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LIMNOLOGY AND OCEANOGRAPHY
BULLETIN

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BOOK REVIEWS

COHEN, ANDREW S. 2003. **Paleolimnology: The History and Evolution of Lake Systems.** Oxford University Press. ISBN 0-19-513353-6 (hardbound). xxiv + 500 p. US $115.

Reviewed by Jonathan L. Richardson, Franklin and Marshall College, Lancaster, Pennsylvania 17604 USA; jorichardson@stny.rr.com

To the uninitiated, paleolimnology seems a narrow subject indeed. Nonscientific friends often wonder how I could spend a career studying lakes; were I to confess that I really made my living studying lake *mud*, even fellow scientists at my institution might raise eyebrows. I believe I am not alone in my sensitivity to possible ridicule. Even leading paleolimnologists like Ed Deevey and Dan Livingstone have warded off possible "Golden Fleece" candidacy by penning articles for the general reader such as "In praise of mud" (Livingstone, 1984). In truth, however, rather than being excessively narrow, paleolimnology is one of the most interdisciplinary sciences imaginable. Any paleolimnologist feels incomplete if he or she is not in some part geomorphologist, sedimentologist, chemist, physicist, hydrologist, biologist, and climatologist, as well as conversant in stratigraphic dating methods.

Thus it is unsurprising that, until now, no one has been rash enough to write a text that tries to cover the whole schmear! Thirty-five years ago, C.C. Reeves (1968) published *An Introduction to Paleolimnology*, but even in that bygone era Reeves did not try to cover the field, as Andrew Cohen does here. And, the field has blossomed into full flower since Reeves' book! Today the question really becomes—can one author, in one volume, cover the many facets of paleolimnology in a way that not only does justice to the subject, but also is intelligible to its intended audience (graduate students and advanced undergraduates)? In great part the answer is yes—Cohen has done so, and he is to be cheered not just for the attempt (certainly it is high time for such an attempt!), but for the achievement. Andrew Cohen is professor of geosciences and joint professor of ecology and evolution at the University of Arizona. As an undergraduate he attended a liberal-arts college. Such breadth of training and interest stands him in good stead in this ambitious endeavor, which is not to say that his is an easy book, nor one without flaws. Students to whom it is assigned—and instructors who assign it—will doubtless find some chapters too elementary and others far too difficult, and those chapters will differ depending on what their prior training has been. The 78 pages of references that follow the text provide plenty of avenues to further clarification if one is dissatisfied or perplexed by his treatment of one topic or another. Cohen provides a helpful glossary as well.

An early warning to palynologists—this book will educate them in useful ways, but not about pollen analysis, even though lake sediments are the bread and butter of quaternary palynologists. Cohen barely mentions pollen, and the reason is made clear in his preface: Paleolimnology is "the study of *lake history* from preserved geological records" (italics are mine). The pollen of terrestrial plants, even if recovered from a lake's sediments, tells us primarily about the history of the terrestrial landscape, not the history of the lake. This may seem a fine point, especially since Cohen is quite happy to extrapolate from lake history to watershed and climate history, but omitting pollen archives from his treatment of lake sediments certainly is sensible here. Their inclusion in an introductory text that is already so ambitious would probably be madness.

After an introductory chapter describing the sorts of information archives that are preserved in lake sediments, Cohen launches into a thorough account of the many ways in which lakes are formed. For a geologist needing to deduce why an ancient lake existed where its dry sediments now are found, this much detail on lake origins may be desirable, but for students of existing lakes and their sediments, a summary account and referral to Volume 1 of Hutchinson's *Treatise on Limnology* (1957) would be ample. Chapters 3, 4, and 5, on the physics, chemistry, and biology of modern lakes, present what Cohen feels to be a necessary introduction to *limnology* for students lacking that background when they come to paleolimnology. Such students, however, will have a hard time

The Limnology and Oceanography
Bulletin

The American Society of Limnology and Oceanography is a membership-driven scientific society (501(c)(3)) that promotes the interests of limnology (the study of inland waters), oceanography and related aquatic science disciplines by fostering the exchange of information and furthering investigations through research and education. ASLO also strives to link knowledge in the aquatic sciences to the identification and solution of problems generated by human interactions with the environment.

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The *L&O Bulletin* publishes brief, peer-reviewed articles of broad interest to the ASLO membership, Letters to the *Bulletin* (typically responses to articles), as well as ASLO News on a quarterly basis. Information on the preparation and submission of articles and letters can be found on the ASLO web site (www.aslo.org). It is recommended that you contact the editor before preparing an article or letter.

with these chapters; a great deal is compressed into the physical and chemical accounts, and they are only partially successful as clear treatments. The overview in Chapter 5 of what lives in lakes is straightforward but rather indigestible; the treatment would be more focused and possibly more useful if the many non-fossilizing elements in the biota were treated only briefly, with emphasis directed more sharply to those biota whose remains or signatures typically are critical parts of a lake's sedimentary archive. On page 123 Cohen makes the important point that detailed paleolimnologic records of biotic dynamics over significant periods of time often can be used to address central questions in modern ecology. Deevey (1969) once described such opportunities as "coaxing history to conduct experiments." I wish Cohen had driven this idea home with a clear example or case study.

Chapter 6 is a long, strong chapter on methods of age determination in sediments. Finally, with all preliminaries out of the way, we arrive, in Chapter 7 at the mud itself. It has been a long wait, but we are rewarded with a chapter on sediments and their stratigraphic records that is well written and very instructive. Sections on seismic profiling, the nature of deltaic sediments, authigenic carbonate minerals and the conditions under which they form, and varved sediments all are rewarding. Cohen continues in Chapter 8 to detail typical patterns and modes of sedimentation in different types of lakes, particularly rift lakes, glacial lakes and closed-basin saline lakes. Chapter 9 discusses the variety of stratigraphic chemical analyses (e.g., individual elements, mineral and organic compounds, pigments, and stable isotopes) by which sediment cores may be coaxed to unlock secrets of lake and watershed history. Two chapters deal with the stratigraphy of aquatic microfossils, emphasizing diatoms, cladocerans, ostracods and chironomids as groups that often yield particularly valuable inferences about past changes in lake depth, productivity, pH, mixing regime, and other parameters. Chapter 12 takes up "modern" issues that have preoccupied many paleolimnologists in recent years—the critical evidence in very recent lake sediments documenting the onset and progress of human impacts on lakes and their watersheds, e.g., land clearance, cultural eutrophication, acid deposition, and heavy-metal pollution. A difficult chapter follows on climatology and the important contributions paleolimnology can make in documenting past climate change on scales from the decadal to the millenial. The last full chapter (14) mines the geological record as far back as Devonian times in an attempt to trace the evolution of freshwater biotas and the lake ecosystems of which they were part, and includes an interesting discussion of the species flocks that have evolved in long-lived lakes like Baikal and Tanganyika. Finally, in a two-page coda, Cohen suggests exciting future directions in which the burgeoning field of paleolimnology may proceed. The prospects include much longer, continuous coring records from deep, ancient lakes such as those just mentioned; new advances in geochronometry; and sharply focused application of paleolimnologic records to critical questions of global climate change.

I have already suggested that students will find parts of this strong, comprehensive text exacting. This is partly because of difficult or unfamiliar content, but partly too because of a frequently heavy prose style. Useful end-of-chapter summaries will rescue or restore firm footing to readers who have waded into deep water. To be of maximum value, many of the figures need more complete legends and/or further explanation within the text. The several figures depicting "conceptual models" (e.g., those on pages 274 and 275) are too busy to be very effective on the printed page, though as teaching outlines in a lecture presentation they would be useful. A thorough walk-through of one or two broadly analyzed core stratigraphies would help the student immeasurably in learning how to milk complex stratigraphic diagrams for maximal information. Although typos are scarce, several repeated errors of grammar or word choice ("data is" rather than "data are;" "compliment" when "complement" is meant; semicolons used where colons should be) should have been caught by the editor. These minor criticisms should not deter you from acquiring this book. It draws together so much of value that every reader—teacher, student or researcher—will have his or her paleolimnological horizons expanded. It is a one-volume reference work as well as a challenging text. Thank you, Andy Cohen!

