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Editors:

Alison R. Sherwood
Dept. of Botany
Univ. of Hawaii
Honolulu, HI 96822

Morgan L. Vis
Env. & Plant Biology
Ohio University
Athens, OH 45701

Email: psa@psaalgae.org

PSA 2005 - Durban, South Africa

The next annual meeting of the Phycological Society of America will be held August 14-19, 2005 in Durban, South Africa as part of the 8th International Phycological Congress. The deadline for regular registration fees is 31 March. For further information, visit the Congress web site (www.ipc8.org.za /). Students should note that PSA has committed $14,000 to the Hoshaw Travel Awards for this meeting. Individual awards will be between $800 and $1000 each. Students should check the Student Grants web page (www.psaalgae.org / student / stugrants.html) for details on applying.

PSA 2006 - Juneau, Alaska

The 2006 annual meeting will be held July 7-12 in Juneau, Alaska and is being hosted by Dr. Michael Stekoll (University of Alaska Southeast and University of Alaska School of Fisheries and Ocean Sciences). In a new meeting format, PSA will sponsor three Plenary talks and associated mini-symposia with participants identified by the Plenary speakers. Contributed papers related to the mini-symposia topics will be solicited and scheduled in "featured contributed talk" sessions immediately following each mini-symposium.

PSA is pleased to announce the three Plenary Speakers for 2006:

Dr. Robert T. Paine (University of Washington) will speak on the topic: ***Macroalgae as powerful, experimental probes of how natural communities are organized***. The associated mini-symposium speakers will be Drs. Michael H. Graham (Moss Landing Marine Labs), Karina J. Nielsen (Sonoma State University), and Anne Solomon (University of Washington).

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Dr. Edward C. Theriot (University of Texas at Austin) will speak on the topic: ***Diatom phylogenetics, systematics, and ecology***. Mini-symposium speakers to be announced.

Dr. Paul G. Falkowski (Rutgers University) will speak on the topic: ***How, when, and why secondary red symbiotic algae rose to ecological prominence in the contemporary ocean***. One of the associated mini-symposium speakers will be Dr. E. Virginia Armbrust (University of Washington) and a second speaker to be announced.

The tides in southeast Alaska are excellent during the meeting week and Dr. Sandra Lindstrom (University of British Colombia) will lead an optional 2-3 day field trip to the open coast (Sitka area) following the meeting. There will also be a variety of mid-meeting field trips that will include an intertidal trip in Juneau (also led by Dr. Lindstrom), freshwater collecting, and several of the many recreational activities that make Juneau an outdoor vacation destination.

PSA 2007 - New Orleans, Louisiana

The 2007 annual meeting will be in New Orleans, Louisiana and is being hosted by Dr. James L. Wee (Loyola University) with assistance from Drs. David Millie (Florida Marine Research Institute) and T.J. Evans (USDA-ARS). Tentative plans are for it to be held in the later half of July or very early August.

Watch the PSA website for further updates
www.psaalgae.org / meeting / meeting.html

Algal Culturing Techniques

Edited By: Robert A. Andersen
Provasoli-Guillard National Center for Culture of Marine Phytoplankton

Algal Culturing Techniques is a comprehensive reference on all aspects of the isolation and cultivation of marine and freshwater algae, including seaweeds. It is divided into seven parts that cover history, media preparation, isolation and purification techniques, mass culturing techniques, cell counting and growth measurement techniques, and reviews on topics and applications of algal culture techniques for environmental investigations.

PSA members receive a 30% discount on this volume. Please see the PSA website (**www.psaalgae.org**) for ordering information. For further information about this book, please see: **www.books.elsevier.com**.

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PSA STUDENT GRANTS AND FELLOWSHIPS FOR 2005:

Submitted by T.J. Evens, Chair, Grants & Fellowships Committee

PSA will once again be offering students three opportunities for educational, travel and research funding. The **Hannah T. Croasdale Fellowships** are designed to encourage graduate students to broaden their phycological training by defraying the costs of attending phycology courses at biological field stations. These awards are made in amounts of up to $1000; the deadline for applications is **March 1, 2005**.

The **Hoshaw Travel Awards** are to help students with their travel expenses to the annual PSA meeting. Since the annual meeting is in South Africa this year, a significant sum of money has been allocated to this program in order to provide substantial assistance to students wishing to attend. The deadline for Hoshaw Travel Awards is **April 1, 2005**.

