freshwater and sub-aerial algae, offering many opportunities to learn about this fascinating and ecologically important group of organisms.

We shall take full advantage of this excellent range of local aquatic and terrestrial habitats in this beautiful area of Highland Perthshire to provide a sound introduction to the recognition, identification and ecology of freshwater algae. Emphasis will be placed on the use of the microscope and taxonomic keys for the identification of algae to generic and species level, but ecological considerations will not be ignored.

For those with some prior experience of the algae, we hope that the opportunity to study samples from a range of habitats will broaden their knowledge and/or allow them to focus on particular groups.

Field trips, on foot or by road, will be varied, but not strenuous and will be complemented by laboratory work, illustrated talks and class discussion.

Tel: 01475 530581 E-mail: enquiries.sco@field-studies-council.org

The course focuses on how to become familiar with the major algal groups and get to grips with identification, while providing an overview of algal morphology, structure, reproduction, and classification (morphological and molecular). The course has been part of our programme at Kindrogan for over 20 years.

About the Tutors

Eileen Cox is Head of Post Graduate Studies at the Natural History Museum, London, with an extensive research background and a particular interest in the taxonomy and ecology of diatoms. She has published over 100 scientific papers and completed a key to the identification of live diatoms. She has run a number of courses and workshops on algae with particular emphasis on algal diversity and the identification of genera and species. Eileen is currently Editor for *Diatom Research*, on the Editorial Board of *Fottea*, Leader of the Working Group on Diatom Terminology and Co-Editor of two special volumes on Ecology of Springs and of a book on Long-term Ecosystem Study of the Breitenbach.

Elliot Shubert is Editor-in-Chief of *Systematics and Biodiversity* at the Natural History Museum, London. His research interests are phenotypic plasticity, gene expression and cell wall chemistry in the freshwater green alga, *Desmodesmus*. Previously, he was Professor of Biology at the University of North Dakota USA for 21 years where he taught undergraduate and post-graduate courses on algae. He has published over 60 research articles, and has produced a revised chapter on “Nonmotile coccoid and colonial green algae” for the 2nd edition of “Freshwater Algae of North America”.

Guest Lecturers

Professor Tom Day is Head of the Culture Collection of Algae and Protozoa at the Scottish Marine Institute at Oban. He is a recognised world expert on algal culturing, algal biofuels and cryopreservation. He is widely sought as an invited speaker for international scientific meetings.

Dr Laurence Carvalho, Centre for Ecology and Hydrology, will give a presentation on the EU Water Framework Directive with special reference to lakes and will describe their counting methods.

Where can I find more information?

- For detailed information about the Kindrogan Field Centre:
<http://www.field-studies-council.org/centres/kindrogan.aspx>
- For information on the Field Studies Council:
<http://www.field-studies-council.org/>
- Course information for 2017:
<http://www.field-studies-council.org/individuals-and-families/courses/2018/kd/freshwater-algae-73665.aspx>
- Booking information
<http://www.field-studies-council.org/individuals-and-families/booking-information>

If you have any other queries, please contact: e.shubert@nhm.ac.uk

SUMMER FIELD OPPORTUNITIES AT IOWA LAKESIDE LABORATORY

Six courses related to algae/diatoms/paleolimnology are being offered in Summer 2018 at Iowa Lakeside Laboratory. Classes target advanced undergraduates, grad students, post-docs, teachers, and professionals. There is also a class for high school students with the opportunity to earn college credit.

More Information/Registration?: <http://www.continuetolearn.uiowa.edu/lakesidelab/>

Contacts:

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Kerry Howard
University of Nevada, Reno &
Truckee Meadows Community College
kerryhoward@gmail.com

