LIMNOLOGY NEWS

University of Wisconsin- Madison
College of Letters and Science

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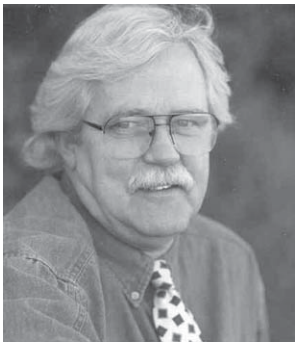
From the Director's Desk, Fall 2007



Dear Alumni and Friends of the CFL:

Fall colors are appearing on forested shorelines of Lake Mendota and I saw my first south-bound loon earlier today. Those are the harbingers of year's end. Herein follows our annual variety of news and accomplishments from those of us at the CFL.

Among the components of this newsletter is a special feature from Maria Gonzalez and Mike Vanni as they recount the geographic and professional challenges involved in the pursuit and successful accomplishment of a dual career marriage. Another long-sought and recently accomplished goal will appear next summer to the east of Trout Lake Station. It is a new housing facility intended for visiting investigators made possible with primary support from NSF plus some matching funds from the College of Letters and Science and our CFL endowment.

A second special feature elaborates on the recent growth and development of GLEON (Global Lakes Ecological Observation Network). This program began a few years ago and is rapidly expanding, in no small part due to the leadership of CFL members Tim Kratz, Paul Hanson, and Marilyn Larsen. The program includes a new Research Coordination Network grant from NSF plus, I just learned, another new grant from the Moore Foundation to support a postdoc, help develop the science agenda, and sponsor travel awards to graduate students and principle investigators involved in this multi-national effort.

As in the past, we'll offer praise to those who have received special recognition through awards. Foremost among them is the recognition of Steve Carpenter as recipient of the Naumann-Thieneman Award at the 2007 International Society of Limnology (SIL) congress in Montreal. Simply stated, this is the most prestigious international award for our discipline. Recognition also goes to our youngest faculty member, Jake Vander Zanden, who was promoted to Associate Professor AND received the Phil Certain Award which recognizes the single most outstanding of this year's group of newly-tenured faculty in the College of Letters and Science. Yes, there's some money involved. Jake tells us that he and his wife Helen Sarakinos will use that to help cover costs associated with their new son, Milo, born in January of this year. Additionally, the College of Letters and Science recognized Mike Pecore's hard work and dedication to the CFL through a Classified Staff Excellence Award.

We've also had some losses. One of our long-term stalwarts, Gerry Chipman, passed away. Chip's retirement years were busy with summers and family in Madison, then winters in Arizona. He regularly stopped by to check up on us. We'll miss his visits and the memories those brought.

In keeping with our section on graduations, migrations and new faces, you may recall that a few years ago John Magnuson initiated support to development of the Hasler Garden which is now flourishing at the west edge of the Hasler Laboratory. I recently noticed a new sign that proclaims it as a "Native Plant Nursery" which will "…contribute seeds…" to the newly designated UW Lakeshore Nature Preserve that runs from here to the end of Picnic Point. It seems fittingly symbolic of the CFL--we developed a garden and planted seeds that grew to provide more seeds. It is a method that is working for both native plants and limnologists.

Sincerely,

Jim Kitchell

Life in the Dual-Career Lane

By Maria Gonzalez and Mike Vanni

It's a pleasure for us to write a little something for this newsletter, because we met at the CFL in summer 1986. María was a graduate student with Tom Frost, working on the Little Rock Lake acidification project, and Mike arrived to begin postdoctoral research on the then-fledgling "Lake Mendota Project." María actually already knew about Mike's research, but not because she had read his papers. As part of a project for Stan Dodson's Plankton Ecology class, María had contacted Stuart Hulbert asking for papers that could be used as examples of "pseudoreplication." Hulbert sent her a letter (no e-mails back then!) about a paper by M.J. Vanni, that supposedly contained at least 30 cases of pseudoreplication! (Mike disputes this claim to this day – there are no more than 20 cases!).