The **Grants-in-Aid of Research Program** is designed to aid graduate students conducting research in phycology by providing monies in amounts up to $1000 to defray research expenses. Awards are intended to enable the student to accomplish work not otherwise possible. The deadline for applications to this program is **May 1, 2005**.

Look to the PSA website for application information and materials. Enquiries can be directed to T.J. Evens (tevens@ushrl.ars.usda.gov). Please note that we are requiring all application material to be submitted electronically this year.

Deadline for submission of information for the next PSA Newsletter:

September 15th, 2005

Please contact Alison Sherwood (*asherwoo@hawaii.edu*)

Have you renewed your PSA membership for 2005?

Visit the PSA website at **www.psaalgae.org** and follow the directions to renew online, or to get an application form.

Questions? Email: John LaClaire at *laclaire@uts.cc.uteaxs.edu*

NEWS OF COLLEAGUES

Michael Friedlander - Dr. Michael Freidlander officially retired from his position in the Israel Oceanographic and Limnological Research, Haifa, Israel, after 20 years of work. He has been mainly involved in the research and development of seaweed culture in ponds. Under this title he developed the technology of intensive seaweed cultivation in terrestrial seawater ponds for several commercial species. The achievements of these developments have been already implemented in several seaweed cultivation companies in Israel for the culture of *Gracilaria* and *Ulva*. In the future he is happy to share his experience with students, scientists and companies, interested in pond cultivation technologies of seaweeds. Contact information:
Dr. Michael Friedlander
8 Mordechai St., Ramat Hasharon,
47441, Israel
e-mail: michael@ocean.org.il, Home Phone: 972 3 5405565

Andrea Kirkwood - Dr. Andrea Kirkwood (2002 Ph.D., University of Toronto under Roberta Fulthorpe) completed 27 months as a postdoctoral fellow on the NSF Salt Plains Microbial Observatory, in the lab of Bill Henley. Andrea has characterized the community of halotolerant algae and cyanobacteria from this harsh soil / water ecotone in northwestern Oklahoma. Fifty genetically and physiologically unique isolates of cyanobacteria, diatoms and chlorophytes have been deposited in the UTEX and CCMP culture collections for access by the phycological community (pending full accession). Several publications are in the works, so stay tuned! Andrea decided it was time to move on, and started a new postdoctoral position with Ed McCauley at the University of Calgary in January 2005.

Michael Sullivan - Mike Sullivan has taken a new position at the Marine Lab of Florida State University. His new contact information is listed below.
Research Scientist
Editor, *Diatom Research* (1990-2003)
Florida State University Marine Lab
3618 Highway 98, St. Teresa, FL 32358-2702, U.S.A.
Phone: 850-697-8550, FAX: 850-697-3822
mjsulliv@fsu.edu

Roy Tsuda - Dr. Roy Tsuda has recently "retired" from the University of Guam Marine Laboratory and is now a research affiliate at the Bernice P. Bishop Museum in Honolulu, Hawaii. Roy originates from Hawaii, and completed his Bachelor of Science degree at the University of Hawaii before going on for his PhD at the University of Wisconsin. Dr. Tsuda pioneered the early work on the algal floras of the Northwestern Hawaiian islands. During his career he has accumulated significant experience throughout the tropical Pacific and the Caribbean, and is known as the foremost algal expert of the Micronesian floras. We are very pleased to welcome Roy Tsuda back to the island of Oahu!

News from our colleagues in Thailand - News from our Thai colleagues, Professor Khan Lewmanomont and Anong Chirarpart of Kasetsart University in Bangkok, Thailand, report that the seaside Research Center of Kasetsart University at Ranong, Thailand (on the Andaman Sea, near 10 degrees N, 98.5 degrees E) was severely damaged in the tsunami of December 26, 2004. Four staff members and six family members perished. All of the equipment at the Center was destroyed. A fishing village (containing 100 families) that was located near the Center was washed away leaving bare land. Kasetsart University is in Bangkok at the head of the Gulf of Thailand, many miles from the Ranong Research Center. As of mid-January 2005, relief agencies and people from other parts of Thailand have restored food, drinking water, clothing and cooking equipment for survivors. Funds are being gathered for reconstruction of housing.

