
Phycological Newsletter

New Initiative from the Vice President/President Elect

I propose that at every annual meeting PSA sponsor a lecture or lectures to which the general public is invited. The genesis for this proposal was the 2014 JASM meeting in Portland, Oregon that had a large contingent of freshwater scientists from around the world, but no representation from local riverine organizations. Where I live in North Carolina, there are two prominent NGOs concerned with the quality of our local rivers, the Haw River Assembly (HRA) and the Eno River Association (ERA). The HRA every year brings 5th grade classes from all schools along the Haw's flow to learn about the abiotic and biotic components of the river. The ERA has been instrumental in buying land along the Eno's flow to buffer the river from urban and rural impacts. These are examples of effective organizations engaged in citizen science and whose members would be interested in hearing from, and engaging with, phycologists.

Unbeknownst to me, the PSA already had taken the initiative to engage in citizen science by helping to sponsor a documentary film on a women's seaweed collective in Zanzibar that had its world premier at the 2015 annual meeting (see review on pp. 13-14) and by inaugurating the Tiffany Award to identify and promote work that communicates the importance of algae to humans (see pp. 6-7). I see these public lectures linked to our annual meeting as another outreach where PSA can promote algae and the scientists that study these organisms that we find so fascinating. I ask your assistance in supporting this proposal by sending to me suggestions for topics and/or speakers: drseaweed@hotmail.com



Phycological
Society of
America



Don't forget to check out the August Issue of the Journal of Phycology that include a special article by Mike Graham: Fifty years of the Journal of Phycology: What's the impact? (Editor's Perspective)

Also see the 50th Anniversary Virtual Issue, which is a collection of articles marking important milestones in the Journal's history.

[http://onlinelibrary.wiley.com/journal/10.1111/
\(ISSN\)1529-8817/homepage/
50th_anniversary_virtual_issue.htm](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1529-8817/homepage/50th_anniversary_virtual_issue.htm)

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Phycological Society Of America

September 30, 2015

Dear PSA Members,

Dr. Norma J. Lang, PSA President (1975) and long-time supporter of the Phycological Society of America, passed away on March 6, 2015, leaving a scientific and personal legacy that will be long remembered, within the PSA and among her many friends and colleagues at the University of California at Davis. The PSA received word just after the Annual Meeting that Dr. Lang left a bequest of over \$700,000 to the PSA Endowment. On behalf of all PSA members, the Executive Committee and Board of Trustees have expressed the Society's sincere gratitude to the Lang family.

Many of us knew Norma J. Lang as a good friend and colleague, and even though she was unable to attend recent meetings, we retain fond personal memories of her past loyal attendance at meetings and of her tireless service to the Society, notably as President in 1975. She was one of the giants in our field and we feel her loss deeply. She played a vital role in the development of PSA as the premier scientific society for the study of algae, the organisms to which she devoted her life, and about which she published numerous important research papers especially in the field of algal ultrastructure. She played an especially important role in the Society's first few decades of existence. She helped lay the groundwork for the PSA in formulating its bylaws, developing the Endowment, and helping to oversee the growth of the *Journal of Phycology* and the development of other PSA activities.

All of us knew of Norma J. Lang's great devotion to the PSA, but the Executive Committee and Board of Trustees were simply overwhelmed to hear of this generous gift to the Society's Endowment. This unprecedented gift increases the existing Endowment Funds of nearly \$2 million by over a third. The PSA Endowment is greatly strengthened by her contribution. The Board of Trustees and Executive Committee, together with the Editorial Staffs of the *Journal of Phycology* and the *PSA Newsletter*, are planning several celebrations of Norma J. Lang's life and her contributions to phycology and PSA during the coming year and at the 2016 Annual Meeting. If you would like to participate or contribute ideas for these tributes, please contact us.

Sincerely,

Rick Zechman
PSA President

Paul Gabrielson
PSA Vice-President/
President Elect

Rick McCourt
Chair, Board of
Trustees

This letter was originally sent to the PSA members through the PSA list server on October 1st, 2015.

TRIBUTE - NORMA JEAN LANG (1931-2015)

With sadness, we note the passing on March 6 of Norma J. Lang, a former President of the Phycological Society of America (1975), a respected early practitioner of the tool of the electron microscope for studying the ultrastructure of green algae and Cyanobacteria, a greatly admired teacher, a prominent spokesperson for phycology, and a dear friend to many.

Norma was born to Dave and Mary Lang on July 25, 1931, in Memphis, TN. The family made many moves in her early years, and Norma graduated from high school in Toledo, OH. Her initial college period was at Bowling Green University in Ohio, but she transferred to The Ohio State University, where she earned her B.S. (1952) and M.A. degree (1958). At OSU, she had an early exposure to the algae from Prof. Clarence E. Taft. She entered Indiana University in Bloomington, working on her PhD research with Dr. Richard C. Starr and earning her Ph.D. in botany in 1962. She spent the summer of 1961 at the Marine Biological Laboratory in Woods Hole as a teaching assistant in the algae course, in which Richard Starr was the primary instructor. At IU, she was a contemporary of other Starr students, including Phil Cook, Austin Brooks, Melvin Goldstein, Ed Lippert, and Bob Korn. When Phil Cook decided to buy a new car [a red Studebaker] before he drove across country to start a post-doc (with Prof. Ralph Emerson at UC Berkeley), he wisely enlisted Norma to go along with him to the car dealership. She was the type of person that you would want to be with you when you negotiated for a new car. As Phil later told me, the dealer agreed to toss in the seatbelts (which back in 1962 were an optional feature) for nothing! Norma must have intimidated that car dealer. No mean feat. For her doctoral research, she was one of the first phycologists to use the innovative technology of transmission electron microscopy to visualize the fine structure of organelles such as chloroplasts and eyespots in green algae, and the various inclusions in Cyanobacteria. Her early publications (Lang, 1963a, b, 1965, 1968a, b) dealt with those subjects.

Norma spent a post-doctoral NIH fellowship at the University of Texas in Austin, where she worked with Dr. Gordon Whaley (Cell Research Institute) and also interacted with Harold C. Bold. I heard that during her time in Texas she went out to a limestone quarry and selected a massive rock that was loaded with fossils of shells and other marine life, to serve as a conversation-piece coffee table in her home. Norma's next move, as well as hauling that huge monolith / coffee table, was out to Davis, California, where in 1963 she started as an assistant professor in the Department of Botany at UC Davis. She received funding for her research from the National Science Foundation. Then in 1968, she was awarded a Guggenheim Fellowship for a sabbatical leave, spent at Westfield College, University of London, in the lab of Peter Fay. She also received advice and encouragement from G. E. Fogg and Irene Manton. Insightful publications on the nature of the heterocyst in blue-green algae resulted from the time spent on that sabbatical (Fay & Lang, 1971; Lang & Fay, 1971). Her papers published over a two-year period were recognized by her being awarded the Darbaker



Norma J. Lang. At Shell Beach, Bodega Bay, Sonoma Coast State Park, California. August, 1977. [Courtesy of Dr. Judy Jernstedt.]

Prize in 1969 from the Botanical Society of America. She continued to keep in touch with Richard Starr, who entrusted her with a culture that he isolated from a soil sample made in Rhodesia [Zimbabwe], Africa, by South African phycologist Mary A. Pocock. This culture proved to be a new genus, which Norma was pleased to name for her PhD mentor, namely, *Starria zimbabweensis* (Lang, 1977).