We were just friends for the year and a half that we knew each other, and during this time María kept the pseudoreplication secret to herself. During this time, Maria spent a winter in an OTS course in Costa Rica and spent the summers at Trout Lake. Mike was focused on being a "publishing postdoc" in Madison. In retrospect, we have to thank Chris Luecke and John Post, two other CFL postdocs, for helping us get together. John hosted a great going-away party for Chris just before Chris departed for a job at Utah State in late summer 1988, and it was at (actually, after) that party when we decided we should be more than just friends. Just a few months later, Mike left for a tenure-track job at Miami University in Oxford, Ohio (For those of you who are confused about the name, "We were a university when Florida still belonged to Spain." You can look it up.) So we had to deal with the whole long-distance relationship thing. Fortunately, Tom was very understanding and María was able to spend a fair amount of time in Ohio while she was writing her dissertation. In addition, Mike was still working on papers from his CFL postdoc and so had a good "excuse" to spend time in Madison. Still, for a couple years we had to be satisfied with a long weekend together every two weeks or so, at least during the academic year. During summers things were easier because Mike did field work at UNDERC and María was still finishing up her dissertation research at Trout Lake. Lucky for us, Tom allowed us to live together - in sin - in the "Fish" cabin at Trout Lake during summer 1990. We got married in May 1991, and many friends from the CFL made the trip to Ohio for our wedding. For that we are still very grateful! We then returned to Trout Lake as a properly married couple for the summer 1991 field season.

Mike Vanni and Maria Gonzalez, 2007

In spring of 1992, María finished her dissertation and started a postdoc at Michigan State's Kellogg Biological Station. Things were looking good – now we were only five hours apart instead of eight! Mike's research at UNDERC had wound down and he started working on the beautiful aquatic ecosystems of Ohio (to those of you unfamiliar with Ohio's aquatic environments, that's sarcasm). Maria kept close contact with Tom, particularly discussing papers and future career plans. María's one-year postdoc was an eventful time. During that period she landed a job at Wright State University in Dayton, OH, only a little more than an hour from Oxford, meaning that finally we could live in the same house. Not only that, we learned that María was expecting our first child – in fact, María found out within a three-day period that she got a faculty job and that she was pregnant! Although we were thrilled with both happenings, we also realized that our lives were about to become more complicated.

María started her job at Wright State in fall 1993 and our daughter Melina was born that same semester. María established a research program on Lake Erie focusing on the effects of a recent invader, the zebra mussel, on benthic communities, while Mike expanded his efforts on Ohio reservoir-watershed systems. Later, María also became interested in the reservoir systems and we've worked together on these systems, with some great colleagues and students, ever since. Although María was happy at Wright State, in 2000 (six month after getting tenure!) she accepted an opportunity to move to Miami. So finally, 12 years after we first became a couple, we had jobs at the same university. We have a great group

of colleagues and positions at a university that recognizes ecology and environmental biology as one of its strengths, so things are great overall. Our research on reservoirs continues to be scientifically stimulating. Like most limnologists, we were reluctant to work on "artificial" lakes at first, but then realized that there are some very interesting questions to ask in these systems. Plus, if we wanted to work locally, a real issue after starting a family, we had no choice! Broadly, our research focuses on how watershed land use and omnivorous fish regulate reservoir ecosystems, and following the CFL model, it encompasses long-term trend analyses, experimental work at various scales, and little bit of modeling. Our reservoir research has been continuously funded by NSF since 1993, and since 2003 by the Ohio Department of Natural Resources, with additional funding from USDA. Overall this research has been quite satisfying. Now if we could just move some of those clear Wisconsin lakes to Ohio…

Although our interactions with CFL folks became less frequent once we stopped working on the Madison and northern lakes, we have maintained and created many connections over the years. For example, both of our first master's students (Shelley Arnott and Amina Pollard) went on to the CFL for PhDs. And two recent CFL undergraduates, Allison Babler and Freya Rowland, just started this semester as grad students with Mike. Also, we both learned many skills at the CFL that have helped us in our careers, beyond our research areas. Among the most important are the value of collaboration and the benefits of establishing a relationship with state agencies. We've developed an excellent, productive partnership with the Ohio Department of Natural Resources. The ODNR funds some of our work, and we have a joint sampling program in which ODNR field crews and our labs are sampling over 150 lakes in Ohio across a gradient of watershed land use. Interestingly enough, our relationship with the ODNR was facilitated by another CFL alum, Roy Stein, our friend and collaborator at Ohio State University who cultivated a productive and mutually respectful relationship with the ODNR that paved the way for us.