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RAY, G. CARLETON and JERRY McCORMICK-RAY. 2003. **Coastal-Marine Conservation: Science and Policy.** Blackwell Publishing. ISBN 0-63-205537-5 (paperback). xiv + 327 p. US $70.

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This book tackles a monumental problem: How to manage our coastal ecosystems. Where land meets sea is a physically energetic zone, a region of many topographic differences, of substrates varying from sand to rock. There are complex physical/chemical changes of salt- and freshwater, ice cover, hurricanes, and flooding. Within this complex environment, there are two competing interests—natural biological ecosystems and the multiple anthropogenic uses of coastlines—and the latter varies between the extremes of resort development to urban disposal. How can any book deal with such complexity?

In trying to explain the links between these competing forces, the authors define the issues, discuss current remedial policies, and describe the science available to study the problems. They present three case studies—Chesapeake Bay, the Bering Sea, and the Bahamas—locations that give a broad latitudinal coverage of different coastal ecosystems. In the two final chapters, the authors analyze the general symptoms of coastal-ecosystem change and discuss how to reach a balance between natural and economic needs in order to preserve the "wellbeing" of our coasts.

The subjects covered above are detailed with liberal use of text, diagrams, tables, and photos. Special boxes are introduced in which the authors, or an invited author, elaborate on particular topics that range from noise pollution, to water birds, to a summary of U.S. legislation relating to marine mammals. At the end of the book, each chapter is provided with a list of supplementary reference material, and an index is included.

Because of its wide coverage of the subject and its importance to society, this book should be available as a reference text in every marine-science library. When used as a teaching text, it will be necessary to summarize and highlight portions of the book, because the chapters' "Conclusion" sections are often brief and do not pose questions to heighten a student's interest. The book will be a very helpful compendium for the professional scientist working in government or with consulting companies.

This book is not wholly devoted to the scientific study of coastal ecosystems. There is a very important chapter entitled "Mechanisms," which describes the competing demands of society on coastal ecosystems. Most scientists who might be engaged in resolving coastal conflicts will have no idea what has predated their efforts in terms of national and international agreements. This chapter on mechanisms is a chance to catch up! The thinking and legislation behind Marine Protected Areas, the Antarctic Treaty, Law of the Sea, conventions on oil pollution, and a host of other agreements and treaties are described. This is a tortuous bureaucratic field, filled with administrative bottlenecks distributed throughout local, regional, national, and international governments. It is a credit to the authors that they lead the reader through at least a partial exposé of this subject.

The authors emphasize the need to develop new strategies, followed by new tactics, to deal with the multi-faceted problems of coastal management, which include legal, social, and scientific issues. These problems are taken up again in the last chapter on "Synthesis," where the authors express the need for an "about face" in our approach to coastal management. Instead of being governed by a "tyranny of small decisions," the authors are looking for a more holistic approach, one founded on humans being part of the ecology, rather than competing with nature.

The three case studies of coastal ecosystems (Chesapeake Bay, Bering Sea, and Bahamas) are informative lessons in comparative ecology. As such, they highlight the impossibility of writing universal legislation to cover all coastal areas. A later discussion on "regime" changes emphasizes the possible need to modify management approaches over time.

It is a great pity the publisher could not have included some color photos; coral reefs and turtle-grass communities do not come alive in black and white. Also, some of the photos are too small to convey much information. Tables and diagrams are generally clear, but again the latter would have benefited by the use of at least one color. There is room for some small improvements in the tabulated data, such as the units in Table 1.6, which report oil spills sometimes in gallons and sometimes in metric tonnes, all in the same column.

While the book is comprehensive in its coverage of problems, the word "risk" is not in the index, and the authors give little indication of how to analyze the risk of anthropogenic impacts on coastal resources. What, for example, is the relative risk of 1 ppm, 1 ppb, or 1 ppt of copper discharged into coastal waters? At what point do these concentrations approach zero risk? The cost of reducing risk cannot be placed out of proportion to the benefit of accepting a low probability of risk. It would have been useful to read a discussion of their ideas on management risks.

There are some points in the text where any reader may want to exercise his or her own judgment, since the authors themselves recognize the whole science of marine ecosystems is still in its formative years. One subject for inclusion might have been made under "Strategies for coastal-realm conservation." I think the book should have included a consideration of experimental approaches to ecosystem

management. As examples, these might range from mesocosm research (e.g., CEPEX; Parsons, 1978) to local strategies, such as experiments in the replanting of mangroves and marsh grasses. There are often an infinite number of remedial opportunities that can be first launched under experimental conditions.

In summary, this book is unique in its broad approach to coastal ecosystems. The authors are to be congratulated on having brought us so much information under one cover and to have been able to integrate some of the physical, biological, and economic forces that govern our coastal environments.

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THOMAS, DAVID N. and GERHARD S. DIECKMANN (eds.) 2003. **Sea Ice: An Introduction to its Physics, Chemistry, Biology and Geology.** Blackwell Publishing. ISBN 0-63-205808-0 (hardbound). xiv + 402 p. US $155.

Reviewed by **Rolf Gradinger**, *Institute of Marine Science, University of Alaska, P.O. Box 757220, 245 O'Neill Building, Fairbanks, Alaska 99775-7220 USA; rgradinger@ims.uaf.edu*

While searching for Sir John Franklin and the crews of the Erebus and Terror, Sutherland (1852) provided one of the first observations on life in polar sea ice. He reported that "greenish slimy-looking substances" occurred on the bottom centimeters of the sea ice, substances that under a microscope turned out to be "minute vegetable forms of exquisite beauty." Such observations had been a surprise, as the ice itself appeared—at least from the human perspective—to be an unfavorable environment for any kind of life. Until about 1980, knowledge about the offshore pack ice in the Arctic and Antarctic was obtained only sporadically and based on observations from drifting ice stations like T-3 or the Russian NP program. However, a wealth of information had been gathered along the coastline of the American and Eurasian continents of the Arctic and at land-based research stations like McMurdo Sound in Antarctica. Rita Horner, one of the pioneers in integrative, biological sea-ice research, convinced the leading scientists at that time to contribute to her book, *Sea Ice Biota*. The nine contributions published in 1985 set the stage for decades of sea-ice biologists to come. For me and many other colleagues, the text served as a standard reference on the ice environment, specifically its biological context, as it was multi-authored, multidisciplinary, and bipolar in its contents.

The 1980s and 1990s were good years for polar research. Research stations were opened in the Arctic and Antarctica, and new icebreakers dedicated to science, like Polarstern and Healy, allowed exploration of formerly unvisited polar realms. In the same period, political changes opened previously closed areas on the Russian continental shelves to the international science community, an important step to understand further the connections between land and ocean in ice-covered regions. Over the nearly 20 years since Horner's book was published, a wealth of new information has been gathered, in essence asking for a new, dedicated book on sea-ice research. Thomas and Dieckmann took this challenge—and to make a long story (402 pages) short, the book is worth their efforts. Sixteen authors from five countries contributed a total of 11 chapters that cover the entire scope of sea-ice research, from microscale, brine-channel geometry to the reconstruction of the sea-ice paleo-distribution. The foreword by G.E. Fogg sets the stage by citing Shakespeare: "There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy."