I served on the Society's Executive Committee when Norma was president, and she was a take-charge type of leader. I recall how at the meetings of the Executive Committee, she would tell us that she would efficiently "orchestrate" how the annual Business Meeting would be handled. She was a no-nonsense person, and that is a good quality to have. I also recall that during Norma's tenure as PSA President, she took the initiative to hire an attorney to gain tax-exempt status for the Society. It was a process that took two years to complete, but in the end, it was successful quest.

Norma retired somewhat early, in 1991, but she was able to devote her retirement years to many pursuits. One keen hobby was training and showing dogs in obedience competitions, and she received many awards for that activity. She also served her community, primarily as a volunteer in the adult literacy program of the Woodland Public Library. This generous spirit displayed by Norma was recognized by the California State Assembly in 2011. Norma J. Lang will be long remembered for her many contributions not just as a phycologist but as a warm and caring person.

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Michael J. Wynne
University of Michigan

The Tiffany Award

A NEW PSA AWARD

Executive Committee Repurposes Applied Phycology Committee

If it's true, as Susan Kilham asserted recently (Kilham 2015) that 50% of the oxygen we humans breathe derives from algal photosynthesis, then people on this planet need to know a lot more about algae. But that's not all, as we algologists know, algae are ancient and beautiful and deserve more respect than they get.

The Tiffany Award is a new initiative by the Phycological Society of America to identify and promote work that communicates the importance of algae to humans. Funds from this 2014 endowment will be available in 2016 for the \$500 Award at next year's annual meeting of PSA. This initiative is related to, but also an expansion of, the previous work of the Applied Phycology Committee, which will be changed to the Algae and Human Affairs Committee if a ballot measure passes in next year's PSA election. It is related because the Applied Phycology Committee has emphasized research on algae and alternative fuels at the past few meetings of PSA, and more people now realize that algae can provide alternatives to fossil fuels. This relatively new application is introducing algae into human affairs and producing an explosion of ideas about how to exploit algae for this and other purposes. The importance of algae to humans goes far beyond these applications though, as Susan Kilham reminds us. Bridging the knowledge gap between research reported in our *Journal* and society meetings, and the minuscule knowledge of algae among humans on our planet, is an interesting challenge that lies within the domain of our lives and work as phycologists. Who else can spread the word of the importance of algae as effectively as we?



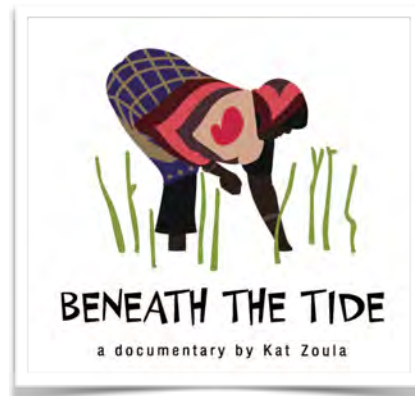
L. H. Tiffany
(PSA Archives)

An important premise of the Tiffany Award is to have fun with the challenge raising public awareness of algae. This is why Lewis Hanford Tiffany is attractive as the personification of the concept behind the Award. Phycologists usually have a hidden conviction to reach out and tell the "unwashed" about the importance of algae, if for no other reason than to continue to receive support from society as a professional scientist. Tiffany's reasons for reaching out to people ignorant about algae were probably more about sharing his delight in knowing about them. That feeling can lead to more creativity in our efforts meet the challenge. If more people had microscopes, for example, they could access an exotic world of beauty, movement, intricacy and struggle in the colored waters of their nearby lakes and streams. For less than the cost of three or four expensive restaurant meals, ten plays and five concerts, and for the rest of their lives, people could gain a more nuanced understanding of problems like eutrophication and the blue water fixation. Tiffany expressed this idea in the second edition in 1958 of his 1938 book *Algae: The Grass of Many Waters*. Tiffany wrote: "The volume was originally written for the sheer fun of putting down on paper some interesting things about algae. Some readers have expressed considerable delight at reading the book, and there has been a number of requests for the volume since it has been out of print. "Curiouser and curiouser!" cried Alice."

Although most people probably will not delve into amateur microscopy, there are unique individuals, many of whom are not phycologists, who have talents in bridging the knowledge gap and understand enough about the underlying science to who produce amazing works that can broaden the minds of the uninformed

The Tiffany Award continued

public. Through the Tiffany Award, the new Algae and Human Affairs Committee can help to identify and support this kind of work, which will be compatible with its expanded mission. For example, the complex research of Peter Hegemann and his associates in Berlin, Germany was presented at the opening session of the Philadelphia PSA meeting; it was an example of sustained and interesting applied phycology using the eyespot of *Chlamydomonas* at the extreme of chemical intricacy. The story of the early days of this research was conveyed so clearly in an article in the November 2009 *Wired* magazine by Michael Chorost, who interviewed Hegemann for the story. Magical “Algae?”, the reader no doubt wondered, “I want to know more about that”. There are others, like Kat Zoula, an independent film director, who presented her film “Beneath the Tide” about seaweed farming in Zanzibar at the Philly meeting (see page 13 of this newsletter for the film review). The women harvesters in her film are definitely applying phycology, but Zoula shaped their story visually and conveyed their challenges to a much wider audience to show the importance of algae in their lives. The PSA presented the first honorary Tiffany Award to Zoula and supported production of the film and her attendance at our meeting. Like Tiffany, other PSA members have produced outstanding works that popularize algae. In an initiative that came from Applied Phycology Committee members, Walter Adey and Charlie Yarish, developed and produced a DVD to present 6012 commercial and conservation projects about algae. As plans developed it was decided PSA should have a booth at the National Science and Engineering Fair in Washington, D.C. April 2011. The booth featured the DVD as a continuous loop. The DVD, the **Amazing World of Algae**, was produced by Karen Loveland Adey, dba Ecological Systems Technology. The DVD is available on the PSA web site, and Stan Geiger, a PSA member since the 1970s who donated the seed money for the Tiffany Award, said it was very useful in helping his grandson with his high school senior project on use of algae for biofuels. This DVD is a good example of a candidate for the Tiffany Award.



The next PSA Newsletter will include an article on the life and work of Lewis Hanford Tiffany (1894-1965). Tiffany was the third PSA President (1948-1949) and one of the charter members of PSA. What Tiffany attempted in his two books was not so simple for this accomplished university teacher and researcher. But he saw the need for telling people about algae with approachable words and a light touch. Through funds made available in memorial trusts, he and his wife Loel attracted many students to phycology. Tiffany appears to have been a pioneer among phycologists in reaching out from the realm of lectures and research to people who were ignorant of the importance of algae to their lives – nearly everyone then and nearly everyone today.

Chorost, Michael. 2009. Algae and light help injured mice walk again. *Wired*. November 2009

Kilham, Susan. 2015. Algae and climate change. Plenary Session Presentation at the 2015 Philadelphia, PA Annual Meeting of the Phycological Society of America, August 13, 2015.

Tiffany, Lewis Hanford. 1958. *Algae. The grass of many waters*. Charles C. Thomas Publisher, Springfield, Illinois. 199 pp.