Shelly Wu
Texas Christian University
shelly.wu@tcu.edu

ECOLOGY AND SYSTEMATICS OF DIATOMS

15 May – 08 June 2018

Instructors: Mark Edlund, Sylvia Lee

ECOLOGY AND SYSTEMATICS OF ALGAE

11 June - 22 June 2018

Instructor: Kalina Manoylov

METHODS FOR TEACHING LIFE SCIENCE

18 June – 22 June 2018 (Online)

25 June – 6 July 2018 (at Lakeside Lab)

Instructor: Kerry Howard

ECOLOGY OF ALGAL BLOOMS

25 June - 06 July 2018

Instructor: Mindy Morales-Williams

PALEOLIMNOLOGY

9 July – 20 July 2018 (at Lakeside Lab)

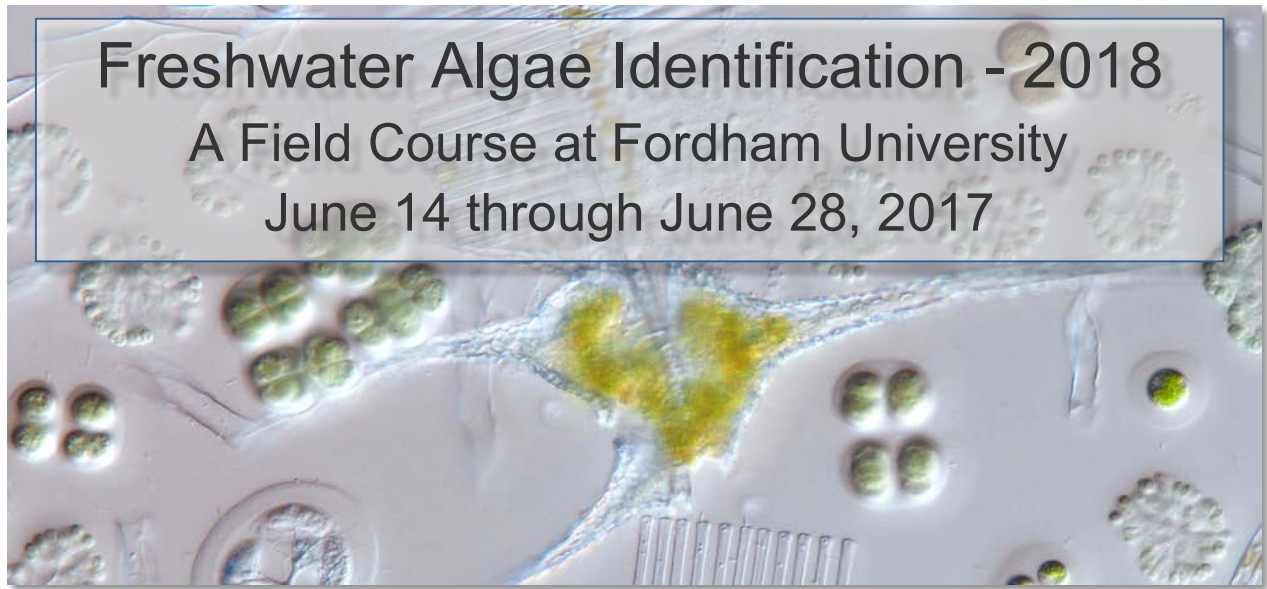
23 July – 27 July 2018 (Online)

Instructor: Kerry Howard

COLLEGE PREP DIATOMS

22 July - 03 August 2018

Instructors: Kerry Howard and Shelly Wu; Visiting Researcher: Sylvia Lee



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



What this course is about

This course focuses on algal identification, with a strong emphasis on the ecology and diversity of algae in freshwater habitats, and introduces the use of algae to assess water quality.



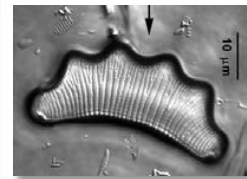
Our Location

We are located in Westchester County NY. The station has a spring-fed lake and is short distance from a diverse range of aquatic habitats. We have an excellent library of taxonomic keys, facilities for imaging specimens, as well as the boats and a wide array of field and laboratory gear for collecting and quantifying freshwater phytoplankton and periphyton. Housing on site will be available on a first-come first-served basis, and can be requested at the time of application.



What we will do

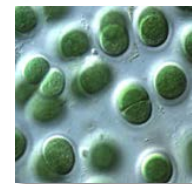
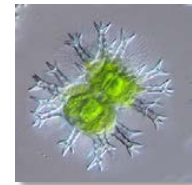
- Collect and study members of all freshwater algal groups, from cyanobacteria through greens, euglenophytes, dinoflagellates, chrysophytes, diatoms, red algae, and plant-like members.



- Gain familiarity proficiency using modern taxonomic keys.
- Learn the features that distinguish the freshwater algal phyla and genera, and gain familiarity with the diagnostic features that are used to identify members of the major groups.
- Create a database of high-resolution algal images and voucher specimens that can be used in future studies.