Chapter 1 (G. Dieckmann and H. Hellmer) provides a general overview on characteristics of sea ice, an introduction to the historical perspective, and implications of ice research for astrobiology and biotechnology. Comparing Arctic with Antarctic ice properties allows the reader to understand the diversity in ice habitats that in winter cover up to 7% of the earth's surface, an area similar to the combined sizes of Europe and North America. Differences in ice regimes are related to the spatial variability of ice properties, which occurs on scales from micrometers to thousands of kilometers. The relevant structural properties along these scales are addressed in Chapter 2 (H. Eicken). By comparing lake ice with marine ice, Eicken introduces unique characteristics of sea ice, followed by detailed description of its structural and physical (salinity and thermal) properties. Ice growth and decay are explained on micro- and macroscopic scales. The third chapter (C. Haas) focuses on one of the most-discussed ice properties today, its thickness. Time-series data on extent and area demonstrate the loss of sea ice in the Arctic since 1979; no comparable data set exists for ice thickness, and therefore ice volume. Haas explains why we still need field expeditions to determine ice thickness by mechanical drilling or indirect techniques (electromagnetic induction), but also anticipates future satellite observatories (e.g., Cryosat) that will allow detection of ice thickness from space. The observed ice-thickness distribution patterns are explained on regional and basin-wide scales using dynamical and thermodynamical growth models. J. Comiso (Chapter 4) focuses on changes in the Arctic and Antarctic sea-ice cover since 1979, as observed from space. Detailed data sets are provided for the Northern and Southern Hemisphere on a regional basis in relation to atmospheric forcing (temperature and cyclical patterns). Chapters 5 (primary production, K. Arrigo), 6 (microbiology, M. Lizotte), and 7 (macrobiology, S. Schiel) focus on the biological properties of the ice-associated biota, covering the entire spectrum from bacteria to fish. Sampling sea ice is a challenge, and different approaches are required for certain habitats and taxa, with ice-core sampling (Arrigo), optical probes, or autonomous underwater vehicles (Schiel) as examples. The authors illustrate how the unique properties of sea ice set specific environmental boundaries for community activity and composition, for example, with respect to ice salinity (Lizotte), light (Arrigo), and seasonality (Schiel). Regional estimates for algal biomass and activity are provided, including model data (Arrigo). Each of these three chapters provides insights into specific physiological adaptations, for

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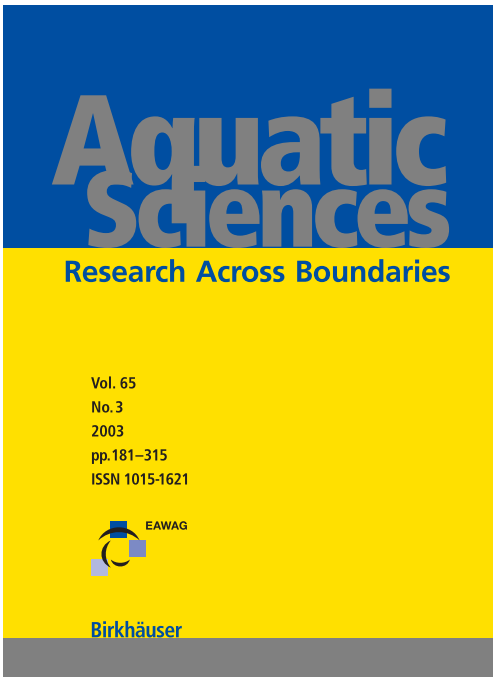

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example, keeping membranes fluid at low temperatures using polyunsaturated fatty acids or avoiding intracellular ice formation with antifreeze substances in fish and algae. Food-web connections are presented from ice-algal production upward to under-ice fauna of crustaceans and fish. Chapter 8 (D. Ainley, C. Tynan, and I. Stirling) extends the food web to its end members, the polar marine mammals and birds. Besides hemispheric patterns, the significance of sea ice as a habitat and the likely impact of global-change scenarios on ice-dependent (pagophilic) species are discussed.

One major difference to Horner's book is the addition here of a chapter on biogeochemistry (D. Thomas and S. Papadimitriou), which reflects the tremendous progress made in the field of cycling of dissolved and organic matter related to sea ice. Impacts of the ice biota are described on various parameters, which cause, for example, unique combinations of stable-isotope ratios ($\delta^{13}C$), pH, and oxygen levels not found in any other marine environment. Dynamics of sulfur compounds like DMS and major macronutrients are discussed as well as the production of exopolymeric substances. Chapters 10 (A. Leventer) and 11 (L. Armand and Leventer) put sea ice into the context of particle flux on a paleo-time scale. Ice impacts particle-sedimentation patterns directly through particle production, transport, and release and redistribution of incorporated sediment. Chapter 10 focuses on the transfer of biota from the ice into the water column, either by direct feeding of pelagic animals on ice algae or feeding within the ice edge, where ice melt leads to favorable conditions for algal growth. Both processes are reflected in the signals collected in sediment traps deployed in the Arctic and Antarctica. The long-term history of ice coverage at high latitudes is accessible by reading the paleo-record of deep-sea sediments. Chapter 11 provides detailed information on observations based on microfossil studies and sedimentological tracers. This information is used to provide ice-extent information for both polar oceans for time slices going backwards from the Holocene to 800ka.

In general, the text of each chapter is supported by excellent figures and color plates. The entire book and all of the chapters are well structured and easy to read for graduate students, teachers, and scientists in general. Although I found it a valuable book for students, the price does seem prohibitive to require it for a course. An extensive glossary helps readers to stay on track in the jungle of scientific terminology. While some of the figures would benefit from better explanation, the text itself is almost free of typographic errors. Besides the excellent literature review, an additional strength lies in the combined representation of observational field data and modeling efforts. Furthermore, the concluding remarks at the end of each chapter identify research perspectives over the next five years. All in all, the book is an excellent compilation of the major scientific achievements of the last three decades, guiding the reader from Sutherland's "slimy-looking substances" into today's science of exopolymeric substances and biofilms. The increase in knowledge is striking when one compares the diversity of topics in Thomas and Dieckmann's book to that in Horner's, with one important exception: biodiversity. Still on the agenda is connecting Sutherland's statement on the "exquisite beauty" of microbes with hard data on diversity indices or species richness along gradients including the polar seas, specifically as ice environments in Arctic and sub-Arctic waters are changing at an alarming rate. The upcoming international polar year 2007/2008 will provide excellent opportunities for truly interdisciplinary research, including that on sea ice. The stage is newly set by this book, and I am looking forward to reading the next interdisciplinary sea-ice book in years to come.

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ASLO NEWS

MESSAGE FROM THE PRESIDENT

Peter A. Jumars, Darling Marine Center, University of Maine, 193 Clark's Cove Road, Walpole, ME 04573-3307 USA; jumars@maine.edu

PRESIDENT TAKES POLICY 101

One of the lessons taught at each semi-annual Council of Scientific Society Presidents Meeting is how to develop rapport with elected officials. Adrienne Froelich has given good advice in the *Bulletin* and in her workshops at ASLO meetings on several such methods. I would like to spotlight one simple one that works. I've chosen this approach to spotlight because I think that even those who do not consider it their job, or even appropriate, to lobby for more research funding should feel perfectly comfortable adopting it.