N. Stan Geiger
Managing Ecologist
Aquatic Scientific Resources, Portland, OR

Highlights from PSA Annual Meeting Philadelphia, PA

2015 Award of Excellence

Dr. Robert Andersen
Friday Harbor Laboratories
University of Washington

Dr. Andersen was recognized for over 35 years of excellence in research, service and teaching in the field of phycology. In that time, he has authored more than 130 publications and sustained an active research career while dedicating extensive time to service to the phycological community. His career started at De Paul University in Chicago, followed by a move to the Provasoli-Guillard National Center for Culture of Marine Phytoplankton, where he served as Director for twenty years. During that time period, Dr. Andersen raised over \$8.6 million in funding from the National Science Foundation for the collection. As noted by one of his nominators "This is research infrastructure of the highest importance for phycology, and it was Bob's reputation as a scientist, his technical skills in cultivating these organisms, and his administrative/political skills in fund raising, that made it possible.". In addition to this important contribution, Dr. Andersen was Editor-in-Chief of *Phycologia* (2011-2014), President of PSA (2008), Secretary of the International Phycological Society (2002-2004) and President of the International Society of Evolutionary Protistology (1998-200) – these are a just a few of the many administrative and executive positions that he has held within national and international organizations.

Another of Dr. Andersen's nominators noted "As a researcher, he has paid attention not only to the 'big picture' of the relationships of algal classification but also to the species-level distinctions" and is recognized as a world authority on the chrysophytes. He has described four new classes within this group. His research has examined the ultrastructure, pigmentation and molecular evolution of these groups and has often involved collecting a taxon from its type locality and through careful isolation and culturing has preserved these organisms for future research. These skills on culturing algae led to the classic monograph, "Algal Culturing Techniques", which has become a standard in any phycology lab focusing on the isolation and growth of algae in culture. Dr. Andersen's primary nominator noted the following "He is held in the highest regard both as a scientist and for his personal qualities. This deep respect is highlighted in having three species named after him as well as a new genus (*Andersenia*, in press). His soft-spoken manner belies a phycologist of the highest caliber who has contributed to our discipline at the highest level." Dr. Andersen's excellence in research and service in phycology has benefited those who follow in this field.



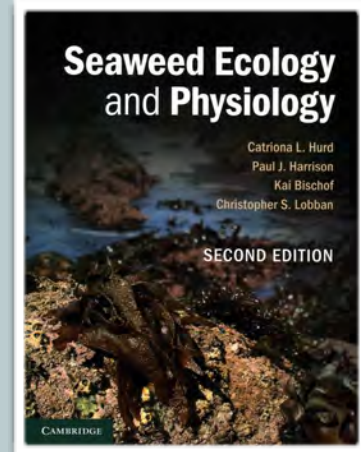
Rick Zechman (PSA President) and Bob Andersen at the PSA annual meeting

Prescott Award

The Gerald Prescott Committee has chosen 2 volumes to recognize in 2015 because both represent excellent scholarly work that contributes greatly to Phycology.

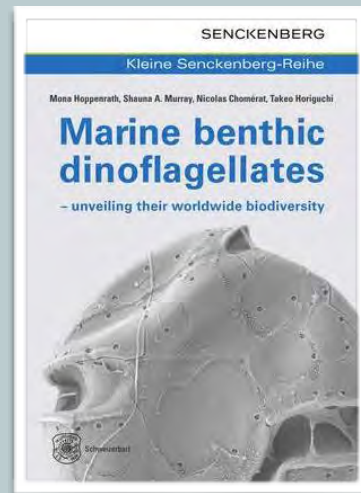
We recognize authors Catriona Hurd, Paul Harrison, Kai Bischoff and Christopher Lobban for their volume *Seaweed Ecology and Physiology*, 2nd Edition.

This Second edition of the original 1994 Harrison and Lobban volume added 2 new authors as well as essays by experts in the field. Published reviews and the Committee praised the book for thorough updating of the first edition to a volume of great utility for educators and researchers. Published reviewers also noted the addition of research from the southern hemisphere and its inclusion of global change issues for seaweeds. A nominator noted that “. . . the book is unique in that there is no comparable text that covers both the ecology and physiology of these important organisms.” The Prescott Committee lauds the authors for a contribution for training future phycology students and anyone interested in the diversity of seaweed biology.



We recognize authors Mona Hoppenrath, Shauna Murray, Nicolas Chomérat, Takeo Horiguchi, for *Marine Benthic Dinoflagellates*.

The Committee recognized the scholarship by Hoppenrath and colleagues in describing a little-known, but ubiquitous group of algae. This portable volume is full of detailed descriptions and illustrations that will help the novice and the expert. The phylogenetic relationships are also described. A nominator noted: “Unlike their planktonic counterparts, benthic dinoflagellates have been largely ignored, Hoppenrath et al. have provided an excellent text and quite superb illustrations. I can immediately begin to put names to things that I have seen for years and never been sure about.” The Prescott Committee praised the authors for providing an excellent resource to the community of phycologists and benthic ecologists.



Rick Zechman (PSA President) and Mona Hoppenrath at the PSA annual meeting

Provasoli Award

The Provasoli Award winners for the best paper published in the Journal of Phycology in 2014 were announced during the PSA banquet at the annual meeting in Philadelphia, PA. Ryan C. Fawcett and Matthew W. Parrow received the award for their work, "Mixotrophy and loss of phototrophy among geographic isolates of freshwater *Esoptrodinium/Bernardinium* sp (Dinophyceae)" (50:55-70). The authors demonstrated mixotrophy in freshwater dinoflagellates for the first time and also the subsequent loss of phototrophy. This work contributes to a better understanding of the eco-physiology, genetics, and evolution of feeding strategies in dinoflagellates, in particular the origination of obligate mixotrophy.

Bold & Lewin Awards

In August, at the 50th anniversary of the annual PSA meeting in Philadelphia, PA, eleven students competed for the Harold C. Bold award for the best oral presentation. Two students shared the top honor for the Bold Award: Grant Jones (Rosemary Jagus' and Allen Place's Labs) for his talk entitled "Phylogeny and function: the role of the eukaryotic initiation factor 4E in control of gene expression in dinoflagellates", and Sarah DeVaul (Robert Sanders' Lab) for her talk entitled "Striking a balance between phototrophy and heterotrophy in the mixotrophic Chrysophyte *Dinobryon* sp." Five students competed for the Ralph A. Lewin Award for the best poster presentation. The winner was Nikolaus Schultz (Louise Lewis' lab) for his poster entitled "Evaluating Heterotrophic Growth Capabilities of Eight Green Algae that Symbiose with Spotted Salamanders." Congratulations to these students and their mentors!



Patrick Martone (Bold and Lewin Award Chair) with Bold award winners (left), Grant Jones and Sarah DeVaul and Lewin award winner (right) Nikolaus Schultz

PSA Annual Business Meeting Minutes

**Aug 12, 2015
Philadelphia, PA**

This meeting reached the required quorum for voting.

Treasurer's Report (Linton)

RPC has been engaged to be our tax consultant. Additionally we have continued membership in AIBS and NSCA. We have also purchased insurance to cover the society for meetings, rather than doing it ad hoc.

Total income was ~\$222k, with a net income of ~\$95k after expenses. Total assets exceed \$2m this year. ~\$100k will be moved to the endowment after meeting expenses are reconciled, leaving ~\$150k in the checking account.

Board of Trustee's Report (McCourt)

There will be a vacancy on the board next year and they are looking for candidates to fill that spot.

