# Douglas Lake Report

A Special Report to Alumni & Friends of the University of Michigan Biological Station

Fall 2015

www.lsa.umich.edu/umbs/

## GUIDELINES CLARIFY UMBS LAND USE EXPECTATIONS

by Kyle Anderson

The Bug Camp property serves a remarkable diversity of purposes. Many researchers rely on its protected habitats to conduct long-term studies on natural processes. Others use it as a site for large-scale experimental manipulations. Classes use the property as convenient, diverse, and well-known grounds for field trips and projects, and local residents rely on the scenic and recreational values provided by the station's woods and trails. Physical resources extracted from UMBS over the years include fish and game, specimens, road fill, and timber.

Managing the UMBS landscape to provide for these many uses is necessarily a balancing act. Yet, the station has long been without any formal policies for the governance and stewardship of its land.

Over the past year, we have created a set of Property Use and Management Guidelines based on a foundation of community comments, administrative vision, and a property resource inventory. The guidelines are a simple system of rules, goals, and decision-making

*see **Guidelines** p. 7*

## New Research: Global Warming and Herbivory

Plants don't have it easy. For one thing, animals – insects, mammals – eat them. And for every physical or chemical mechanism plants develop to keep from being eaten, herbivores evolve an adaptation to bypass this defense. In the past century, plants have encountered an additional challenge: invasive species. Into plants' existing battlefields come invading armies of competing vegetation and new herbivores transplanted from around the globe.

Kileigh Browning Welshofer (left) preparing research plots at UMBS.

With the earth's average temperature expected to increase by 4 degrees F in the next 100 years, plants may face a third and confounding hurdle. Warming may give introduced species an advantage over native plants. Researcher Kileigh Browning Welshofer is exploring the possibility and dimensions of this third threat with her two-year, two-site study.

This past summer, Welshofer marked off 24 study plots on the station's mowed, UV-monitoring

*see **Welshofer** p. 4*

UMBS 2016 calendar

SKI WEEKEND
*February 5-7*

WINTER RESEARCH MEETING
*February 19-20*

SPRING term
*May 22 - June 18*

SPRING II term
*June 5 - June 18*

SUMMER term
*June 25 - Aug. 20*

FABS Weekend
*September 16-18*

# Director's Notes

Knute Nadelhoffer
UMBS Director

A year ago at this time, I told you about the extensive visioning process the station undertook. I can now share the news that we are a significant step closer to realizing a major part of that vision. I received word this week that the Biological Station was awarded a "Transforming Learning for the Third Century" grant from the University of Michigan.

**The award, totaling almost $2M** from the Office of the Provost and the LSA Dean's Office over the coming five years, will begin a transformation to engage a wide range of disciplines in conducting field-based education and research on environmental problems at the Biological Station. We anticipate partnering, not only with more U-M natural science departments, but also with departments, schools and colleges focused on social sciences, the arts, policy, design, engineering, and environmental law.

"We will focus on engaging a much more diverse student body in project-based environmental field research."

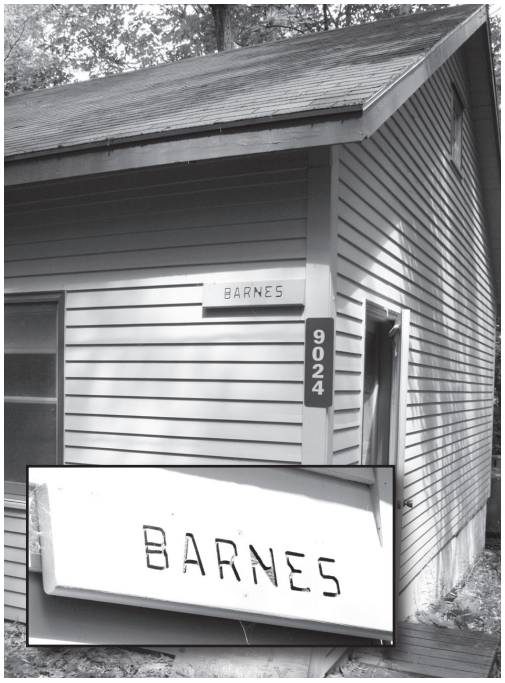
Importantly, we will focus on engaging a much more diverse student body in project-based environmental field research with an overall goal of developing the next generation of creative and skilled problem solvers needed for finding solutions to emerging and critical environmental problems. We have worked with our advisory board to set a goal of raising at least $500K in additional scholarship support ($100K per year) to ensure that all students have their financial needs met.