It's so simple that I don't know why I did not think of it myself or hear about it sooner, and I offer photographic evidence that it works (i.e., of Tom Allen from the First Congressional District of Maine, whose staff became interested in visiting the laboratory where I work). They did so only after the dialogue that resulted from this method. When you win the lottery known as grant writing (for federal resources), let your congressperson and senators know (I leave the non-U.S. readers to translate this advice into their own systems.). Write a one-page letter thanking them for their support of the

Pete Jumars hosts Representative Tom Allen's visit to the Darling Marine Center of the University of Maine. ASLO member Larry Mayer (left) is showing Representative Allen the broad range of research topics, from basic to applied, covered in his geochemistry laboratory.

program from which these funds came. Explain where in their districts these funds will be spent and on what numbers and kinds of people in terms of expertise who will be employed. You would be surprised at how important they regard the employment of professionals in their districts. Use one paragraph to explain in lay terms what research will be accomplished and where it might lead, both locally and beyond. If you care to, and know enough, digress on some common interest of theirs and yours, but limit it to one side of one page.

ASLO has members in most congressional districts. If you are interested in receiving policy-related e-mails from Adrienne Froelich, you need to sign up (and can easily find her contact information at the ASLO website). If you are willing and interested, please also contact Adrienne about being in a second policy database whose members will be contacted when their representatives' or senators' actions on particular items may be crucial to aquatic sciences issues.

Peter A. Jumars

Peter A. Jumars, University of Maine

MESSAGE FROM THE BUSINESS OFFICE

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What a great time to be a member of ASLO! Your society remains very active, and you have a board of directors that is dedicated to providing value for your membership dollar and maintaining the integrity of our science. By now you should have received information on renewing, and we hope that you

have done so by the time you read your December *L&O Bulletin*. The ASLO membership year runs from January 1 until December 31, and we don't want you to miss out on any ASLO activities or information. If you haven't received your renewal notice yet or if you have questions, please be sure to contact us at the ASLO business office (business@aslo.org).

The upcoming year will provide several opportunities to network and meet with fellow ASLO members including the Ocean Research Conference sponsored with The Oceanography Society, February 15-20, 2004, in Honolulu, Hawaii, and ASLO's Summer Meeting in Savannah, Georgia, June 13-18, 2004. On the horizon is the winter Aquatic Sciences Meeting in February 2005 in Salt Lake City, Utah, and a summer meeting in June 2005 in Santiago de Compostela, Spain. This will be ASLO's second meeting held outside of North America.

Your membership also allows access to the society's publications, including complimentary access to our new, all-electronic journal, *L&O Methods*. This journal appears in annual volumes without division into issues, and articles are added to the table of contents throughout the year. Be sure to check it out on the ASLO web site (http://www.aslo.org/lomethods/free/2003/index.html).

Please let us know if there is anything that the business office can do to be of help to you. If you will be attending any of the upcoming meetings, be sure to stop by the ASLO booth and introduce yourself. We love meeting our ASLO members!

Regards and best wishes for the holiday season!

Helen Schneider Lemay
ASLO Business Manager

MEETING HIGHLIGHTS

2004 OCEAN RESEARCH CONFERENCE

Russell A. Moll, Co-Chair of 2004 ORC, California Sea Grant, University of California, San Diego, La Jolla, CA 92093-0232 USA; rmoll@ucsd.edu

As many of you make plans to attend the Ocean Research Conference in Hawaii this coming February, I wish to take this opportunity to welcome you to the meeting and provide an overview of this exciting event. This is the first meeting jointly sponsored by ASLO and The Oceanography Society (TOS). Many thanks go to the society presidents, Peter Jumars of ASLO and Eric Hartwig of TOS, for the creative vision to bring these two like-minded groups together in a major conference for the first time.

In contrast to past ASLO meetings, you will see some changes at the Ocean Research Conference. The guiding premise for these changes is that ASLO and TOS have each developed successful meeting formats over the years and why

not try to take the best of each for a fresh approach to the meeting? Thus, along with co-chair Chuck Trees, the conference steering committee, the Schneider Group (meetings management), and Jenny Ramarui (TOS executive director), we began by thinking outside of the box as to how to organize the meeting. What follows is a result of that planning.

First and foremost, the meeting will bring together a wide variety of ocean science disciplines so that the Ocean Research Conference can serve as a venue for the exchange of ideas among groups that do not normally get together. As a result, there are sessions on fisheries oceanography, remote sensing, optical oceanography, marine molecular biology, coral reefs, invasive species, coastal and estuarine processes, deep seabed processes, marine education, next generation ocean models, and ocean observing systems. While sessions on each of these topics are not new, the mix of these topics at one meeting breaks new ground. In a further new development, rather than ask presenters to select a generic topic as a category for their paper or poster, they were encouraged to select among the more than sixty special sessions submitted to the meeting organizers. The outcome was that all of the more than 1300 submissions fit into these sessions.

Drawing from the TOS format, the Ocean Research Conference places a premium on poster presentations. We have secured sufficient space so that posters will be displayed for three full days; there will not be a need to change posters during the conference. To further enhance the poster presentations, oral sessions will end early by ASLO standards to allow for a poster session/social hour on Tuesday, Wednesday and Thursday afternoons. Realizing the enhanced prominence placed on posters, almost one-third of the submissions requested posters as a first choice for this meeting.

Also drawing from the TOS format, the Ocean Research Conference will have a large number of plenary presentations each morning. Beginning with Dr. Rita Colwell, Director of the National Science Foundation, attendees will hear plenary presentations on topics such as the future of ocean sciences, integrated ocean observing, coupled physical-biological processes, the urban ocean, molecular ecology, mid and high latitude oceanography, coral reefs, and pelagic high-seas fishes.

As you may surmise, this will be a comprehensive and exciting meeting. The ASLO and TOS Presidents and meeting co-chairs felt that returning to the excellent facilities in Hawaii that received rave reviews from the 2002 meeting attendees was the perfect choice for the Ocean Research Conference. Judging by the high number of advanced registrations, many of you agreed with this selection as a venue. Not to be overlooked in the success of any conference are the many extra events that help enrich the value of attending such an event. For the Ocean Research Conference there will be a wealth of these events taking place in the evenings and over the lunch hours.

Because the Ocean Research Conference will break new ground, ASLO and TOS are very interested in your feedback after you have attended the meeting. Please be sure to convey your thoughts to an officer of each society and/or to the co-chairs to help guide and plan the next Ocean Research Conference. In that vein, it is pleasing to report that negotiations are well underway for a tripartite meeting in 2006 with ASLO, TOS and the American Geophysical Union.

I look forward to seeing you in Hawaii in February and to welcoming you to an exciting meeting.

ASLO 2005 SUMMER CONFERENCE (19-24 JUNE 2005) IN SANTIAGO DE COMPOSTELA (SPAIN), A PILGRIMAGE TOWARDS A GLOBAL AQUATIC SCIENCES COMMUNITY

Co-chairs of ASLO 2005: Carlos M. Duarte, IMEDEA, CSIC, Mallorca, Spain; cduarte@uib.es; and Emilio Fernández, Universidad de Vigo, Vigo 36200, Spain; esuarez@uvigo.es

ASLO will hold its second summer meeting in Europe in 2005, following the success of the 2000 Copenhagen meeting. The venue of this meeting will be Santiago de Compostela (NW Spain). Spain is a country with a 3000-year history and at the same time is new, dynamic, modern, and culturally open to the rest of the world. Loyal to its Mediterranean and European roots, Spain also is linked to the American continent, and owing to its maritime traditions, has received visits of other peoples to its shores throughout its history.