Fund Manger's Report (Murray)

Our earnings on the endowment will be roughly \$38k this year, between the treasury and endowment funds. The anticipated 2015 expenditures for the year will be \$50,900, with \$49,700 expected for 2016. There was a \$8,201 shortfall between the endowment earnings and the expenditures. That amount was made up from General Funds. The projected shortfall for 2016 is \$11,078. This is mostly due to dropping interest rates. At a rate of 2.5%, we need roughly \$667k to fully fund all of our expenditures from the endowment.

Membership Report (Robertson)

PSA has roughly 1000 members, which has declined since the 90s, but been somewhat consistent over the last 5 years. Dues have also remained constant for about a decade.

Membership Director, Deborah Robertson, introduced the following motion regarding membership dues:

The PSA will increase the cost of the following membership subscriptions by \$5 USD to begin 2017:

- *Member, online only (\$85)*
- *Member, print + online (\$95)*
- *Joint membership, online only (\$90)*
- *Joint membership, print + online (\$105)*

As the motion came from the Executive Committee there was no requirement for a second. After little discussion, the motion was passed by a show of hands without dissent.

Business meeting minutes continuedPresident's Report (Zechman)

In order to begin to fulfill the President's mission to increase diversity in our membership, PSA will have a booth at the 2015 SACNAS meeting in D.C. We are hoping this outreach will put PSA in the minds of some of the students there. The intention will be to connect students with mentors in their local area.

Managing Editor's Report (Graham)

The numbers for the journal continue to be strong, with highly reduced time to decision and publication. The 50th anniversary of the journal will be coming out in the coming week, highlighting some of the most cited papers in the journal's history. Additionally, profit from the journal is up, as is the Impact Factor, which is currently the highest in journal history.

Communications Report (Müller)

The new web page is up and there was a blog for this year's meeting, which will be done next year as well. The society is also active on Twitter and Facebook.

Student Rep Report (Johnson)

A student committee is applying to NSF for an NRT grant to fund a bioinformatics workshop.

Program Director's Report (Casamatta)

Next year's meeting will be in Cleveland, with 2017 at Monterey Bay, CA. 2018 is still being discussed, but may be held in Vancouver Canada.

V-P/Pres Elect Report (Gabrielson)

Paul would like to initiate a public lecture at each meeting that would be locally relevant and raise out public profile.

Elections Committee (Litaker)

Elections results:

Tim Nelson – VP/Pres Elect

Intl VP – Marianna Cabral de Oliveira

Treasurer – Eric Linton

Student Rep – Emily Johnson

ED Board – CX Chan, Line Le Gall, Connie Lovejoy and Joe Zuccarello.



Beneath the tide

A documentary film by Kat Zoula

The beginning: gentle sea, haunting music, three women walking into view, draped in colourful clothes and wearing fashionable sun glasses, make their way to the seaweed beds across a beautiful shore and the scene is set for Kat Zoula's beautiful yet subtle film. Set in the village of Paje in East Zanzibar, this is a documentary about the lives of the women seaweed farmers in East Zanzibar. Long shots of seascapes with majestically towering clouds, the juxtaposition of rusty coloured corrugated tin roofs against the white walls of the houses, close ups of everyday life introduce us to the village, aspects of daily life, generational differences and the transformation that the seaweed women have brought about in the lives of their families. But the image that captures the film is that of the unique silhouette of a woman tending the seaweed beds amongst the wooden stakes and ivory sand with a backdrop of blues and greens of the sea the and sky beyond.

This is a film about women told entirely by the women. We see how the women grow the seaweed using peg and line farming whereby seedlings of the red seaweeds are tied onto a staked line and left to grow for six weeks before being harvested and turned into soap and cosmetics and sold at a better price than raw seaweed. We hear from the women how farming the seaweeds makes the women happy because the income they make enables them to educate their children, help their husbands and build their houses. However, as the film unfolds, a more subtle subtext emerges that revolves around the setting up of a Seaweed Center and the resulting clash between idealism and hard economics.

A key player in the original concept of the Center, Dr Flower Msuyu, a seaweed scientist in Zanzibar, had the aim of an inclusive community centre, a place where a large number of women could come to make soap to make a living. After the initial enthusiasm of the project, momentum waned and the Center was running at a loss. The other key player in the documentary is Klaartje who was brought in as CEO of the Seaweed Center to attempt to transform it into a profitable concern. In doing so, she reduced the number of women at the enterprise from about forty to seven which resulted in a more viable economic model.

The film reaches a climax when Dr Flower and Klaartje are brought together to discuss the concept of the Seaweed Center. The tension, as the two women speak openly from their particular standpoints, is palpable. Both women are clear in their views and both are right and we can only hope that the relationship between these two strong women will develop into a powerful synergy.

Nevertheless, the long term future of seaweed farming in the area remains unclear. The picture of the sulky teenager sums it up. Will the next generation want to undertake the work in the seaweed beds as their mothers do? Will seaweed disease as has occurred in other parts of Zanzibar impact on the lives of these open, generous, colourful seaweed women? Time will tell.

For me, the success of the film lies in the way that everything that unfolds from the pretty picture at the beginning to what lies behind it is shown through the images, conversations and facts. It is gentle and fair but gets under the skin. It is a fascinating film.

'Beneath the Tide' was shown for the first time on Tuesday 11th August in Philadelphia at the annual meeting of the Psychological Society of America who were sponsors and executive producers of the film. At the end of the showing, after a lively question and answer session, Kat Zoula was awarded the Society's first L.H. Tiffany award for popularization of science.

Juliet Brodie
August 2015



From left to right: John Stiller (Past PSA President), Kat Zoula and Rick Zechman (PSA President)

Photos from PSA Annual Meeting in Philadelphia, PA

Marine Field Trip - Jersey Shores



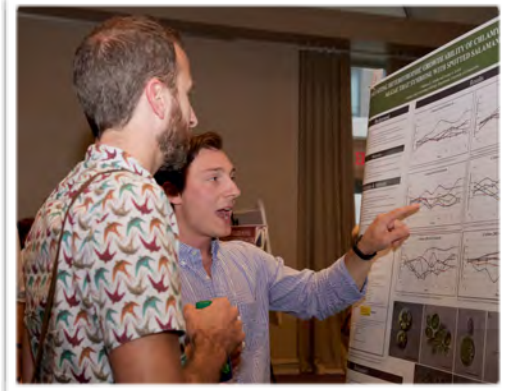
Marine Field Trip to the
Jersey Shores
led by Dr. Elizabeth Lacey
(Stockton University)
Sunday August 9th, 2015

Freshwater Field Trip



Freshwater Field trip led by Dr. John Hall (UMD) to the Pine Barrens, Sunday August 9th, 2015

PSA Poster Session



PSA Mixer and Auction



Linda Triemer was on hand to paint some amazing algal body art!



PSA Mixer and Auction



All the funds from the PSA auction go to support student awards and fellowships. The kelp statue was carved by Gary Saunders and was auctioned off for \$600 and the original artwork for the meeting went for \$220.



THE *ASCOPHYLLUM* SONG

(to the tune of "Teddy Bear's Picnic")

(By David Garbary with a little help from
Rob Fitch!)

IF YOU GO OUT TO THE SHORE TODAY, YOU'RE
IN FOR A BIG SURPRISE.

IF YOU GO DOWN TO THE SHORE TODAY, YOU
BETTER BE IN DISGUISE.

FOR EVERY FROND THAT EVER THERE WAS IS
SHRINKING NOW JUST BECAUSE;

TODAY'S THE DAY THAT *ASCO* SHEDS ITS
GAMETES!