We both value the collaborative, "team-spirit" approach to science fostered by the CFL, and try to structure our own labs on this model. Mike learned a great deal observing how Jim Kitchell and Steve Carpenter approached science and interacted with people of all backgrounds and educational levels (Steve was not yet on the UW faculty but spent a sabbatical year at the CFL while Mike was a postdoc). We both admired John Magnuson for his leadership abilities. For Maria, her relationship with Tom Frost has been very important in her academic development. Maria feels very proud to have had such a caring, understanding, and flexible advisor. Tom spent a lot of his time at Trout Lake during the academic year, but he always had time to discuss research ideas and follow his students' progress during his visits to Madison. So, Maria tries to follow Tom's legacy in terms of setting aside time for her students. Personally Tom, Susan and later their sons became very special friends. We have good memories of summer cookouts, Thanksgiving dinners, political discussion, trips to Philadelphia and hiking trips after scientific meetings. Tom introduced us to wonderful scientists and interesting people… and of course we will always remember how much water a freshwater sponge the size of a fingernail can filter, thanks to Tom's passion for these creatures!

We both feel fortunate to have the careers and lives that we continue to enjoy. We still get a kick out of doing and teaching limnology, and we both attribute a good measure of our happiness to our times at the CFL. We hope that some of the current and future CFL students are lucky enough to replicate (or pseudoreplicate?) our paths.

Aerial view of Little Rock Lake

Carpenter Receives Preeminent International Award

by Jill Sakai, Science Writer, UW Communications

Steve Carpenter (left) accepts the Naumann-Thienemann medal from Bill Lewis (center) and Gene Likens (right).

University of Wisconsin-Madison limnologist Stephen Carpenter joins the select ranks of the world's most distinguished by receiving the highest international honor in his field.

Steve Carpenter was awarded the Naumann-Thienemann medal on Monday, Aug. 13, at the triennial meeting of the International Society of Limnology in Montreal, Quebec. This medal, named for two early 20th-century European limnologists, is bestowed in recognition of outstanding career contributions to the field of limnology.

Carpenter, the Stephen Alfred Forbes Professor of Zoology and a prominent member of the UW-Madison Center for Limnology, is well known for his seminal work on understanding and modeling lake ecosystems. Much of his research has been based in Wisconsin, where he has extensively studied methods to improve the health and water quality of lakes in the Madison area and in the Northern Highlands Lake District. He has contributed to understanding the impacts of a wide range of factors, including invasive species, pollution, and lakeshore development.

For the past eight years, Carpenter has led the Wisconsin Long Term Ecological Research (LTER) program to study ecological changes in the state's lakes over time. "His leadership has really helped put Wisconsin on the map as an outstanding LTER site," says Jim Kitchell, director of the Center for Limnology.

Carpenter's contributions also extend beyond his scientific legacy, Kitchell says. "Steve has expanded the context of limnology beyond basic science to include the social, economic, and political considerations that guide lake management," Kitchell says. "He has developed mechanisms for interacting with the public to help guide informed decisions about the environment."

The Naumann-Theinemann medal adds to a long list of lauds Carpenter has accumulated during his career. He is a member of the National Academy of Sciences and has received awards from numerous scientific societies, including the Ecological Society of America and the American Society of Limnology and Oceanography.

In testament to UW-Madison's long-standing position at the forefront of limnology, Carpenter is the fourth Naumann-Thienemann medal recipient from the university, out of only 57 medals given since the award's inception in 1942. Edward Birge and Chauncey Juday were awarded medals in 1950 and Arthur Hasler won in 1992.