Santiago de Compostela is a small town with spectacular monuments, which has merited a place in European history as a site of intense pilgrimage to the burial place of the apostle St. James (Santiago in Spanish) since medieval times. As the German writer Goethe put it, the concept of Europe developed along the pilgrimage to Santiago. In order to cater to the spectacular multitudes crossing the Pyrenees on the road to Santiago, it was essential to design and develop a network of churches, hospitals, bridges, hotels and even changes in the law and order to aid and foster the rights of the pilgrims. Hence, the "*camino*" or trail of Santiago was born, featuring innumerable historic monuments, significant works of art built in memory to the Apostle, and as testimony to the profound significance of the pilgrimage. The City of Santiago therefore developed as a place to gather, resulting in a stony miracle of splendid and harmonic architectural ensembles, one of the great medieval cities in Europe and perhaps the world.

The Santiago of today has managed to maintain the synthesis of the Romanesque and Baroque architectural styles that reflect the very essence of their peoples. Simultaneously, Santiago has grown into a wonderful, modern city that boasts the necessary infrastructure and services that make it an important meeting and conference center, and it includes an active five century-old university with about 35,000 students. The city was designated a World Heritage Site by UNESCO in 1985 and was designated as European City of Culture for the year 2000. Santiago de Compostela is the capital of Galicia, a region of Celtic heritage, fishing tradition, and a contrast between a unique blend of green gentle rural landscapes and a dramatic coastline, including some of the most biologically productive aquatic systems (Rías) in the world. For more details on Santiago de Compostela, visit http://www.santiagoturismo.com/.

The Camino de Santiago still bustles with pilgrims, accommodating everyone from those seeking the spirituality of the experience to hikers (or cyclists!). Tourists enjoy the ever-changing landscape, cuisine, and Spanish hospitality. We invite you to learn more about the pilgrimage through the Camino de Santiago at an excellent web page: http://www.xacobeo.es/. To these pilgrims, ASLO would like to add in the summer of 2005 a large gathering of aquatic scientists. As scientific conferences have been equated with a medieval pilgrimage ("Modern conference cycles resemble the medieval pilgrimages in that they allow participants to enjoy the travel while pretending a spartan dedication to self-improvement. They also include penitential exercises such as perhaps the presentation of results, and definitely the attendance to the presentations of others;" David Lodge, 1984. "Small World"), what is more natural than to choose a pilgrimage venue as the site for a truly scientific pilgrimage?

ASLO will spare no effort in rendering this a memorable event, striving to produce an exciting scientific program addressing emerging issues and new developments in aquatic sciences, while accommodating the meeting to the cultural environment, providing attendees with multiple opportunities to enjoy Santiago de Compostela and the idiosyncrasies of Spanish culture and the Spanish way of life. In a series of vignettes to come, we will provide you with additional information on the development of the conference's scientific program, as well as details on the local culture, traditions, gastronomy, restaurants and "tapas" bars, and sample budgets. Highly competitive accommodation and restaurant prices, along with the proliferation of low-cost overseas airfares will make it possible for overseas participants to attend at a cost comparable to, or likely lower than, those required to attend an ASLO conference on their continent.

Bookmark 19-24 June 2005 for your participation in ASLO's meeting in Santiago de Compostela!

NSF'S GEOSCIENCES DIRECTORATE PROMOTES FRESHWATER RESEARCH

Submitted by ***Wayne Wurtsbaugh****, Utah State University, Logan, UT 84322-5210 USA; wurts@cc.usu.edu;* ***Pat Brezonik****, University of Minnesota, Minneapolis, MN 55455-0116 USA; brezo001@umn.edu;* ***Jon Cole****, Institute of Ecosystem Studies, Millbrook, New York, 12545 USA; colej@ecostudies.org;* ***Sally MacIntyre****, University of California, Santa Barbara, CA 93106-6105 USA; sally@icess.ucsb.edu;* ***Diane McKnight****, University of Colorado, Boulder, CO 80309-0450 USA; diane.mcknight@colorado.edu;* ***Ken Potter****, University of Wisconsin-Madison, Madison, WI 53706-1691 USA; kwpotter@facstaff.wisc.edu*

About half of ASLO members are limnologists. However, unlike oceanographers, limnologists do not have a well-defined home at the National Science Foundation (NSF). Rather, the study of inland waters is supported in a variety of different divisions and programs at NSF in the Geosciences, Biological Sciences, and Engineering Directorates. With heightened awareness of freshwater resources at the national and international levels, (last year was the UN's "year of water") several agencies, including the NSF, have been assessing and reviewing their support for freshwater sciences.

In the National Science Foundation's 10-year Outlook on Complex Environmental Systems (2003), freshwater research was identified by the Advisory Committee on Environmental Research and Education as one of the critical research areas in environmental science for the next decade. In accordance with NSF's growing interest, the Geosciences Division of the U.S. National Science Foundation funded an ASLO workshop to consider new research directions in physical, chemical, and geological limnology. The workshop, held in Boulder, Colorado, in December 2002, was attended by 38 limnologists and hydrologists with diverse interests in lake, stream, river, and wetland science, as well as NSF representatives from geosciences and the Division of Environmental Biology.

Workshop participants identified many topics for discussion, and these fell primarily into four major themes that were pursued during the workshop:

- The hydrogeomorphic landscape
- Inland waters as hot spots of biogeochemical activity
- Hydrodynamic controls of biogeochemical and ecosystem activity
- Global change and inland waters

The workshop report entitled, *Emerging Research Questions for Limnology: The Study of Inland Waters*, is available on the ASLO website (http://aslo.org/announce/limnologyworkshop.html) or from the ASLO Business Office. Although the workshop did not deal with all the disciplines encompassed within limnology, it was encouraging that NSF is showing interest in supporting exciting new research challenges in limnology, particularly interdisciplinary studies.

An important outcome of the workshop and subsequent meetings was that we gained a better awareness of the diversity of programs at NSF that support research on fresh waters. The NSF website has information on both the core programs and for special research opportunities. For example, the Geosciences' Hydrologic Sciences Program now includes geolimnology as a topic area and the Engineering Directorate's Division of Bioengineering and Environmental Systems considers projects that focus on the engineering aspects of limnological research. The Biological Sciences Directorate's Long Term Ecological Research (LTER), Ecosystems Studies, Frontiers in Integrative Biological Research, and Ecology and Population Biology Programs continue to support limnological research, as does the National Center for Ecological Analysis and Synthesis. There are special competitions in the Geosciences Directorate in water cycle research, integrated carbon cycle research, and biogeosciences. Additionally, crosscutting programs such as information technology, nanoscale science and engineering, and biocomplexity in the environment, are potential funding sources for limnological research.

By all accounts the workshop was successful in demonstrating to the Geosciences Division of NSF that limnology is a vibrant field with much to contribute to the understanding of fresh waters in ways that relate to the geosciences. The addition of limnologists to programs dealing with larger-scale water-cycle issues that have been dominated by hydrologists will likely lead to important increases in scientific understanding and management approaches for inland waters.

L&O FEATURED ARTICLE

Everett Fee, Limnology & Oceanography Editorial Office, 343 Lady MacDonald Crescent, Canmore, AB T1W 1H5 Canada; lo-editor@aslo.org

[Editor's note: This is a new edition to the Bulletin *and will be a regular feature.]*

Beginning with the May 1999 issue of *Limnology & Oceanography*, selected articles have been made freely available for reading or download on the *L&O* web site a few weeks in advance of when the printed issue is mailed. Featured articles receive no special attention in the printed issue. A paper may be featured for different reasons (e.g., to draw attention to an exceptional piece of research or to promote an area of research that the associate editor feels L&O readers should be more aware of). Each featured article is announced in the *Bulletin*, as well as to the LO-Feature Mailing List, and is accompanied by an introduction to the article by the associate editor who handled the paper discussing its significance.

The article featured in the January 2004 issue of L&O is:

DE LA ROCHA, CHRISTINA, L., AND UTA PASSOW. 2004. RECOVERY OF *THALASSIOSIRA WEISSFLOGII* FROM NITROGEN- AND SILICON-STARVATION. LIMNOLOGY AND OCEANOGRAPHY 49: 245-255.