IT'S SHEDDING TIME FOR *ASCOPHYLLUM*,
THEY'VE WAITED A YEAR TO DROP,

PREPARING FOR SEX & A SYMBIONT,
RECEPTALCES READY TO POP.

SQUEEZING TO FORCE THE GAMETES OUT,
WATCH THE EGGS AS THEY OOZE OUT.

THEY'RE SEXY AND GREEN, RELEASING THEIR
FINAVARRENE.

SEE THE CLUMPS OF ORANGE MASSES, THE
SPERM ARE ON THEIR WAY,

AS THEY GET READY TO SWIM ABOUT, SEEKING
AN EGG TODAY.

SO WATCH THEM, CATCH THEM UNAWARES,
THE SEXY GAMETES NOW PREPARE,

TO JOIN TOGETHER WITHOUT A CARE,
MAKING ZYGOTES, HAPPY LITTLE ZYGOTES.

SEE THE ZYGOTES SWIM & PRANCE, SWIRLING
AFTER THEIR THEIR MATING DANCE,

THEY'LL SINK AND GROW, 'CAUSE THAT'S
WHAT ZYGOTES DO, YOU KNOW!

SO IF YOU GO DOWN TO THE SHORE TODAY,
YOU BETTER WEAR RUBBER BOOTS,

IF YOU GO DOWN TO THE SHORE TODAY
YOU'D BETTER BE READY FOR SEX.

'CAUSE TODAY'S THE DAY THAT *ASCO* SHEDS
ITS GAMETES!



David and Rob treating PSA members to a
performance of the *Ascophyllum* song during
the PSA Mixer

See this on the PSA YouTube channel:

[https://www.youtube.com/watch?
t=6&v=ITpLERd4qE](https://www.youtube.com/watch?t=6&v=ITpLERd4qE)

PSA Banquet



The banquet this year was held at the Academy of Natural Sciences of Drexel - among the fabulous dinosaur skeletons. At this time, the society recognized important contributors to the society and to the field of Phycology. John Stiller (Past PSA President), Jeanine Olsen (Board of Trustees) and Juliet Brodie (Past - International Vice President) were recognized for their service to PSA. Schonna Manning accepted an award celebrating 40 years of dedicated service to the University of Texas Culture Collection (UTEX).



Upcoming PSA Awards & Grants

PSA Award of Excellence

The Phycological Society of America is soliciting nominations for one or more Awards of Excellence. Recipients of the 2016 Award of Excellence will be chosen on the basis of their sustained scholarly contributions in, and impact on, the field of phycology, through a distinguished record of scholarly activity. Nominations will be welcomed for all fields of research on algae and also should highlight the candidate's service to the PSA and/or other phycological societies. The Award is a career achievement award for a living phycologist. Membership in the PSA is not a requirement for nomination. See previous awardees at <http://www.psaalgae.org/award-of-excellence/>.

Nomination packages should include a single nominating letter from a PSA member highlighting the reasons for the nomination. The candidate should acknowledge his/her nomination and also provide a complete C.V. (including information relating to teaching and service). The committee requests 4 additional names (and e-mail contact information) submitted to provide letters of support. The nominator is required to confirm that these individuals have agreed to write letters within two weeks of being contacted by the Committee. Nominations received for the previous year (2015) for nominees who were not selected in 2015 will automatically be reconsidered in 2016. Updates to nomination packages submitted in 2015 are not required but an updated C.V. can be substituted for the prior version if submitted by the nomination deadline. Nominations made prior to 2015 will not automatically be reconsidered but completely new nomination packages for such candidates will receive full consideration.

Nomination Package due:

January 31, 2016

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

In order to receive full consideration for the award that will be made at the 2016 annual meeting of the PSA, the complete nomination package must be received by January 31, 2016.

Checklist for nomination

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

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

PSA Grants-in-Aid of Research

Each year over \$25,000 is awarded to support student 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. The deadline and requirements for each award application is listed on the PSA website: <http://www.psaalgae.org/grants-and-fellowships/>. The committee looks forward to reviewing more great applications this year!

Deadline:

November 1, 2015

Upcoming deadline: Grants-in-Aid of Research on November 1, 2015

Please see the PSA website for information and the reporting requirements of successful applicants: <http://www.psaalgae.org/grants-in-aid-of-research-program>

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and sharing the link on our
Facebook page!**

UT-Austin Home to the Largest and Most Diverse Algae Collection in the World

UTEX Culture Collection of Algae Celebrates 40 Years on the 40 Acres

The University of Texas at Austin is recognized globally as a hub for algae-based research and biotechnology development. Cultures in the UT Collection are used for a wide variety of projects on campus and throughout the world — supporting research needs of world-class scientists, students, national labs, and industry.

Fast Facts About the UTEX Culture Collection of Algae:

- Maintains more than 3000 strains of algae, representing all major groups
- Approximately 85 percent of the strains are unique and cannot be found anywhere else
- Continuously funded by the NSF since 1976
- Financially self-supported and funded by NSF, culture sales, and ancillary funds coming from the U.S. Department of Energy and various other sponsored projects
- Provides educational workshops on the growth and analysis of microalgae
- Research and development programs include larger-scale cultivation facilities located in the WEL greenhouse and at the Algae Culturing Facility on the PRC

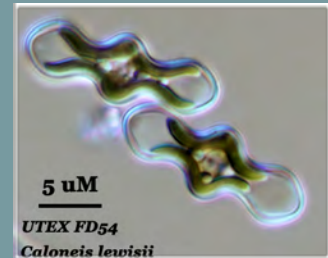
Strains in the Collection have been used for:

- Basic and applied research
- Biofuels
- Biofertilizers
- Biomaterials and the development of specialty chemicals
- Bioremediation (CO₂ mitigation and wastewater treatment)
- Food, feedstocks, and nutritional supplements
- Cosmeceuticals
- Pharmaceuticals
- And, more

Go green! Learn more about algae on our website,
www.utex.org



UTEX Culture
Collection
of Algae
at The University of Texas at Austin

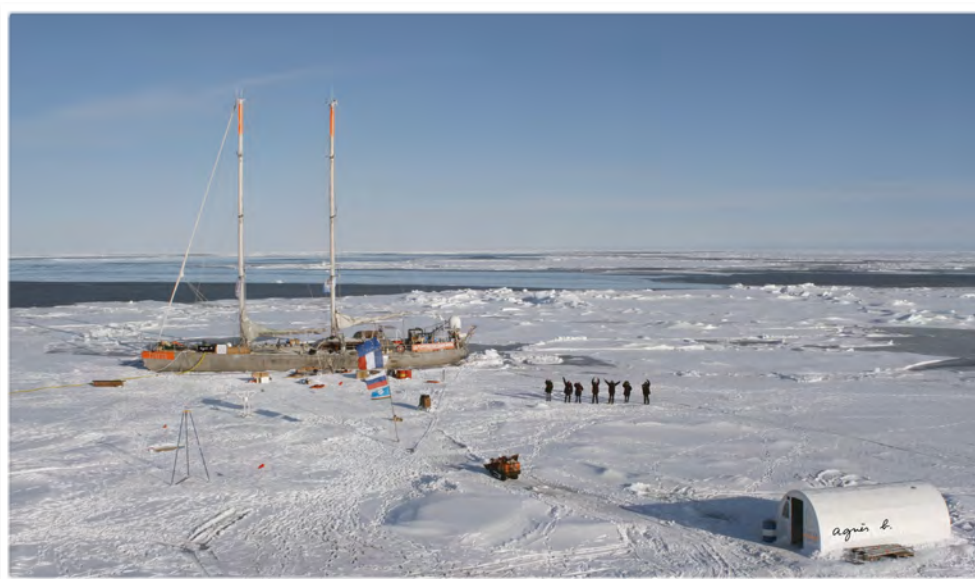


Tara Oceans Expedition opens up a treasure chest for phycologists

The *Tara* Oceans consortium recently published five scientific papers in the journal *Science* revealing the initial wave of scientific results from the first six years of the project.¹⁻⁵ The findings show the extraordinary diversity of plankton in the world's oceans, uncover many of the interactions between them, and reveal how plankton impact and are influenced by the environment. This publication is accompanied by two editorials by Eric Karsenti (Director of *Tara* Oceans) and colleagues in the journal *Molecular Systems Biology* that describe the history of the project and reveal some of the challenges of translating such a vast amount of data into knowledge.^{6,7}