OBITUARIES

Prof. G.E. Fogg

Prof. G.E. Fogg passed away in late January 2005. Prof. Fogg was an Emeritus Professor of Marine Biology at the School of Ocean Sciences, University of Wales, Bangor. He was well known for his work on the biology of polar habitats.

Prof. Chengkui (C.K.) Tseng

Prof. C. K. Tseng passed away on Jan. 20, 2005, after a long illness. Dr.Tseng was one of William R. Taylor's Ph.D. students at the University of Michigan. He was a postdoctoral fellow at Scripps, after which he returned to China and established the premier marine biology and mariculture programs that continue today at the Chinese Academy of Sciences' Oceanology Institute in Qingdao, where he was Director. He is a past recipient of the PSA's Award of Excellence.

Prof. Patricia Walne

Dr. Patricia Walne, a former president of PSA and Professor Emerita at the University of Tennessee, passed away on October 21, 2004 in Bloomington, Indiana. Prof. Walne's research was focused on the ultrastructure and physiology of flagellate algal cells.

PHYCOLOGICAL TRAILBLAZER

No. 22: Nils Svedelius

Although two detailed biographical sketches have already been published on the life and accomplishments of Nils Eberhard Svedlius (Skottsberg, 1961; Papenfuss, 1961), he was such a significant person in terms of achievements in the first half of the 20th century that his inclusion in this series of essays seems fully justified. Nils Svedelius was born in Stockholm on the 5th of August, 1873. He received his education at the University of Uppsala under the tutelage of another eminent Swedish phycologist, F. R. Kjellman (Svedelius, 1908a).With Kjellman's permission, Svedelius carried out his Ph.D. research on the algal flora along the southern part of the east coast of Sweden, that is, the Baltic Sea, a then-neglected region with low salinity and a reduced number of species. But the uniqueness of the region enabled Svedelius to recognize the inherent ecological and morphological problems offered. He defended his thesis ["Studies in the marine algae of the Baltic Sea", 1901) in May 1901. The fact that he had earned his doctorate with distinction resulted in his being appointed to the position of *docent* in October, 1902 (Skottsberg, 1961).

A year after earning his doctorate, *docent* Svedelius received a traveling scholarship, enabling him to spend almost a full year (1902-1903) primarily in Sri Lanka [Ceylon] but also with side trips to Singapore and Java. In the latter he spent some time in the Dutch-administered botanical garden in Buitenzorg. During his extended stay in Sri Lanka, he was based in the coastal town of Galle, the site of the Ceylon Marine Laboratory and in close proximity to the splendid coral reefs that lie just beyond the ramparts of the old town. Svedelius made excursions to other sites along the coast, going by railroad to Colombo, on the west coast, and eastward to Weligama, Matara, Tangalla, and Pamban, and to Jaffna in the north. Interestingly, W. H. Harvey had collected at some of these same sites 50 years earlier. Svedelius collected marine algae in Sri Lanka intensively, paying close attention to their detailed distribution and time of occurrence. These studies resulted in his monograph (1906a) of *Caulerpa*, in which he gave his observations on a total of 21 species of the genus in Ceylon, including two newly described ones (*C. dichotoma* and *C. parvula*). Svedelius (1906b) also published a paper on the phenology of the benthic algal flora present on the coral reefs near Galle. He recognized the correlation of the occurrence of the algae with the timing of the monsoons.

At various times during his stay in Sri Lanka, Svedelius gathered specimens of *Martensia fragilis* Harv. from the coral reefs off Galle, allowing him to produce an elegant study of the structure and vegetative and reproductive development in this alga (Svedelius, 1908b). It was the most detailed monographic study of this handsome net-forming member of the Delesseriaceae produced up to that time.

A different net-forming genus that captured Svedelius' attention in Sri Lanka was *Dictyurus* of the Dasyaceae, "a beautiful red alga, characterised by its pretty reticulate thallus" (1947). The only location where he succeeded in finding *D. purpurascens* Bory was at Golcanda Rocks on the west coast, where there was a rocky intertidal with heavily shaded caverns and crevices covered by close mats of this red alga (Svedelius & Nygren, 1946). He showed how the male plants formed complicated compound branch systems, the sterile tips of the spermatangial branches fusing with other parts of the branch system. He proposed the term 'arrhenophore' for these compound male stands (Fig. 2).