Adapted with permission from an the original UW News article printed 10 August 2007, http://www.news.wisc.edu/13994 Photograph courtesy of Paul Hanson.

Trout Lake Station Housing Expansion

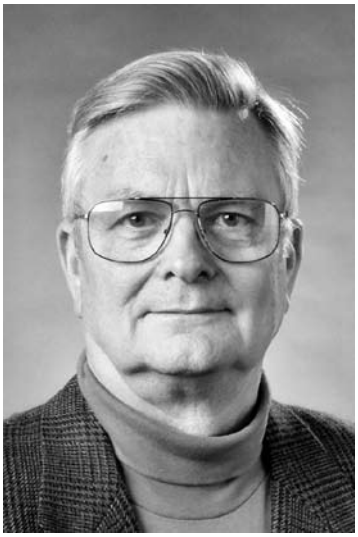
By Tim Kratz

The Trout Lake Station recently received funding from the National Science Foundation and the College of Letters and Science to build a four-season, four bedroom residence cabin. When completed, the cabin will increase the housing capacity for students and visiting scientists by 20% (to 48 beds) and help alleviate overcrowded conditions. The new cabin will be built on a bluff overlooking Trout Lake, just east of the main laboratory building.

The additional housing will make it much more convenient for faculty to make short-term visits to the station, allowing for more time to develop new research ideas and mentor students working on existing projects.

We hope to break ground this fall with completion scheduled for spring or early summer 2008. The new residence will be named "Frost House," in honor of Thomas M. Frost who was the director of Trout Lake from 1981 until his premature death in 2000.

Intergovernmental Panel on Climate Change Wins Nobel Peace Prize



As a contributer to the United Nations Intergovernmental Panel on Climate Change (IPCC) in both 1995 and 2001, John Magnuson is delighted to see the Panel share the 2007 Nobel Peace Prize with Vice-President Al Gore.

John was a lead author of chapters focusing on the impacts of climate change on freshwater ecosystems. He recalls that the 1995 report had reached near-final stages before reviewers vigorously pointed out that inland water ecology had not been addressed. That deficiency resulted in John leading a group of lake and stream ecologists who joined the working group focusing on impacts. This group led a crash effort resulting in a chapter being added to the 1995 report entitled "Hydrology and Aquatic Ecology." Other lead authors included Patrick Mulholland, Stuart Fisher and Diane McKnight. Contributing authors included our Shelley Arnott during her years as a student here. John Magnuson added the lake and stream ecology chapter entitled "Ecosystems and their goods and services" to the 2001 report. This chapter included much of our analyses of lake ice time series.

Congratulations to all the above, and to the cast of several thousand scientists who contributed to the IPCC.

Gerald Chipman - A Life by the Lakes

by John Magnuson

Gerry Chipman (December 1928 – February 2007) was a most valued colleague at Limnology over 30 years. He joined the Laboratory of Limnology in 1962 as a Research Assistant with Dr. Hasler and retired in 1992 as Laboratory Manager III at the Center for Limnology. He participated in the transitions when Dr. Hasler retired and the growth of our program as we became a free-standing center in the College of Letters & Science.

We depended on Gerry for the many things he did so well. For 30 years he designed electronic equipment for tracking salmon and measuring temperature preference of fishes and sensing subsurface temperature and light levels, negotiated with Planning and Construction, and reviewed construction designs. He made certain along with Walt Haag that the housing and facilities at Trout Lake were well built. He bailed out students in trouble on the road, and ensured that our buildings remained well maintained. He made many contributions that newcomers now take for granted. Gerry was a role model as a staff member and a loyal friend.

Gerald Chipman, circa 1988

Gerry was a good and dependable friend to many of us and we will miss him. Our sympathies go out to his family. He is survived by his wife Eleanor, two daughters Carol (Hans) Borcherding, and Connie, and two grandchildren, Kendra and Kurt Borcherding.