The special issue of *Science* devoted to *Tara* Oceans includes five publications that unveil the vast amount of scientific data arising from a project that has grasped the attention and imagination of both scientists and the general public. Starting as a grass-roots initiative by a group of scientists, the research-enabled schooner *Tara* spent almost 4 years circumnavigating the globe and going around the Arctic Circle. Overall, *Tara* Oceans sampled plankton at more than 210 sites and at multiple depth layers in all the major oceanic regions. The scientific sampling followed protocols developed to capture the entire morphogenetic complexity of the plankton community across several orders of size (from 0.02 μm to a few mm), together with an extensive range of physico-chemical parameters.⁸ Sampling typically lasted 60 hours per station. The 35,000 samples collected form the basis for extensive processing and data integration on land.

The sequencing of almost a billion genetic barcodes, short genetic sequences that help identify organisms, has revealed more than 150,000 new genetic taxa of eukaryotic plankton, a number that far surpasses previous estimates. An ocean microbial reference gene catalog of 40 million genes from marine microbes was also described, as were more than 5,000 viral communities, more than 99% of which have not been described previously. The scientists further determined the



Tara Oceans continued

“interactome” of the plankton living in the world’s oceans – the social network between bacteria, viruses and planktonic eukaryotes. The high prevalence of parasites within this ecosystem was one of the significant findings of this hidden world. For the first time, scientists now have a picture of the structure and function of much of the global ocean microbiome.

The depth of DNA sequencing and extensive sampling make the data set an unprecedented public resource⁸ for phycologists interested in exploring the ecology and evolution of marine plankton, and likely signals the start of a new era of omics-enabled research in microbial oceanography. Feast your eyes on the May 22 special issue of Science, it’s not every day you’ll see plankton gracing the front cover of this prestigious journal!

1. Sunagawa et al. (2015) Science 348: 1261359.
2. Villar et al. (2015) Science 348: 1261447.
3. Brum et al. (2015) Science 348: 1261498.
4. de Vargas et al. (2015) Science 348: 1261605.
5. Lima-Mendez et al. (2015) Science 348: 1262073.
6. Karsenti (2015) Molecular Systems Biology 11: 811.
7. Sunagawa et al. (2015) Molecular Systems Biology 11: 809.
8. Pesant et al. (2015) Scientific Data 2: 150023.

Dr. Chris Bowler
Ecology and Evolutionary Biology Section
Institut de Biologie de l'Ecole Normale Supérieure (IBENS)
Paris, France

Meetings



The Eighth Symposium on Harmful Algae in the U.S. will be held in Long Beach, California, November 15-19, 2015.

This is the eighth in a series of biannual meetings intended to provide a forum for scientific exchange and technical communication on all aspects of HAB research in the United States. We encourage everyone who works on HAB issues to attend the only national conference focused exclusively on HABs whether your focus is freshwater or saltwater, microalgae or macroalgae, basic research and monitoring, or policy and management. Students, established HAB folks, managers and scientists from NGOs, academic institutions, and local, state and federal agencies are invited to join us in Long Beach.

<http://www.whoi.edu/habsymposia/>
 Registration closes on November 1, 2015.

A New Age of Discovery for Aquatic Microeukaryotes

EMBL Heidelberg, Germany

Tuesday 26 January -
 Friday 29 January
 2016

J. Archibald, C. Bowler, D. Caron, C. de Vargas, S. Dyhrman, J. Kaye, K. Rengefors



<http://www.embo-embl-symposia.org/symposia/2016/EES16-01/>

Marine Botany: Diversity and Ecology

University of Washington's Friday Harbor Labs, Friday Harbor, Washington

June 20, 2016 - July 23, 2016

The theme of the course is "uniting classical phycological principles and methods with modern phylogenetics and genomics", with a focus on the macroalgae of marine benthic environments in the Salish Sea. Students will learn traditional and contemporary molecular methods for the identification, classification, and analysis of marine benthic algae (seaweeds), the theories underlying the methods, and the application of biodiversity information in benthic ecology. They will gain practical experience in such tools as: specimen collection, identification, preservation, and the creation of databases. Students will investigate macroalgal morphology, life histories, reproduction, and the role of macroalgae in the nearshore ecosystem, including primary production and food web interactions, biogenic habitats, and plant-animal interactions such as herbivory. This knowledge will be tested with molecular techniques, including phylogenetics (DNA isolation, PCR amplification, phylogenetic analysis) and genomics (organellar assembly, annotation, submission to GenBank). The course will demonstrate how to use modern tools to address questions raised through morphological and ecological observations. Field and lab work will be extensive, as the diverse and species-rich aquatic habitats on and around San Juan Island provide ideal sites for the examination of macroalgal diversity.



We will emphasize the use of the above combined approaches to answer phycological questions. The students will perform group projects using morphological, ecological and molecular data to assess the diversity of algal populations, and interpret that diversity in its ecological context. For the class project, students will examine the ecological, evolutionary, and genomic diversity of the red algal genus *Mastocarpus* in the Salish Sea.

At the end of the course, students will be able to perform standard techniques and use modern tools to identify and classify algae, and to critically assess the value of these tools in studies of algal biodiversity and marine benthic ecosystems. Students, through the production of outreach products, will also learn how to effectively communicate to the public about the significance of marine algae to conservation, sustainability or other relevant societal issues. Students will partner with or present to such ongoing efforts as the Friday Harbor Labs Science Outreach Program, Marine Resource Committees, The Encyclopedia of Puget Sound, and Friends of the San Juans.



This is a course appropriate for marine biologists, botanists, geneticists, and oceanographers with interests in marine biodiversity, conservation biology, and coastal ecology with an emphasis on using genetic data to support taxonomic and ecological studies, and to promote conservation biology.

Applications will be accepted starting October 1, 2015 and accepted until the class is full. Applications will be reviewed starting February 1, 2016. Information on the labs is available at <http://depts.washington.edu/fhl/index.html>. Information on the 2016 classes will be available on the FLH webpage in October." Funding is available through the PSA's Hannah Croasdale Fellowships. <http://www.psaalgae.org/hannah-t-croasdale-fellowship/>

Dr. Tom Mumford
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Dr. Jeffery Hughey
Division of Math, Science and Engineering
Hartnell College
jhughey@hartnell.edu

ATP³ Education & Training Workshops

ATP³ offers a diverse range of topics pertaining to the management and processing of microalgal cultures, and uses of their products. Laboratory and field training are led by highly-trained scientists and engineers. Principal instructors include: Dr. Milt Sommerfeld (ASU/AzCATI), Dr. Thomas Dempster (ASU/AzCATI), and Dr. Schonna Manning (UT-Austin/UTEX). For more information about these and future workshops please visit www.atp3.org/education.