Svedelius' attention was drawn more toward the phenomenon of the nature of the alternation of generations in the algae, and so he temporarily abandoned his pursuit of the classification of the marine algae of Sri Lanka. It was the papers by Yamanouchi on *Polysiphonia*, by Williams on *Dictyota*, and later by Sauvageau on the kelp *Saccorhiza* that stimulated much interest in the nature of algal life histories and the timing of meiosis. For those red algal taxa, such as *Scinaia furcellata* (1915), *Asparagopsis armata* (1933), and *Bonnemaisonia asparagoides* (1933), in which only gametophytes were known, Svedelius presented his observations that after fertilization (and before formation of the cystocarp) the zygote nucleus underwent meiosis, in the fertilized carpogonium (in *Bonnemaisonia*), in the hypogynous cell (in *Asparagopsis*), or in a fusion cell product with the fertilized carpogonium (in *Scinaia*). He (1937) introduced the term 'haplobiontic' for that type of alternation with immediate meiosis, thus without tetraspore formation and with only sexual individuals (a single kind of 'biont'). He used the term 'diplobiontic for the pattern with two kinds of individuals, sexual and tetrasporic (free-living individuals with tetrasporangia). Later culture studies of some of these genera, showing the existence of microscopic (heteromorphic) stages bearing tetrasporangia, have forced Svedelius' findings to be re-considered.

After Kjellman died, Svedelius inherited the job of completing a supplement on the red and the brown algae for Engler & Prantl's *Natürlichen Pflanzenfamilien* (1910, 1911a). Another research interest that seems to have been inherited from Kjellman was a life–long fascination with the tropical red algal genus *Galaxaura*. Kjellman (1900) had already produced a monograph of the genus, in which he recognized a total of 62 species. But for some of the species only tetrasporic plants were known, whereas in other species only sexual plants were known. Howe (1917, 1918) had published his findings of Caribbean species of *Galaxaura*, in which co-occurring

Fig. 1. Nils Svedelius, in Woods Hole, MA, 1926 [photo taken by W. R. Taylor]

tetrasporangiate and sexual plants on circumstantial evidence were interpreted to be one and the same species despite the fact that their cortical organizations were different and would be regarded as belonging to different sections of the genus based on the standard taxonomic scheme of the day. This caused a major re-thinking of the systematics of the genus. But Svedelius was also keen to understand the cytological evens in the life history of the genus. His own material from Sri Lanka being fixed in Formalin was not suitable for a study of chromosomes. So he requested that G. F. Papenfuss, who had spent some time in Svedelius' lab in Uppsala but who was then in South Africa, provide him with some suitably fixed material. Papenfuss was able to oblige, sending Svedelius fertile stages of several species. Over the following years, in fact, right through his entire productive period, Svedelius continued with a series of papers on *Galaxaua*, including investigations on its male stages (1939b), the development of its female plants and cystocarps (1942b) along with more general systematic papers (1944, 1945, 1953, 1956). His major paper on *Galaxaura* (1942a), dedicated to the memory of his mentor Kjellman, was a monumental treatment of the external morphology, internal anatomy, and reproductive stages (male, female, and tetrasporic) of several species in the genus.

Despite his notion (Svedelius, 1945) of a broadly circumscribed genus, more recent work has provided evidence for the recognition of segregate genera from *Galaxaura*. Huisman & Borowitzka (1999) established *Tricleocarpa* that differed from *Galaxaura sensu stricto* both on differences in development of the carposporophyte and in the life history (i.e., a microscopic filamentous tetrasporic stage is present in *Tricleocarpa*). More recently, in a study using gene-sequence data, Huisman *et al.* (2004) produced a phylogenetic tree in which the type species of *Galaxaura* (*G. rugosa*) was sister to *Actinotrichia*, while several other species of "*Galaxaura*" formed a clade sister to *Tricleocarpa*, *Galaxaura s. s.*, and *Actinotrichia*. The solution to avoid this paraphyletic / polyphyletic treatment of *Galaxaura* was to place those several species of "*Galaxaura*" into their own genus. For this purpose, the old generic name *Dichotomaria* of Lamarck was reinstated by Huisman *et al*. (2004). Conveniently, Huisman *et al*. (2004) were able to point out correlated anatomical differences: stalk cells laterally or terminally producing the tetrasporangia and a tetrasporophyte cortex with stalked epidermal cells in *Tricleocarpa* versus elongate filaments producing the tetrasporangia and a tetrasporophyte cortex with a filamentous organization in *Galaxaura s. s.*