Our core model will involve a university-wide call for proposals to develop new courses with one component held on the Ann Arbor campus and a linked field component at the Biological Station. Students will engage in background reading, discussions, planning, and theoretical studies on main campus, followed by a field component involving data collection, information gathering, analysis, and synthesis at UMBS.

These courses will focus on difficult environmental problems and will engage in cross-disciplinary forums to find solutions, both at UMBS and back on our Ann Arbor campus. Most new courses will involve a Winter Term (January-April) component, with a follow-on component in May to mid-June (2 to 6 weeks). This is a time when the Biological Station is well below its maximum housing capacity with much unused laboratory and teaching space. Other models are also possible. For example, faculty could offer Fall or Winter Semester 16-credit, multidisciplinary residential courses, or courses that begin in the field during summer, and move to Ann Arbor in fall for synthesis activities.

The efforts of many were critical to the success of our proposal, including many U-M faculty and members of the LSA Dean's Office staff, the UMBS staff, the Center for Research on Learning and Teaching (CRLT), our executive committee and our advisory board. Please join me in thanking them all.

I look forward to working with you, as members of our broader Biological Station community, in moving ahead to dramatically expand our engaging a larger and more diverse group of students in our field-based programs and to magnify our impacts locally and globally.




A new sign (inset, above) marks the unofficial renaming of the Forestry Lab in a fitting tribute to one if its most beloved occupants.

## OSBORN PRESERVE'S NEW CARETAKER

For a self-described transplant to the Upper Peninsula, Vicki Miller lives like a native Yooper. The Station's new Chase S. Osborn Preserve's caretaker has lived on Sugar Island for the past 15 years. She has hiked Grand Island, spent ten days kayaking around Isle Royal, and has even "commuted" to the Osborn Preserve by kayak from her home.

Miller's move north of the bridge was inspired by childhood trips to Iron Mountain. "We visited my aunt there every summer. The U.P. is where I always wanted to be," she says. This new position is another wish fulfilled. "I never would have imagined in my wildest dreams that I could say I was the caretaker there."

The caretaker's most obvious responsibility is preparing the preserve for use by UMBS researchers and classes. Miller will be the person who sweeps out the mouse nests and lays in firewood at the Gander. She will also clear the trails and manage the grounds. "I want it to look

*see* ***Caretaker*** *p. 4*

## Administration Building Foundation Dried and Fortified

A long-standing runoff problem with the Dining Hall/Administration Building was addressed this fall. For years, rain and snowmelt have run off the building's southwest roof valley into a dugout area that used to provide access to the original, basement kitchen. When the kitchen was moved to the second story as part of a 1976 renovation, the vacated space was dubbed "the dungeon" and used for storage. Adjacent to the dungeon were the back walls of the administrative offices. These seeped water from snowmelt and heavy rains.

Now the former windows and doors have been bricked in (top photo, right), and engineered drainage installed. Gone are the spooky external stairs to the dungeon and views out the Associate Director's and Office Manager's office windows. But gone, too, are the damp walls and floors. Native grasses and wildflowers have been planted along the reconstructed west Dining Hall entrance.


# ALUMNA BEQUEST WILL FUND NEED-BASED SCHOLARSHIPS

A woman who changed the face of health education at the University of Pennsylvania and across the U.S. took steps to look out for future UMBS students as well. Dr. Elaine Pierson-Mastroianni, who died on October 3 of this year, left a bequest gift to create a need-based scholarship fund for undergraduates who are studying at the Station.

Dr. Elaine Pierson-Mastroianni

Pierson-Mastroianni first came to UMBS as an undergrad in 1945. She returned for graduate-level classes in 1948 and 1949. After that, a career in medicine took her east (see below). We are grateful for Dr. Pierson-Mastroianni's decision to include the Station in her estate plan. Gifts in her honor can be sent directly to our address, with either a note directing your contribution to the Dr. Elaine C. Pierson-Mastroianni Scholarship Fund, or by including the fund's six-digit code, 799175, in the check memo line.