Nov 2-6, 2015 **Fall ATP³ Workshop @ AzCATI** - Large-Scale Algal Cultivation, Harvesting and Downstream Processing

This workshop will cover practical applications and issues with growing and managing microalgal cultures at the production scale, including methods for handling cultures, screening strains for desirable characteristics, identifying and mitigating contaminants, scaling up cultures for outdoor growth, harvesting and processing technologies, and methods for the analysis of lipids, proteins and carbohydrates in biomass. Related laboratory and field training will include numerous hands-on opportunities for participants to collect and perform routine sample measurements, monitor cultures for contaminants, and evaluate the chemical composition of algal biomass. This workshop is ideal for those interested in obtaining a broad overview of the management of microalgal cultures at scale, and for advanced students and trainees interested in the practical applications of microalgae. Activities will be held at AzCATI, a nationally-recognized algae testbed facility, where participants can explore every aspect of growing microalgae at the production scale. All lectures and laboratory training are conducted by trained algae experts, biochemists, and engineers.

Feb 15-19, 2016 **Winter ATP³ Workshop** - Routine Measurement and Biochemical Analysis of Microalgal Cultures

This workshop provides an introduction to the diversity of microalgae and common analytical methods for the evaluation of microalgal biomass. Topics presented are relevant to those interested in an overview of microalgal biochemistry, performing routine laboratory procedures and data analysis. Field training will include sample collection and handling techniques from ponds and photobioreactors. Participants will also have ample opportunities to work in the laboratory learning how to measure culture density (cell counting and optical density), observe algae using compound light and fluorescence microscopy, perform gravimetric analyses (wet weight, dry weight, ash-free dry weight, ash and moisture content), and techniques for the measurement of bulk proteins, starch, carbohydrates and lipids. The workshop will be held at AzCATI, a nationally-recognized algae testbed facility, where participants can explore every aspect of growing microalgae at the laboratory and pre-commercial scale. All lecture and laboratory activities are conducted by trained algae experts, biochemists, and engineers.

ATP³ Education & Training Workshops continued

May 16-20, 2016

Spring ATP³ Workshop - Principles and Processes: Algae Culture Maintenance, Production and Downstream Processing

This workshop covers the fundamentals of selecting and managing microalgal cultures, culturing techniques, acquiring critical biomass measurements, an overview of high-value natural products, demonstrations of harvesting and processing technologies, and operation at the production scale. Topics presented are relevant to those interested in obtaining a broad overview on the biology, growth and commercialization of microalgae. Participants will have ample opportunities to gain hands-on experience collecting algae from photobioreactors and large ponds. Laboratory training includes techniques for monitoring culture health and contamination, routine sample measurements, and an overview of techniques for the analysis of biomass composition. The workshop will be held at AzCATI, a nationally-recognized algae testbed facility, where participants can explore every aspect of growing microalgae at the production scale. All lectures and laboratory training are conducted by trained algae experts, biochemists, and engineers.

Aug 22-26, 2016

Summer ATP³ Workshop - Microalgal Culture Management and Strain Selection

This workshop will provide an introduction to the major classifications of microalgae, including their diversity, nutrition, ecology, and biochemical content. Topics are designed for advanced students, instructors and trainees who are interested in obtaining a broad survey of the microalgae and the field of applied phycology. Presentations will cover techniques for maintaining microalgal cultures in the laboratory. Participants will have ample opportunities to gain hands-on experience. Specialized training will include managing algal cultures, using compound light and fluorescence microscopy, counting cells, measuring culture growth rates, and the analysis of biomass proteins, lipids and carbohydrates. Activities will take place at the UTEX Culture Collection of Algae facilities, located in the center of the University of Texas campus. This unique venue will provide participants with the opportunity to observe the diversity of microalgae and learn about the management of laboratory cultures. All lectures and laboratory training are conducted by trained algae experts, biochemists, and engineers.

New Book Titles

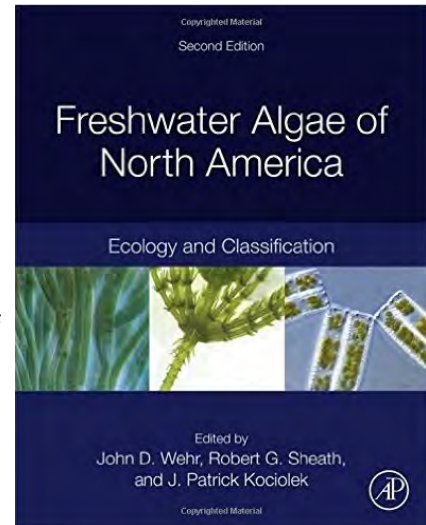
Freshwater Algae of North America, Ecology and Classification; 2nd Edition. 2015.

Editors: John D. Wehr, Robert G. Sheath, J. Patrick Kociolek
Academic Press. 1066 pages. Print Book ISBN: 9780123858764,
eBook ISBN: 9780123858771

Key Features:

- Extensive and complete
- Describes every genus of freshwater algae known from North America, with an analytical dichotomous key, descriptions of diagnostic features, and at least one image of every genus.
- Full-color images throughout provide superb visual examples of freshwater algae
- Updated Environmental Issues and Classifications, including new information on harmful algal blooms (HAB)
- Fully revised introductory chapters, including new topics on biodiversity, and taste and odor problems
- Updated to reflect the rapid advances in algal classification and taxonomy due to the widespread use of DNA technologies

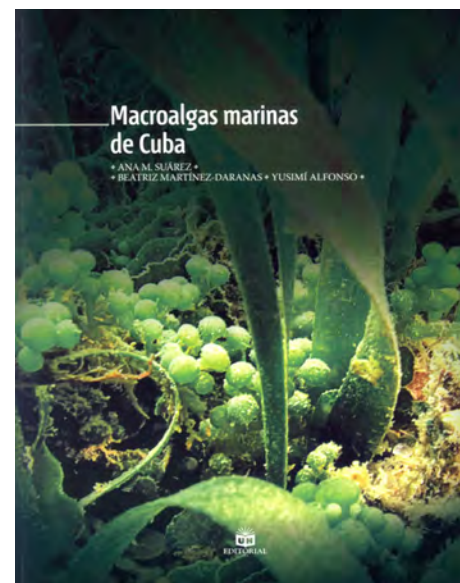
<http://store.elsevier.com/Freshwater-Algae-of-North-America/isbn-9780123858764/>



Macroalgas marinas de Cuba. 2015

by Ana M. Suárez, Beatriz Martínez-Daranas and Yusimí Alfonso. 2015. Editorial Universidad de La Habana, La Habana, Cuba. 264 pp. ISBN: 978-959-7211-44-0

This volume is the result of an exhaustive study of the biodiversity of the marine macroalgae of the Cuban platform and will undoubtedly become a standard reference text not only for Cuban phycologists but also for phycologists around the world. This book includes the records of 579 infrageneric taxa (299 red algae, 75 brown algae, and 205 green algae). The authors provide for each taxon information on the taxonomic position, bibliographic references, type locality, distribution zones, and habitat. There is included a comparative study of the diversity of the algal flora of Cuba, Florida, the western Caribbean, and the Gulf of Mexico. This work will be of great utility for both undergraduate and graduate students and professionals, in the areas of marine biology, taxonomy, biogeography and ecology.