Activities

- (1) A detailed habitat-based survey of benthic and planktonic algae at the meso-eutrophic lake located on the field station property;
- (2) Comparison of algal floras and their ecological factors across a diversity of aquatic habitats in the local area, which encompasses numerous lakes, ponds, marshes, streams, and rivers;
- (3) A detailed study of a specific group or genus of algae in each student's area of specialization or interest.
- (4) Algae Bio-Blitz: a 24-hour hunt and competition to find the most biodiversity!



Costs and Registration

- Registration Fee: \$1,800
- Cost includes on-site housing (limited number). Meals are not provided
- Transportation costs to and from the Calder Center are not included.

Register at: www.fordham.edu/FWalgaeID

For more information, contact: Alissa Perrone at aperrone@fordham.edu

DURHAM COURSE ON FRESHWATER ALGAL IDENTIFICATION

Van Mildert College and Department of Biosciences, Durham University, UK

Organizers: Brian Whitton (Durham) and David John (London)

Dates: Sunday 8 July - Saturday 14 July 2018

The course provides training for staff in environment agencies, water companies, museums, consultancies, museums, research students and overseas visitors in the identification of the more widespread and environmentally important microscopic and macroscopic freshwater algae. Topics introduced include monitoring, field sampling, preservation, harmful and nuisance algae.

The Durham identification courses have been run independently by the organizers since 1992 and have been attended by more than 500 people from over 35 countries. Durham is a well-known important tourist destination because of its cathedral (began in 1093, completed within 40 years) and castle that is now part of the University and a World Heritage Site – both are just 15 minutes walk from the course venue. .

Course Leaders: Prof. David John and Prof. Brian Whitton. Dr Gordon Beakes (University of Newcastle), Dr Alan Donaldson (consultant) and Dr Martyn Kelly (Bowburn Consultancy) also contribute.

Lecture and practicals: run until 2120 each evening (including the Sunday) and the formal part of the course ends at 1300 on the Friday. Most study is in the laboratory or seminar room, but there is a short field excursion on Tuesday afternoon. Following the end of the formal course there is a half-day field visit to river sites and to streams influenced by former lead-zinc mining, followed by a meal in an Alston pub in the Pennines.



The historical city of Durham is a well-known tourist destination famous for its cathedral (began 1093) and castle, part of a World Heritage Site and just 20 minutes walk from the course venue

Costs: The inclusive cost for all members other than full-time research students is £900 (no VAT charge) for those making a firm reservation by 1 April. Overseas members may stay one further night in advance of the course free of charge. The cost is the same whether leaving after lunch on Friday or breakfast on Saturday.

The discounted price for full-time students is £800. Students who have been members of the British Phycological Society for at least three months (*essential!*) may apply directly to the Society for some support, but any decision rests with the BPS. Details will be posted on the BPS website (<http://www.brphycsoc.org/funding.lasso>), but it is recommended that an application is submitted **as early as possible**. Graduate students belonging to other societies (Phycological Society of America, British Ecological Society, etc.) can also apply to them for funding to defray the cost of attending specialist courses.

Van Mildert College can provide accommodation for anyone wanting to stay one extra night at the beginning and as many as required at end of the course (about £40 for B & B. Payment can be included in the main invoice, provided organizers know well in advance, but otherwise it can be paid to the college after arrival.

Further Information:

Anyone wanting more details, including a copy of a previous year's programme and manual is welcome to contact

Brian Whitton: b.a.whitton@durham.ac.uk phone +44(0)191-3867504 or

David John: d.john@nhm.ac.uk or d_m_john@ntlworld.com phone +44(0)208-4646367/07920124825 or

Department of Life Sciences, Natural History Museum, Cromwell Road, London SW7 5BD, UK

Booking: Provisional and firm reservations for one of 16 places should be made by email (b.a.whitton@durham.ac.uk) or to B.A.Whitton Algal Training, 74 Archery Rise, Durham DH1 4LA, UK. A full refund will be made to anyone paying in advance, but then cancelling before 1 June, while 50% refund will be made to anyone cancelling between then and 1 July.