Introductory comments by John Raven

The featured article in this issue adds to the list of possible functions of silicon in diatoms. The suggested function is novel in that it concerns the ecological and evolutionary consequences of silicon deprivation in diatoms, rather than the more obvious consequences of the presence of silicon in the environment and of silicified structures in the diatoms.

The suggestion made by De La Rocha and Passow concerns the different effects on a diatom of limitation by silicon and limitation by nitrogen on the performance of the cells when nutrients are re-supplied. Flynn and Martin-Jezequel (2000) suggested, on the basis of modelling, that silicon-deprived diatoms will recover more rapidly than nitrogen-deprived diatoms upon re-supply of nutrients. De La Rocha and Passow have experimentally verified this suggestion for *Thalassiosira weissflogii* and have carried out further modeling exercises. The experimental findings are that, starting from closely similar lengths of nutrient deprivation and of population sizes of nutrient deprived cells, the nitrogen-starved cells do not catch up with the silicon-starved cells within the two days of the experiments after nutrient re-supply. Modeling indicates that this difference should be perpetuated over at least nine days.

Like all good research, more questions are raised than are answered. One requirement for future work is to extend the experimental analysis to phytoplankton cells other than diatoms. De La Rocha and Passow point out that the changes seen in nitrogen-deficient diatoms also occur in non-diatom species, so that their hypothesis could relate ecologically to a situation in which diatoms run out of silicon and other phytoplankton species running out of nitrogen. In a situation with a low silicon:nitrogen ratio in the surface ocean where diatoms run out of silicon well before other phytoplankton cells run out of nitrogen, what, all else being equal, is the outcome as the smaller populations of silicon-starved diatoms compete with the larger populations of nitrogen-starved cells of other groups of algae when nutrients are re-supplied? Does a more rapid recovery of the diatoms from a smaller population base still give an advantage in terms of population size at, say, 10 days after re-supply relative to the population sizes of non-diatoms? De La Rocha and Passow suggest that the diatoms would be at an advantage, citing the generally high specific growth rate of diatoms as a contributing factor in speeding the growth of diatom populations.

A possibility for future cogitation, if not experimentation, is the evolutionary significance of the hypothesis. Could the selective advantage in running out of a resource, i.e. silicon, which few non-diatom competitors need, as a means of

maximizing the long-term survival and growth potential of the silicon-requiring cells in an environment with fluctuating resource supply, be an evolutionary rationale for the silicon requirement in the first place? At first sight this seems unlikely, since the phenomenon elaborated by De La Rocha and Passow involves a silicon sequestration by diatoms sufficient to cause local depletion of the resource. Such a quantitatively significant sequestration would have to involve production of a solid mineral phase with implications for cell density. Further, if the mineral phase was externalized as in fossil and extant diatoms, there also would be implications mentioned by De La Rocha and Passow for grazing, ultraviolet absorption and the functioning of extracellular carbonic anhydrase. These lines of reasoning suggest that the role of silicification suggested by De La Rocha and Passow is an important emergent property of silicification in diatoms, but it is probably not the original selective advantage of the silicon requirement.

Flynn, K. J., and V. Martin-Jézéquel. 2000. Modelling Si-N-limited growth of diatoms. J. Plankt. Res 22: 447-472

OUTSTANDING *L&O* REVIEWERS

Peer review is a crucial component of modern science. The fact that *L&O* is able to utilize the services of the best scientists as reviewers allows it to be a leading journal in the aquatic sciences. However, these individuals seldom get the recognition they deserve for this selfless work. Therefore, each issue of the *Bulletin* cites two outstanding reviewers that Everett Fee, *L&O* Editor, feels deserve special recognition for their overall reviewing efforts. The ASLO membership extends its sincerest appreciation and thanks to these two outstanding scientists.

DAVID A. HUTCHINS

David Hutchins is an associate professor of oceanography at the College of Marine Studies, University of Delaware. His interests include marine biogeochemistry and phytoplankton biology. Recent projects have examined iron limitation in California, Peru, the Bering Sea, and the Southern Ocean. A number of harmful algal bloom studies are also currently underway, such as the application of molecular probes to determine how environmental factors affect toxic raphidophyte blooms in mid-Atlantic estuaries. A new project on climate change impacts is investigating the effects of increased CO_2 and temperature on phytoplankton community structure and biogeochemistry in the Bering Sea.

PETER R. LEAVITT

Peter Leavitt is Canada Research Chair in Environmental Change and Society at the University of Regina in Saskatchewan, Canada. His research program encompasses paleoecology, long-term ecological research, whole-lake

experimentation, and simulation modeling to investigate the scales and controls of ecosystem variability. Current studies include forecasts of drought occurrence and societal response using paleoclimatic records, evaluation of the role of UV radiation in lake evolution, and quantification of marine and freshwater responses to interactions among climate, urbanization and land-use practices. In his spare time, Peter hosts a music show on CJTR, Regina Community Radio.

GETTING TO KNOW YOUR L&O ASSOCIATE EDITORS

Everett Fee, Limnology & Oceanography Editorial Office, 343 Lady MacDonald Crescent, Canmore, AB T1W 1H5 Canada; lo-editor@aslo.org

The next time that you pick up an issue of *L&O*, I hope that you will take a moment to peruse the list of Associate Editors (AE) on the inside of the front cover. These are the people who decide what is published in *L&O*. ASLO acknowledges the important work that these people do for the society; AEs are featured in each issue of the *Bulletin*.

The role of the AE is that of an impartial judge — to fairly assess the reviewers' comments and guide the author's next steps. About every two weeks an AE is assigned a new manuscript. His or her first task is to select reviewers; this delicate job requires profound knowledge of both science and politics (the often conflicting relationships among people in a society). When the reviews are received, the AE digests that input along with his or her own assessment of the manuscript to arrive at a decision. It is unfortunately quite common for reviewers to recommend very different fates for a paper, which puts the AE in the uncomfortable position of having to make at least one of the reviewers and perhaps the author unhappy. If a paper is accepted, the AE's final job is to edit the manuscript, suggesting wording and organizational changes to improve clarity.

L&O AEs work at the highest level of our profession. Being an AE is a very demanding job, and we are extremely fortunate that these people devote so much time to the ongoing challenge of making *L&O* the leading journal in the aquatic sciences.

JONATHAN P. ZEHR

Jon Zehr is a professor in the Ocean Sciences Department at the University of California, Santa Cruz. His overall research interests include microbial ecology, the nitrogen cycle, nitrogen fixation, and molecular biology/ecology, but more specifically, the relationships between environment and microbial community structure, with emphasis on nutrient cycles and controls. Currently, he has projects involving the development of molecular approaches for studying the ecology of microorganisms

involved in nitrogen cycling, particularly nitrogen fixation and nitrogen assimilation. He has wide-ranging interests in aquatic environments, from hypersaline lakes to microbial mats and oligotrophic oceans. As an *L&O* AE, he handles manuscripts on organic matter cycling, microbial community structure, viruses, phytoplankton physiology, and harmful algal blooms.

FROM THE EDITOR'S IN-BOX

AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES 2004 ANNUAL MEETING, 16-18 MARCH, WASHINGTON, DC

Submitted by Donna Royston, American Institute of Biological Sciences, 1444 I (Eye) St., NW, Suite 200, Washington, DC 20005 USA; droyston@aibs.org

Plenary speakers, panel sessions, and informal discussion groups at the 2004 AIBS Annual Meeting will approach the topic of "Invasive Species: The Search for Solutions" from the perspective of one or more of the meeting's cross-cutting themes, including: what makes a species "invasive;" research questions and tools; aquatic and terrestrial issues; economics; public policy; education; public health; prevention and remediation; international issues; and local initiatives. Each plenary speaker will couch his or her talk with reference to invasive species issues involving particular major taxonomic groups: plants, vertebrates, invertebrates, and microbes.