Center For Limnology online
http://limnology.wisc.edu/

Update on the GLEON Network

By Tim Kratz

Scientists at the Center for Limnology have provided leadership in the emerging Global Lake Ecological Observatory Network (GLEON - http://www.gleon.org/). GLEON is an international, grassroots network of limnologists, information technology experts, and engineers who have a common goal of building a scalable, persistent network of lake ecology observatories. Data from these observatories will allow us to better understand key processes such as the effects of climate and land use change on lake function, the role of episodic events such as typhoons and storms in resetting lake dynamics, and carbon cycling within lakes. The observatories will consist of instrumented platforms on lakes and reservoirs around the world capable of sensing key limnological variables and moving the data in near-real time to web-accessible databases. A common web portal will allow easy access to data by researchers and the public. A series of web services supported by this portal will allow computation of metrics based on the high frequency data. Such metrics would include estimates of rates of important processes such as gross primary production and respiration.

The focus to date on the technology of sensor networks has caused data gathering capacity to leap ahead of the models and questions required to exploit these data. Ecological research as a paradigm can be visualized as the inextricable links between observations, models, and questions (Figure 1). When any one node in the paradigm is pushed to a new time or space domain, the other two must follow. Sensor networks have pushed observations to a new domain in which high-frequency data are collected over extended spatial extents, requiring us to explore new ways of modeling ecosystems and challenging us to identify the most compelling scientific questions given these new data.

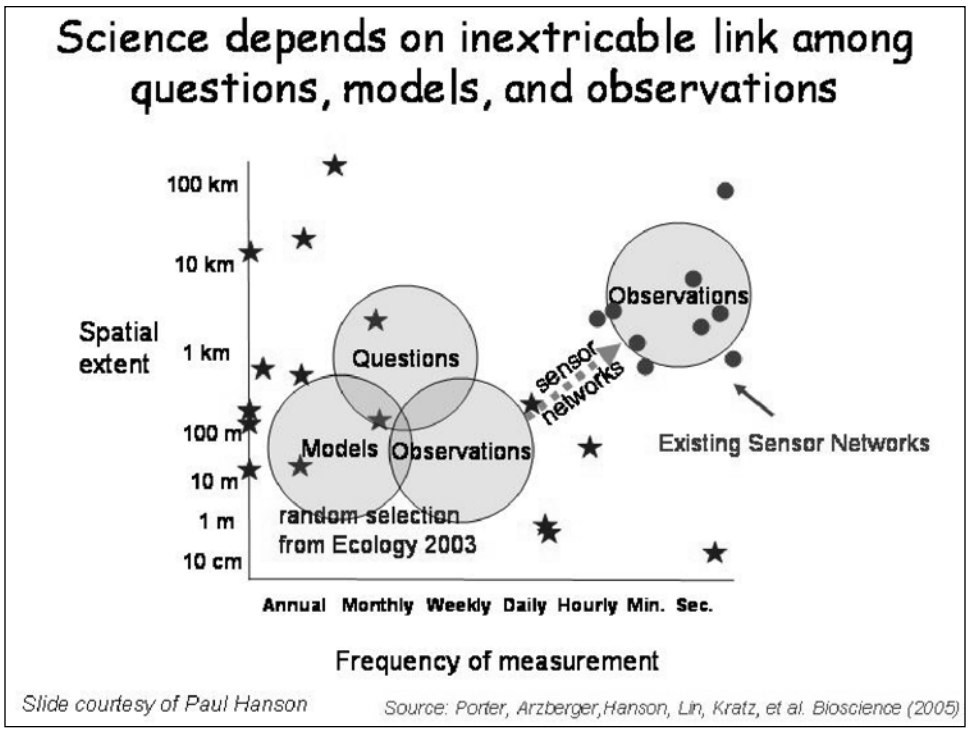


Figure 1: The relationship between spatial extent and measurement frequency in ecological field studies (after Porter et al. 2005).