NEW BOOK TITLES

Diatom taxonomy and ecology from France to the sub-Antarctic islands

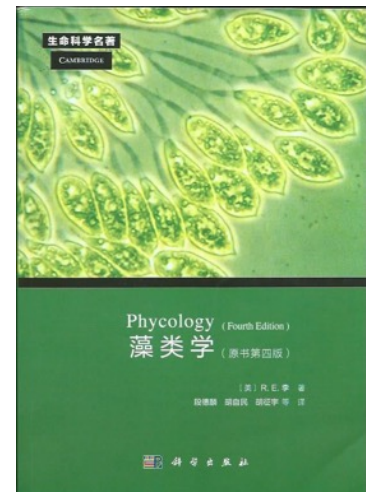
Ed.: Bart Van de Vijver; Loïc Tudesque; Luc Ector
 2018. 325 pages, 1210 figures, 24 tables, 17x24cm
 (Nova Hedwigia, Beihefte, Beih. 146)
 ISBN 978-3-443-51068-8, paperback, 139.00 €
www.schweizerbart.de/9783443510688

The diatom flora and cyanobacteria from caves on Kauai, Hawaii

Taxonomy, distribution, new species

I. Investigation of the cave diatom flora of Kauai, Hawaii:
 an emphasis on taxonomy and distribution
 II. Novel cyanobacteria from caves on Kauai, Hawaii
 Ed.: Laura H. Miscoe; Jeffrey R. Johansen; J. Patrick Kociolek;
 Rex L. Lowe; Melissa A. Vaccarino; Nicole Pietrasiak; Alison R. Sherwood
 2016. 152 pages, 448 figures, 2 tables
 (Bibliotheca Phycologica, Band 120)
 ISBN 978-3-443-60047-1, paperback, 89.00 €
www.schweizerbart.com/9783443600471

A Chinese language edition of the fourth edition of *Phycology*, by Robert Edward Lee, published by the Chinese National Academy of Sciences, is available on Amazon.cn for Y380.80.



Phytoplankton Algae of Nigeria- A Practical & Theoretical Guide. Volume 1: The Desmids

by Professors F.I. Opute and M. O. Kadiri has been published and is available. It is a hard cover, 304 page book and contains 250 photographs (plates) and 226 line drawings accompanied by detailed taxonomic description of each species.
<http://www.amazon.com/gp/product/9788448763>

KOELTZ BOTANICAL BOOKS

Taxonomy and ecology of *Eunotia* species (Bacillariophyta) in southeastern Brazilian reservoirs

2017. (Bibliotheca Diatomologica, 64). 108 plates, 1 fig. 1 tab. 302 pages. Paper bd. EUR 149.00

Süßwasserflora von Mitteleuropa: Volume 13, Chlorophyta: Ulvophyceae

Skaloud, P., F. Rindi, F. Boedeker and F. Leliaert: 2017. 182 figs. IV, 250 o. 8co. Hardcover. EUR 94.00

Süßwasserflora von Mitteleuropa: Band 06, Dinophyceae

Moestrup, Ojvind and Antonio Callado: 2018. 421 figs. X, 390 p. Hardcover. - In English. EUR 126,35

Tropical Seaweed Farming Trends, Problems and Opportunities. Focus on Kappaphycus and Euchuma of Commerce.

Hurtado, Anicia Q., Alan T. Critchley and Ian Neish (eds.)

2017. (Developments in Applied Phycology, 9). 106 (3 col.) figs. XVI, 216 p. gr8vo. Hardcover. EUR 135.00 (Approx. 175.00 USD)

Diatom taxonomy and ecology. From France to the sub -

Antarctic islands. Van de Vijfer, Bart, Loic Tudesque and Luc Ector (eds.):

Celebrating the work of Prof. Dr. René Cohu on the occasion of his 80th birthday.

2017. (Nova Hedwigia, Beiheft 146). 1210 figs. 24 tabs. 325 p. gr8vo. Paper bd. EUR 139.00

www.koeltz.com

Phycology. 5th Edition.

Robert Edward Lee. Due April/May 2018. ISBN: 9781107555655. 546 pp., 427 b/w illustrations. Paperback. \$59.99

This revised edition maintains the format of previous editions, whilst incorporating the recent developments in the field such as: the potential and challenges of producing algae biofuel; the proliferation of algal toxins; and the development of new molecular tools and technologies on ancestry, phylogeny, and taxonomy of algae.

*Discusses the connection between the surplus of pollutants in waters due to Man's activities and the increasingly high densities of algae growth resulting in blooms of nuisance and/or toxin-producing genera

*Introduces the latest research on algae as a biomass resource, allowing students to learn about the various strands of development in this field and the hurdles that this technology has yet to overcome before it can compete in the fuel market

*Explains how the application of powerful and ultra-rapid nucleic acid sequencing techniques to the problems of phylogenetic studies has led to a greater understanding of the evolution of algal groups and their interrelationships

*Covers the economic importance of algae from their role as primary producers of the aquatic environments to source of food for both animals and humans, and their ability to yield specific chemical products and antibiotics

Bibliotheca Diatomologica, Band 65, The diatom genus *Pinnularia* from Great Xing'an Mountains, China.