Svedelius was among the first to report chromosome counts in the algae, recording a haploid number of 10 in both *Scinaia furcellata* (1915) and *Asparagopsis armata* (1927d), a haploid number of 20 in both *Delesseria sanguinea* (1911b) and *Nitophyllum punctatum* (1914b), and a haploid number of about 20 (18-[20]) in *Bonnemmaisonia asparagoides* (1933). His first paper in 1911 on the life history of *Delesseria sanguinea* was followed by papers on the formation of spermatangia (1912) and on the formation of cystocarps (1914a). He (1914b) showed how in *Nitophyllum punctatum* the tetrasporangial primordia are multinucleate and that all the nuclei but one degenerate. The sole persistent nucleus then undergoes meiosis, and four haploid tetraspores are produced. He showed that *Lomentaria clavellosa* underwent a typical life history with male and female plants (n = 10) and tetrasporic plants (2n = 20), in which meiosis occurred in the tetrasporangia. But in *L. orcadensis* [= *L. rosea*] only tetrasporic plants occurred in European waters, and tetraspore formation involved an apomeiotic process (Svedelius, 1937).

In his specimens of *Dermonema* brought back from Galle, Svedelius (1939a) observed only the occurrence of separate male and female thalli. He also saw that the carpogonial branches were lateral, or "accessory," and that the cystocarps developed as a diffuse network of filaments bearing terminal carpospores. He later (1952) reported on his study of *Actinotrchia*, in which the calcified axes are terete but unlike *Galaxaura s. s.* there is no anatomical distinction between sexual and tetrasporic thalli.

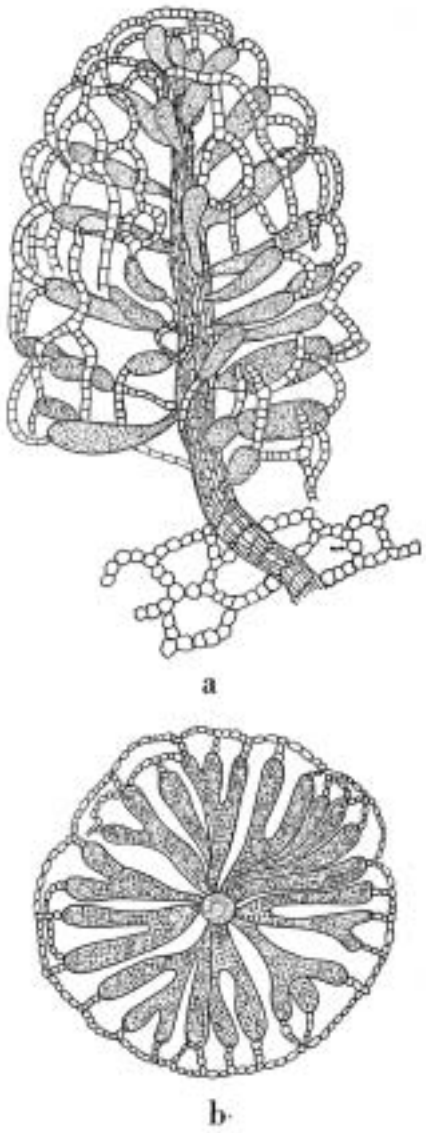

Fig. 2. Arrenophore of *Dictyurus purpurascens*. a, in optical longitudinal section; b. in cross-section [Fig. 9 in Svedelius, 1946].

His collections of the dasyclad genus *Neomeris* brought back from Sri Lanka allowed him to do a later study (1923), in which he detailed the vegetative and reproductive development. He also offered *Neomeris* as a useful example of a genus with a disjunct distribution (in the Caribbean Sea and in the Indo-Pacific Ocean). He concluded that *Neomeris annulata* and *N. dumetosa* had to be older than the Isthmus of Panama, that is, prior to the time when the continuity between the Caribbean and the Indo-Pacific was disrupted. His 1924 paper on the discontinuous nature of the distribution of some tropical and subtropical benthic algae showed his remarkable insight not only into the systematic relationships of these seaweeds but also into the historical factors that may have brought about the current patterns in their ranges. It remains a classic paper.