To facilitate this development, we need to improve ecological discussion and transfer of ideas among ecologists and between ecologists and information technology experts. An example of observations outstripping models and questions is the documentation of nighttime increases in dissolved oxygen concentration observed in lakes throughout the GLEON network (Figure 2). This phenomenon is currently unexplained, but is likely caused by either horizontal or vertical movement of higher oxygen concentration water past the sensor at night. This example of discovery science shows promise that sensor networks will uncover previously unobserved phenomena.

GLEON also plays an important role within the ecological community in confronting challenges that traditionally have been barriers to network-level science. A few examples include agreements on policy for the use of data and acknowledgement of contributions, the development of standards for describing data and metadata, embracing a diversity of ideas and approaches to conducting science. Advancements in community wide practices that facilitate data sharing and exchange of ideas will enable a new level of network science.

The CFL is providing leadership in GLEON. Tim Kratz is chair and Paul Hanson is a member of the GLEON Steering Committee, while Barbara Benson, Dave Balsiger, Tim Meinke, and Luke Winslow are also active in the network. The GLEON network has members in Argentina, Australia, Brazil, Canada, China, Finland, Israel, Japan, New Zealand, South Korea, Sweden, Taiwan, the United Kingdom, and the US (Figure 3). The CFL operates six instrumented buoys on lakes near the Trout Lake Station and on Lake Mendota.

GLEON is supported by awards from the National Science Foundation, the Gordon and Betty Moore Foundation, and individual awards to several of the participating non-UW sites.