Attendees will hear distinguished plenary speakers and panelists present synthesizing lectures from the forefront of their fields, then will join those speakers and other equally notable scholars in panel sessions and informal discussion groups. Speakers include Ann Bartuska, The Nature Conservancy, "Abating the Threat of Invasive Species: Linking Science and Policy;" Richard Mack, Washington State University, "Prevention and Remediation of Plant Invaders;" Stephen Morse, Columbia University, "Emerging Infections: Microbial Invaders Discover New Territory;" David Lodge, University of Notre Dame, "Bioeconomic Risk Analysis of Invasive Vertebrates and Other Species;" Andrew Dobson, Princeton University, "Zen, Parasites, and the Art of Alien Invasion;" and Daniel Simberloff, University of Tennessee, "Invasion Biology." Additional speakers include Cynthia Kolar, U.S. Geological Survey; David Pimentel, Cornell University; and Fred Dobbs, Old Dominion University.

All sessions take place at the Westin Grand Hotel, 2350 M St. NW, Washington, DC 20037 (three blocks north from the Foggy Bottom Metro Station, on the edge of Georgetown). Register on-line at http://www.aibs.org/annual-meeting-2004/. Early registration closes 2 March 2004. Poster abstracts may also be submitted at the above URL. Poster submissions close 16 February 2004. Early registration prices for the 3-day meeting are $200 for individual members of AIBS, $250 for non-members (includes automatic one-year AIBS membership), $160 for government employees, $150 for educators, and $130 for students. Attendance is limited—register early! For more information, contact rogrady@aibs.org.

PHYTOPLANKTON SPECIES TIME SERIES DATA NOW AVAILABLE ON THE INTERNET

Submitted by Christopher D. Hewes; cdhewes@ucsd.edu; and William H. Thomas; whthomas@ucsd.edu; Scripps Institution of Oceanography, University of California, San Diego, La Jolla, CA 92093 USA

W. E. Allen's Phytoplankton Species Time Series Data are now available on the Internet as an e-book. These data consist of weekly species identifications and enumerations of diatoms and dinoflagellates in seawater samples taken from six North American Pacific Coastal locations during the period 1917-1939. Also included are physical and chemical data on the water samples plus meteorological data taken at daily to monthly intervals from the same locations. This historical data set constitutes a very long time series of biological and hydrographic observations that can be analyzed as curiosity warrants. The data also can be used to introduce students to dealing with a very large data set. Various investigators may perhaps uncover important ecological patterns and/or issues, not presently envisaged, that may be hidden within the data. The data can be accessed at the following website: http://repositories.cdlib.org/sio/techreport/1/

DIALOG: EASING THE TRANSITION FROM STUDENT TO PROFESSIONAL

Submitted by C. Susan Weiler, Biology Department, Whitman College, Walla Walla, WA 99362 USA; weiler@whitman.edu

We are in the midst of a sea change when it comes to professional aquatic science positions. Today's Ph.D.s are extraordinarily knowledgeable and proficient when it comes to disciplinary knowledge. Yet, they are often ill prepared for the "real world." Jobs are scarce, and money is tight. The need for disciplinary specialization has not diminished, but there is an increasing requirement for breadth as well as depth. Building a productive laboratory in a soft-money world has never been easy, but it is more difficult than ever due to the rising costs, limited resources, and an infrastructure that is not designed for work that transcends traditional disciplinary boundaries.

How can we prepare our students and recent grads for life in a changing professional world? Sessions at recent DIALOG symposia grappled with this very issue. DIALOG symposia bring together a cross-section of aquatic science graduates to foster interdisciplinary understanding, peer networking, and early career development. While the focus of the week-long meeting is on the science, the time is used to plumb the collective wisdom of the group and to develop resources to address the specific concerns and needs of this highly accomplished group at a pivotal stage in their careers.

In addition to the presentations and interactions by the recent grads, DIALOG symposia include a small number of established professionals who participate as mentors to provide perspectives that only time and experience can provide. Consultant-led training in team building has been used to prepare grads for collaborative research projects, while federal agency representatives have been generous in providing overviews of their programs. Most recently, SeaWeb provided guidance in communicating beyond the ivory towers and

particularly with the media. Deneb Karentz, a rotator at NSF and faculty member at UC San Francisco, developed a terrific set of recommendations for new proposal writers. Monty Graham, an alum of DIALOG I, participated in the October 2003 DIALOG V symposium as a mentor. He provided some timely advice and encouragement on negotiating jobs and going through the tenure process. Indeed, several participants were negotiating jobs while at the symposium and were able to use Monty's advice in "real-time." (Monty has an article following this one.) Visit the DIALOG website for more such resources including reports from past symposia.

Can DIALOG-style sessions be held at various scientific society meetings? Past symposium participants are eager to share lessons learned at DIALOG to enrich the larger community. While some components can only be done as part of a prolonged, intensive meeting such as DIALOG, some are portable. Scientific society meetings provide a cost-effective opportunity to reach a broad audience. At the time of this writing, a professional-development session is planned for the February 2004 Ocean Research Conference in Hawaii and more are in preparation for the 2004 Benthic Ecology Meeting in Mobile, Alabama. If you have suggestions for topics, please contact dialog@whitman.edu.

Electronic resources enable the DIALOG program to reach members around the world. The web page, http://aslo.org/phd.html is the main portal, while an electronic newsletter provides access to time-sensitive announcements. Anyone may visit the web page, and everyone who submits a Ph.D. dissertation abstract is added to the electronic distribution list.

With over 1,000 Ph.D. abstracts registered, the Ph.D. Dissertation Registry is perhaps the best-known, but by no means the only, part of the DIALOG web page. Resources developed for symposium participants and by the participants are published along with the biennial program reports. The recent Ph.D.s and mentors who attended past symposia have been extraordinarily generous. Indeed, the DIALOG web page has recently been redesigned to accommodate the growing number of papers and other resources. The site now offers an annotated list organized by topic (advice for students and job hunters, articles on mentoring, recommendations for graduate education, tips on proposal development, advice for making effective oral and poster presentations, etc). Resources for new teachers are under construction.

Interest in the biennial DIALOG symposia has increased with every round, from 67 applicants for DIALOG I (1993) to 146 for DIALOG V (2003). To serve more grads while retaining the benefits of small groups, the size of the symposium will remain the same, and the frequency will increase. I am pleased to report that Monty Graham has agreed to co-organize the DIALOG VI symposium, to be held October 30 – November 6, 2004 at the Dauphin Island Sea Lab (Alabama). As always, the symposium is international in scope, and graduates from around the world are encouraged to apply. Maarten Boersma will continue his role as a co-organizer to ensure that the European community is well-represented despite the symposium's move from Bermuda to the U.S. mainland. Travel subsidies will be available to all participants, though applicants from developed nations may be required to cover partial expenses.

We invite you to participate. The student-to-professional transition can be daunting; we hope the DIALOG program will ease the transition. Please encourage your students and recent-Ph.D. colleagues to visit the DIALOG web page, register with the program, and participate in sessions held in conjunction with scientific society meetings. Those completing their last Ph.D. requirement between April 1, 2002, and March 31, 2004, should apply for the DIALOG VI symposium by the May 1, 2004, deadline. Visit http://aslo.org/phd.html for application instructions.