The seasonal occurrence of marine algal species was another topic of interest. Svedelius followed the occurrence of a species of *Ceramium* year-round, in the Baltic in the vicinity of Stockholm. Separate male and female plants were dominant in late summer, but only tetrasporic plants could be found in late autumn into winter. A luxuriant growth of this *Ceramium* on the shore and exposed to freezing was wiped out, but by forming holes in the ice in January of 1924 he found some tetrasporic plants surviving the winter (1927a). That publication came under attack by Sjöstedt (1928), forcing Svedelius (1929b) to defend his observations and causing him to show how Sjöstedt had taken some of Svedelius' comments out of context.

The algae were not the sole taxonomic group that caught Svedelius' attention. He published papers on such flowering plant families as the Gentianaceae and the Convolvulaceae as well as on such topics as pollination in the hydrophyte *Enhalus acoroides* and the seed morphology in members of the Dilleniacae, He also asked questions about the nature of endemism and the theories on the origin of species.

From spring to mid-summer of 1913 Svedelius traveled to various marine stations. These included the one in Rovigno (now in Croatia), the Plymouth lab in England, and Helgoland in the North Sea of Germany. Over the years he was a frequent participant in international meetings, such as botanical congresses, including the one in Cornell, NY, in 1926. During that summer he visited the marine lab in Bar Harbor, Maine, and the Marine Biological Laboratory in Woods Hole, where Dr. W. R. Taylor snapped his photo (Fig. 1). His numerous contributions were recognized by his being elected to membership in the Royal Swedish Academy of Science as well as to the Royal Science Society in Uppsala. Foreign societies, such as the Linnean Society of London and the British Royal Society, also elected him to honorary membership. In 1939, at the age of 65, Svedelius retired, but he continued to remain active in his research and in his productivity well into his retirement. He passed away on Aug. 6, 1960, shortly before his 87th birthday.

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Michael J. Wynne

University of Michigan, Ann Arbor

Southeastern Phycological Colloquy 2004

The 26th Annual Southeastern Phycological Colloquy (SEPC) was held October 22-23, 2004 at the Dauphin Island Sea Lab on the Alabama coast. It was hosted by Juan Lopez-Bautista (University of Alabama) and Chuck Amsler (University of Alabama at Birmingham). The meeting opened with a Friday afternoon mixer in the Sea Lab's Estuarium (a public aquarium devoted to the local estuarine habitats) and ended Saturday evening with a spirited after dinner talk by Russ Chapman (Louisiana State University) entitled "The evolution of green algae and land plants – The past, the present, and the future." In between, the 42 scientific attendees from all seven southeastern coastal states from North Carolina to Louisiana plus Puerto Rico and Ireland were treated to 16 contributed oral presentations and 12 poster presentations. A short power outage caused a slight rearrangement in the afternoon schedule but resulted in a very enjoyable al fresco poster session.

The 27th SEPC is being coordinated by Dennis Hanisak (Harbor Branch Oceanographic Institution) and will be held in Florida during October or early November 2005.

Please visit the PSA website for news on other upcoming meetings:
www.psaalgae.org/news/news.html

FIELD COURSES IN PHYCOLOGY

COLLECTING AND IDENTIFYING SEAWEEDS
11-13 April 2005; A field course run by the British Phycological Society at the School of Ocean and Earth Science, Southampton Oceanography Centre, University of Southampton. Instructors: Christine Maggs and Francis Bunker, local co-ordinator: Jenny Mallinson (fbunker@marineseen.com).

FRESHWATER ALGAE COURSE , 2005
31 July - 6 August 2005, Kindrogan Field Centre, Enochdhu, Blairgowrie, Perthshire, Scotland (near the tourist area of Pitlochry), . Instructors: Dr. Eileen Cox and Prof. Elliot Schubert.

SUMMER COURSE "MARINE ALGAE"
13 June – 16 July 2005, Friday Harbor Laboratories, University of Washington
http://depts.washington.edu/fhl
Instructors: Dr. Charles J. O'Kelly (cokelly@bigelow.org) and Dr. Paul W. Gabrielson (drseaweed@hotmail.com)

PHYTOPLANKTON CULTURE TECHNIQUES
18-24 May, 2005; 2 credit hours; application deadline 1 March 2005. Instructors: Dr. Robert Andersen and Dr. Michael Sieracki, Bigelow Laboratory for Ocean Sciences
http://www.bigelow.org/course

For a complete listing of courses, please visit
www.psaalgae.org/student/friday.html

Phycological Society of America
Department of Environmental & Plant Biology
317 Porter Hall
Ohio University
Athens, OH 45701-2979

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