Acknowlegements: Paul Hanson, Jeff Maxted

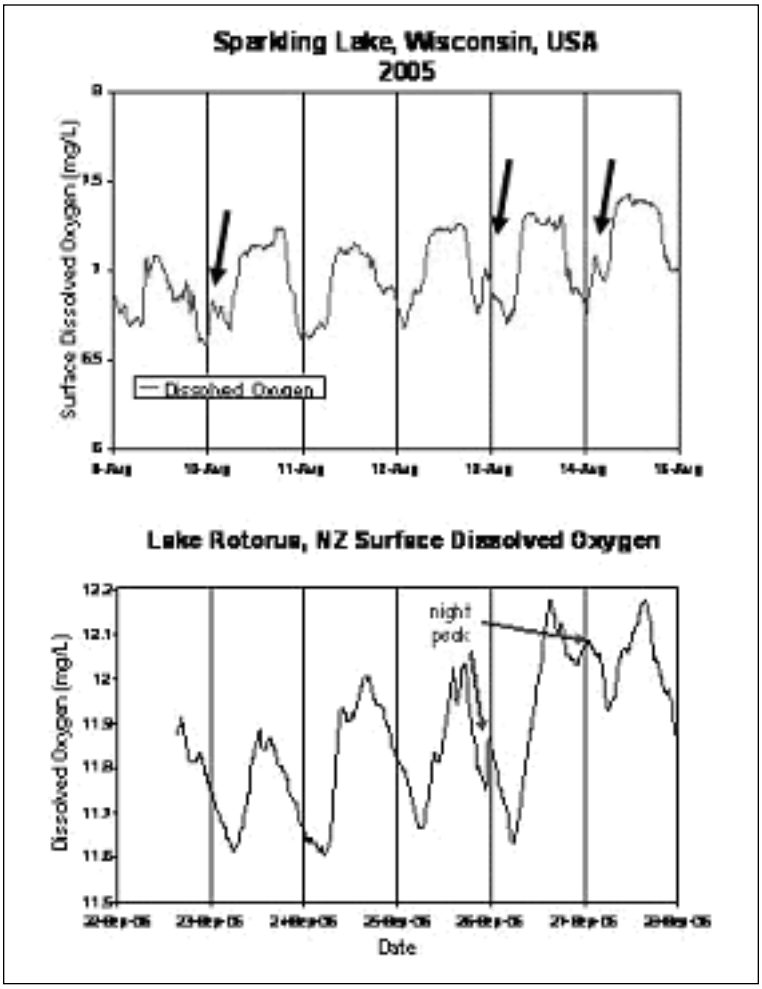


Figure 2: Common responses of dissolved oxygen in disparate GLEON lakes

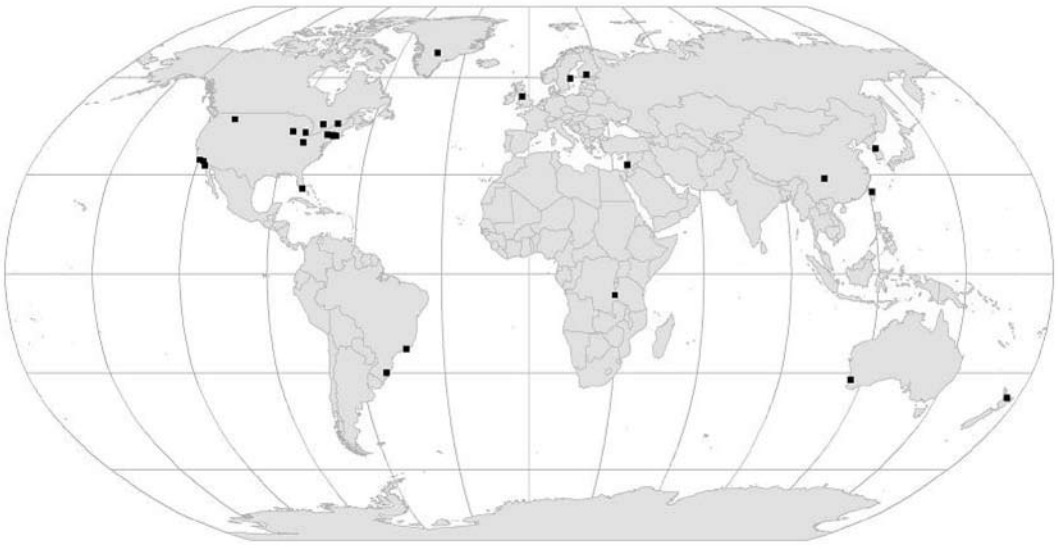


Figure 3: GLEON Participants and sites around the world

Faculty and Staff Awards

Jake Vander Zanden not only achieved tenure in 2007, but received the newly created Philip Certain Distinguised Faculty Award, to recognize outstanding newly tenured faculty. Our heart-felt congratulations to Jake--we look forward to many more achievements in the future.

Stephen Carpenter received the Naumann-Thienemann medal at the triennial meeting of the International Society of Limnology on 21 August, 2007. Please see the article on page 4.

Dean Gary Sandefur presents Mike Pecore with the Letters and Science Classified Staff Excellence Award.

Mike Pecore (Facilities Technician, Trout Lake Station) received the 2006 College of Letters and Science Classified Staff Excellence Award. The Center for Limnology is proud that Mike's long-standing commitment to excellence and his dedication to the mission of the Center have been recognized by the greater UW community.

Dick Lathrop (Wisconsin Department of Natural Resources and Center for Limnology) was honored by the Yahara Lakes Association with their 2007 Scientist of the Year award in recognition "... for his energy, intelligence, curiosity and research, all of which have served to inform the community regarding the state of the Yahara lakes and have helped other scientists and public officials to better manage the lakes." The members of the Center join them in these sentiments!

Student Awards

UW Sea Grant selected **Jeffrey Watters** (Limnology and Marine Sciences, Kitchell) as Wisconsin's 2007 Dean John A Knauss Marine Policy Fellow. This one-year fellowship places highly qualified graduate students in positions within the legislative and executive branches of government located in the Washington, DC area. Jeff traveled to Washington, DC, to work in the office of U.S. Senator Maria Cantwell of Washington. Watters will be busy assisting the senator and her staff with several pieces of legislation involving oil spills and marine-related impacts of climate change and establishing a national ocean observing system.

Olaf Jensen received a Department of Zoology John Jefferson Davis Travel Award for 2007.