NAVIGATING PROMOTION AND TENURE: STRATEGIES FOR THE NEWLY EMPLOYED

Submitted by William (Monty) Graham, Dauphin Island Sea Lab and University of South Alabama, Dauphin Island, AL 36528 USA; mgraham@disl.org

In her address at ASLO's 1999 Sante Fe meeting, Alice Alldredge reflected, with some concern, on the amount of time she found herself either being reviewed or conducting a review of another. Yet, this is our academic culture: we rely on a system where success is based on external review of our performance. In primarily North American colleges and universities, the most important professional review is that conducted for the award of tenure (that is, the life-time

commitment by the institution for employment and the guarantee of academic freedom). Nevertheless, promotional reviews rivaling the magnitude of tenure exist in a multitude of career tracks. Without question, professional reviews are mysterious to newly employed scientists.

As Sue Weiler illustrates in her preceding article in this issue, students are not adequately prepared to handle major professional reviews within graduate programs. I attempt to provide a "survival guide" of sorts with advice on what the newly employed should bring with them on their trek towards promotion review. With the emphasis on early preparation and strategic planning, hopefully some of the mystique (and perhaps *fear*) will be removed. What results are my suggestions summarized into a "top ten" (with apologies to David Letterman). My caveats are: (1) These tips will not, by themselves, get you promoted; (2) Even perfect adherence to them will never substitute for shoddy work and poor scholarly conduct; (3) No two departments (much less institutions) treat promotion and tenure identically, and the height of the "bar" is set by your peers in your department.

1) Seek mentoring. Find individuals who recently passed the promotion or tenure process. Not only will they help explain the expectations and rules, but they will be an invaluable source of emotional support as decision time approaches. Many larger universities have a formalized mentoring program, but at smaller institutions and remote labs you may need to seek your own mentor.
2) Save everything. At some level, applying for promotion or tenure means you are proving your worth to the institution. Whether or not university guidelines dictate it, you should be prepared to document everything reported in the portfolio. At the earliest point possible (now!), establish a good system for maintaining records of your accomplishments such as invitations for seminars and workshops, talks to civic groups, proposal panels, etc. Also, maintain a daily planner as a record of the minutia of your activities.
3) Get regular performance reviews. As difficult as it is to receive criticism about your performance, it is best to hear about deficiencies sooner rather than later. Many programs mandate a mid-track review (sometimes this is a condition for probationary renewal), but an annual review is best as it forces almost continual adjustments in balancing your activities.
4) Familiarize yourself with the formal process. Every institution deals with promotion and tenure differently (this also includes the appeal process should it come to that). Study your employee handbook thoroughly. Know the time-line for review and, most importantly, know your employee rights.
5) Know the "unspoken" rules and expectations. Faculty and employee handbooks are only guides to the process and reveal little about real (and usually unwritten) expectations for successful promotion. In fact, expectations typically vary between colleges and departments within a university. Pay close attention to senior faculty when they offer advice about numbers of publications, best journals for publication, on which service committees to participate, etc. (see #1 & #3).
6) Develop personal relationships. There are three explicit "pillars" on which we are perched as research university faculty: Research, Teaching and Service. However, there is a fourth (and hidden) leg: Collegiality. Unless you are truly extraordinary (e.g., National Academy of Sciences inductee), collegiality with your peers will be an equally important consideration for attaining promotion or tenure. Develop strong, positive relationships within your department and university. Chat with the department chair at the coffee machine and drop e-mails to the dean. Let them know about your professional accomplishments. Also, work on relationships outside the university as you will need strong external letters of support later.
7) Choose your battles carefully. Take care how politically delicate issues are handled within the institution. Seek advice from your personal mentor when it comes to assignments such as committee work. My personal advice is that the seminar committee is the perfect committee for junior faculty to chair (you get to invite all of your friends to visit you in your new lab), however stay away from the "space committee" and all other committees dealing with money or time.
8) Balance your portfolio. Remain familiar with the contract under which you were originally hired. You agreed to perform your job under some allocation of time devoted to Research, Teaching, and Service. As you prepare your review portfolio, ensure that it reflects the original balance of this effort allocation. Seek portfolio examples from others who have been successful in the recent past. Most importantly, if you adhere to #1 through #5, then your portfolio should develop an inherent balance with little additional effort.
9) Stay positive. Know this: promotion or tenure is yours only to lose. When you were hired, your institution went to extraordinary measures and resources to bring you on-board, therefore (de facto) they want you to succeed. After all, it was a huge investment on their part to provide you with years of employment, and now they only need to be convinced that you are worthy of longer-term commitment (and in the case of tenure… for life!). The rule to live by is: You enter with tenure in your grasp, therefore if you have done everything according to spoken and unspoken expectations, then avoid losing sleep over the review process.
10) Maintain a healthy sense of priorities. Of course, academics are strange people with a strange sense of values. Family, friends and personal well being should always have priority over your career. Obviously there will be times when career dominates your life, but as long as a sense perspective is maintained, then the angst over the promotion or tenure process can be kept to a minimum.

DIALOG VI

Dissertations Initiative for the Advancement of Limnology and Oceanography

Program for Recent Ph.D. Recipients

across the Aquatic Sciences and Related Disciplines

The DIALOG goal is to catalyze interactions and understanding across the aquatic sciences. Recent PhDs are targeted to introduce new graduates to the community, forge lasting collegial bonds across peer groups and foster early career development.

Ph.D. DISSERTATION REGISTRY

The registry encompasses *all* aquatic science disciplines. Dissertation abstracts are posted on-line in a fully searchable format, providing a concise overview of the field and highlighting individual accomplishments.

Graduates completing PhD requirements after April 1, 2003 are invited to register. Citations submitted within 3 months of PhD will be published in the *L&O Bulletin*. Participants will receive an abstract book, peer directory and a demographic report on their 2-year cohort.

ELECTRONIC COMMUNICATION

Once registered with DIALOG, graduates are placed on an e-mail list to foster cross-institutional communication and distribute job and other information. Anyone may submit job and other announcements for posting. Submissions should be sent to **dialog@whitman.edu**. Brief summaries are encouraged, with web addresses for details. Please do not send attachments.

Submit job and other announcements to

dialog@whitman.edu

SYMPOSIUM

"I suspect that, in years to come, the familiarity with distant specialties and connection to the top young scientists in diverse fields will greatly impact my own research and teaching."

Past DIALOG participant

The DIALOG symposia catalyze early career development with a focus on interdisciplinary understanding and peer networking across the full spectrum of aquatic sciences.

DIALOG VI will bring together 40 recent grads from around the world. Both oral and poster sessions will be used to relate each participant's dissertation research and current interests. Working groups will discuss emerging aquatic-science research, education, career and societal issues. Agency representatives will describe interdisciplinary and international aquatic science research opportunities. While the format is intense, there will be time for informal as well as formal interactions. Past participants agree this opportunity for information exchange and developing an international peer network should not be missed:

"I am positive that my perspective of science was changed by this meeting. It has already proven to be a milestone in my career."

"This is exactly the sort of thing we need to bring the newest generation of aquatic scientists together."

Symposium Eligibility

DIALOG VI is open to PhDs completed **April 1, 2002 - March 31, 2004** in any subject *within* or *relevant to* the biologically oriented aquatic sciences. Selection will favor applicants who plan to engage in interdisciplinary aquatic science research. Graduates from all nations are eligible. A committee will select 40 participants based on the application materials submitted. Travel subsidies are available.

SYMPOSIUM Dates & Location

Oct. 30 - Nov. 6, 2004

Dauphin Island Sea Lab

Application Deadline

May 1, 2004

HOW TO PARTICIPATE

Abstract Registration Forms

•

Symposium Application Instructions

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PhD Dissertation Registry

http://aslo.org/phd.html

Questions

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