A Field Guide to Seaweeds of the Pacific Northwest. 2015

By Bridgette Clarkston

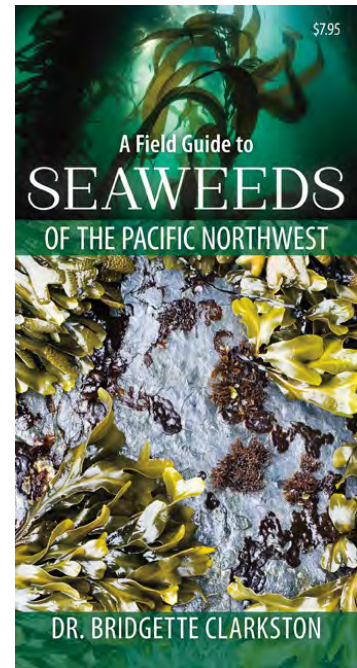
ISBN 13: 978-1-55017-703-9

ISBN 10: 1-55017-703-6

Price: \$7.95 CAD; \$7.95 USD

Pamphlet; 50 colour photos

Book Description Rich in nutrients, used in products from cosmetics to explosives to fertilizers, and vital to our coastal marine ecosystems, seaweeds can be found on any rocky shore or beach in the Pacific Northwest. The pocket-sized *Field Guide to Seaweeds of the Pacific Northwest* is packed with full-colour photos and information on a select variety of the most important and interesting seaweeds commonly encountered on the West Coast. Whether you want to identify seaweeds, better understand their role in the ocean, forage for food, collect for art or you're just plain curious as you poke around the seashore, this educational guide is your ultimate source for casual phycological fun.



Flora marina bentonica del Mediterraneo: Chlorophyta. 2014

By M. Cormaci, G. Furnari and G. Alongi. Bollettino dell'Accademia Gioenia di Scienze Naturali di Catania vol. 47: 11-436.

An identification key to macroalgal genera, species, and infraspecific taxa of Chlorophyta occurring in the Mediterranean Sea is given. 176 taxa at specific and infraspecific level are accepted; 101 are considered as *taxa inquirenda*; 76 taxa are cited as invalid. Seven new combinations and a new species (*Ulva pseudorotundata*) are proposed.



Macroalgas Marinhas da Antárctica. 2014

By M. T. Fujii, S. Yokoya & Y. Yoneshigue-Valentin (organizadoras) P. Colepiolo (coordenador) and 14 authors. Editora Cubo, São Carlos, 93 pp. 1. Biodiversidade. 2. Chlorophyta (9 species). 3. Heterokontophyta (9 species). 4. Rhodophyta (12 species). 5. Baía do Almirantado. [In Portuguese.]

ISBN 978-85-60064-54-0

Large format *in situ* images of the more commonly found species in Admiralty Bay, Antarctica, as well as photomicrographs of internal organization and reproductive structures.



Methods in Molecular Biology. Natural Products From Marine Algae. 2015

Editors: **Stengel**, Dagmar B., **Connan**, Solène (Eds.)

eBook

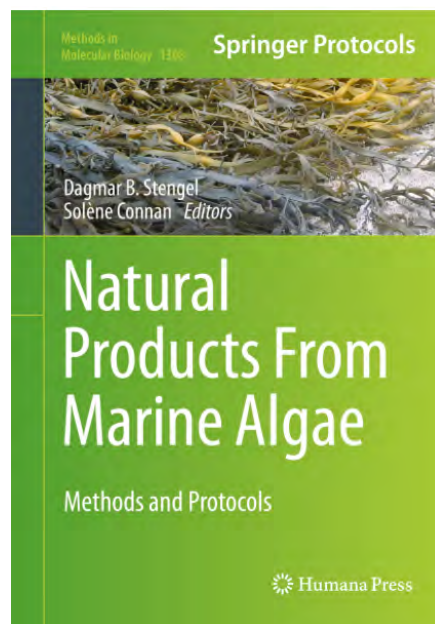
\$109.00 (US) ISBN 978-1-4939-2684-8 digitally watermarked, no DRM, included format: PDF, EPUB eBooks can be used on all Reading Devices download immediately after purchase

Hardcover \$139.00

<http://link.springer.com/book/10.1007%2F978-1-4939-2684-8>

This volume provides a fundamental overview of the current state of the art in natural products from marine algae, linking the complex and diverse natural resource with recent developments in extraction, analytical and bioactivity testing methodologies. *Natural Products from Marine Algae: Methods and Protocols* guides readers through protocols and techniques on algal biotechnology, metabolites, Solid-Liquid Extraction (SLE), Microwave Assisted Extraction (MAE), Liquid Chromatography, Gas Chromatography, Nuclear Magnetic Resonance Spectroscopy, Infra-red spectroscopy and Raman Spectroscopy. Written in the highly successful *Methods in Molecular Biology* series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols and tips on troubleshooting and avoiding known pitfalls.

Authoritative and cutting-edge, *Natural Products from Marine Algae: Methods and Protocols* hopes to aid scientists unravel and quantify algal chemical diversity and support further marine biotechnological developments.



Syllabus of Plant Families - A. Engler's Syllabus der Pflanzenfamilien Part 2/1:

Photoautotrophic eukaryotic Algae Glaucocystophyta, Cryptophyta, Dinophyta/Dinozoa, Haptophyta, Heterokontophyta/Ochrophyta, Chlorarachniophyta/Cercozoa, Euglenophyta/Euglenozoa, Chlorophyta, Streptophyta p.p. Ed.: Wolfgang Frey 2015. X, 324 pages, 67 figures, 25x17cm ISBN 978-3-443-01083-6, bound, 89.00 €, www.borntraeger-cramer.de/9783443010836

Centric, Araphid and Eunotioid Diatoms of the Coastal Laurentian Great Lakes:

Sampling, Taxonomic Descriptions and Environmental Characteristics. 2015. By Euan D.

Reavie; Amy R. Kireta: 184 pages, 49 plates, 23x14cm (Bibliotheca Diatomologica, Band 62) ISBN

978-3-443-57053-8, paperback, 79.00 €, www.borntraeger-cramer.de/9783443570538

Implications of hydromorphological alterations to the littoral zone for freshwater ecosystem functioning

Ed.: Gwendolin Porst; Friederike Gabel; Stefan Lorenz; Oliver Miler 2015. 90 pages, 28x21cm

(Fundamental and Applied Limnology, Volume 186 Nr. 4) ArtNo. ES141018604, paperback, 116.00 €

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News from Colleagues

Phycological Journals available from:

David R. Wiseman (WisemanD@cofc.edu): British Journal of Phycology (now European J. Phycology) + Phycologia + American Journal of Phycology back to the 1960s. Ten very heavy boxes. Available for free for anyone willing to pick up from Charleston, South Carolina.

Arch Hopkins, PhD, P.O. Box 224, Granville, IL, USA 815-339-2815. Complete series of the Journal of Phycology for 1970-1979, volumes 6-15, and Phycologia for 1970-1979, volumes 9-18. Will gladly donate them to any individual or institution that would like to add them to their collection. Requests only payment for shipping.

**Submit your
contributions to the next
Phycological Newsletter
by Jan. 15, 2016**

Kirsten Müller
kirsten.muller@uwaterloo.ca