Anna Grant Birge Awards were granted to **Eric Booth** (Civil and Environmental Engineering, Loheide), **Jennifer Schmitz** (Nelson Institute for Environmental Studies, Hotchkiss), **Matt Fuller** (Limnology and Marine Science, Pekarsky), **Matt Kornis** (Limnology and Marine Science, Vander Zanden), **Nick Preston**, (Limnology and Marine Science, Carpenter), **Chris Solomon** (Limnology and Marine Science, Vander Zanden), **Olaf Jensen** (Limnology and Marine Science, Kitchell), **Stuart Jones** (Limnology and Marine Science, McMahon), **Adam Hoffman** (Limnology and Marine Science, Armstrong), **Yi-Fang Hsieh** (Civil and Enviromental Engineering, Wu), and **Natalie Huisman** (Biological Systems Engineering, Karthikeyan).

The 2007 Winners of the Jean B. and E.T. Juday Awards were undergraduate students **Beth Pfatenhauer**, **Lindsay Schaffner**, and **Ryan Kroiss**. Beth Pfotenhauer worked with Trina McMahon and Stuart Jones on characterizing the influence immigrating bacteria have on changes in bacterial populations in the recipient aquatic ecosystems. Lindsay

Schaffner worked with Jake Vander Zanden and Katrina Butkas on the influence of landscape position and fish predation on benthic invertibrate production. Ryan Kroiss worked with Tim Kratz on a hypothesis testing the reason for night-time increases in surface water dissolved oxygen concentrations.

Research Experiences for Undergraduate awards were given to **John Walters**, **Rachel Penczykowski**, **Amy Kolpin**, and **James Tracey** for the 2007 field season.

Graduations, Migrations, and New Faces

Justin Fox (MS Limnology and Marine Science, Kitchell) has successfully defended his thesis entitled "Quantification of sea lamprey damage to fishes of Lake Superior." Starting in January 2008, Justin will be managing the laboratory of Dr. Jonathan Moore (a new faculty member at the University of California - Santa Cruz) and the project examining the role of Pacific salmon and the factors that limit their persistence in California coastal ecosystems. Justin will begin working on his doctoral degree with Dr. Moore in the fall of 2008.

New Post Doctoral Staff

Daniel Collins will be collaborating with Dr. Stephen Carpenter conducting modeling studies of surface hydrology and phosphorus transport in the Yahara River watershed including imputs of water and phosphorus to Lake Mendota and other Madison-area lakes.

Todd Miller will be collaborating with Dr. Katherine McMahon providing leadership in experimental design, data analysis/interpretation and manuscript preparation for the Microbial Observatory. This will include supervising graduate and undergraduate students and proposal preparation for additional funding to support ongoing research projects.

Ishi Buffam will be collaborating with Dr. Monica Turner and Dr. Stephen Carpenter focusing on modeling transfers and transformations of carbon between forests and lakes in northern Wisconsin, including leading simulation experiments designed to explore how succession, land use and climate affect the reciprocal exchanges of carbon.

Scott Higgins will be working with Jake Vander Zanden while here on a postdoctoral fellowship from the Natural Sciences and Engineering Research Council of Canada.

In Memory of...

Gerald Chipman, see article on page 5.

John Carl Neess, Emeritus Professor of Zoology, passed away on Friday, Oct. 26, 2007.

Support the Center for Limnology

Private support from alumni and friends of the University of Wisconsin-Madison plays a crucial role in helping the University achieve continued excellence in teaching, research, and public service. Gifts to the Center for Limnology provide important support for graduate and undergraduate students, visiting scholars, faculty research and facilities development. If you would like to make a donation to the Center, please contact Anne Murphy-Lom at 608-262-3304, or via e-mail at ammurphylom@wisc.edu. You may also find more information about the Center for Limnology endowment programs, including how to make donations online, by visiting our web site, http://limnology.wisc.edu and clicking on the "Friends and Support" link.

If you would like information on making a gift of securities or including the Center for Limnology in your estate plans, please contact Christopher Glueck, University of Wisconsin Foundation, 608-265-9952, or via e-mail at chris.glueck@uwfoundation.wisc.edu.

Limnology News

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