Y. Liu; J. P. Kociolek; Q. X. Wang; Y. W. Fan. 2018.

ISBN: 978-3-443-57056-9. 298 pp., 1 figure, 112 plates. Paperback. \$222.60

In this volume diatoms of the genus *Pinnularia* from the Great Xing'an Mountains (in northeastern China), a very pristine region with a great diversity of habitat types, are described. A total of 89 taxa of the genus *Pinnularia* were studied and documented in both light and scanning electron microscope images. As a result 19 new species are proposed, and 7 neotypes of taxa of *Skvortzow* are designated.

The diatom genus *Pinnularia* is notoriously difficult taxonomically, with populations having small numbers and apparently great intraspecific phenotypic variability. P.T. Cleve (1895, p. 72) wrote, "The fresh-water forms pass into one another to a great extent, so that the definition of good or distinct species or groups is a matter of greatest difficulty or almost impossible." One of the parts of the world where the freshwater diatom flora is relatively unknown is China. This work will contribute significantly to our understanding of the diversity of the genus *Pinnularia* overall, and especially in China.

Keys to the Seaweeds and Seagrasses of Southeast Alaska, British Columbia, Washington, and Oregon. Phycological Contribution Number 9.

Paul W. Gabrielson & Sandra C. Lindstrom. 2018. 180 pp. Paperback. \$40.00 (price includes shipping from Canada)

Contact S. Lindstrom: sandra.lindstrom@botany.ubc.ca

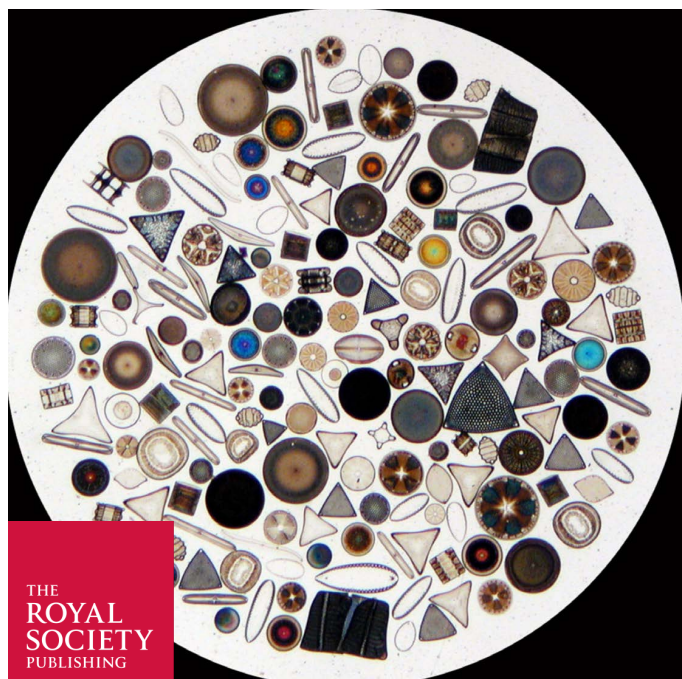
The Peculiar Carbon Metabolism in Diatoms

A special issue in Philosophical Transactions B, compiled by Benoît Schoefs, Hanhua Hu and Peter G. Kroth

As plants, microalgae convert sunlight energy into chemical energy in the chloroplast using CO₂ from their environment and releasing oxygen. Ignored for a long time, it is now estimated that the diatom contribution to carbon fixation and the biogeochemical cycles is enormous: up to 50% of the total carbon fixation in oceans and a photosynthetic yield higher than any tropical forest. In addition, the potential of microalgae for biotechnological application is huge. Despite the tremendous progresses that have occurred in photobioreactor engineering, the achievement of biotechnology in terms of production and economic yields remains fragile, possibly due to a lack of understanding of the metabolism and physiology of microalgae.

In this theme issue, we present a multidisciplinary understanding of carbon metabolism in microalgae, including physiological and ecological aspects. We highlight the importance of carbon metabolism for biotechnological applications and economics.

Access articles [here](#)



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**Submit your contributions to the next
Phycological Newsletter by August 15, 2018**

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

Please forward this information to

Jeffrey Morris

evolve@uab.edu

**Brought to you by the PSA Communications
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