Excerpt from an obituary provided by the Mastroianni family:

*Elaine Catherine Pierson-Mastroianni, author of Sex Is Never An Emergency, a widely circulated sexual health manual published in 1970 and aimed at college students . . . just a few years before Our Bodies Ourselves, died peacefully at her home in Bryn Mawr.*

*She graduated from East Tawas High School and received a full tuition scholarship to attend the University of Michigan. At UM she would receive a BS in Zoology and was one of seven women in a class of 90 to be admitted to medical school. She . . . received her MD in 1956.*

*A rare female medical doctor in those days, Dr. Pierson completed an internship at Cleveland's Case Western Reserve. In the mid-1960s the family moved to Philadelphia where Dr. Pierson practiced medicine as a gynecologist in Student Health at the University of Pennsylvania and began to write articles for the student newspaper. Her articles would catch the attention of Bart Lippincott, president of Philadelphia's Lippincott Publishing house. The result was Sex is Never an Emergency, a title that would sell more than 200,000 copies and three editions.*

*Dr. Pierson-Mastroianni is survived by sons John and Robert, daughter Anna; seven grandchildren; and her brother.*

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***Caretaker**, from p. 3*

like a kept preserve, yet keep the area as natural as can be," she says.

Long-term plans aside, Miller's first task has been preparing her housing. The position comes with a cottage on site. But the building has been empty for over a year. Some of its heating and plumbing components needed repair, which is almost completed. Miller is optimistic that she can move in this month.

Once she's living on the property, Miller looks forward to exploring its nooks and crannies. She says her kayak trip into Duck Lake and Sweet Gale Lake (actually connected inlets from the Saint Mary's river in to the UMBS property) was great. "I just enjoy being outdoors."

The caretaker position is part-time. During the academic year Miller works for the Sault Ste. Marie Area Public Schools. She has two children and two grandchildren.

# Scholarships change

*The Biological Station awarded over $170,000 i its 2015 spring and summer students. The fact have to be repaid is a huge deal for many stud foregoing summer employment to take classes. at UMBS – 63% this spring and 79% this summ amount of aid from the Station. Here is a look*

**Liz Gonzalez** is a junior at U-M. She chose an Ecology and Evolutionary Biology (EEB) major as preparation for a career in medicine. Then the Biological Station happened: "I was trying to figure out if I'd stay pre-med or not," she says. "At the Biostation, I realized this is what I want to do." She is now exploring graduate school options in ecology, public health and public policy. The intersection of social justice issues with environmental issues especially appeals to her.

Greg Boehm (photo by Nikki Diroff)

Like many of students, Liz was first attracted to UMBS because it would let her take some required classes for her major. She

***Welshofer**, from front page*

forest clearing (maintained by UMBS as part of a federal program). Half her plots are surrounded by 3'x3' polycarbonate walls and topped with polycarbonate domes that are open across the top. Passive solar heat warms these chambers above ambient air temperatures. The remaining plots have no chambers and experience ambient temperature conditions as a result. The two plot types create environments with current and simulated future temperatures.

The plots permit or exclude various herbivores. Some are surrounded by fencing dug 20 cm. deep to keep out small mammals. Others are treated with insecticide in attempt to ex-

# lives

*in scholarship aid to that this aid does not ents who are already The majority of students her – received some at two of them.*

Liz Gonzalez (front, with net) during a lab for her Natural History and Evolution class

had a friend who had gone the year before, so she "knew it was a great experience. I was even excited about the bugs and the bad things!" Once she arrived on Douglas Lake, she says she fell in love with northern Michigan. "I always bring it up in conversation. I'm like, 'This one time at the Bio-station…' I think about it every single day."

**Greg Boehm** is a U-M senior in Program in the Environment (PitE). He, too, signed up for a session at the Biological Station as a way to fulfill a graduation requirement. In his case it was PitE's practical experience requirement.

For the Santa Monica native, time spent in Northern Michigan gave him a new perspective on the state's natural beauty. But don't expect him to become a Great Lakes convert. "I will always prefer the Pacific Ocean," he says, with mock condesension, "but only because you can *actually* surf it. I don't pay attention to this surfing lake Michigan nonsense."

Boehm says he was also surprised by how much hands-on experience he got in his classes (Limnology and General Ecology), including doing two research projects. Still, his favorite memory from the summer was "lying in a hammock under the forest canopy."

clude insect herbivory. The entire array has deer fencing to keep out larger animals that could access the ambient plots.

Welshofer repeated this setup at Michigan State University's Kellogg Biological Station (KBS), in a former agricultural field. By gathering data in sites with differing histories and plant communities, "It will give me the opportunity to examine general trends across species," she says. She notes that the only species to overlap between the two sites is spotted knapweed, "which will provide interesting results on its response to warming and herbivory in different environments."

Welshofer will be collecting several types of data. First, she'll photograph the plants over time. She can feed these pictures into a program that will analyze what percentage of the plant has been eaten. She is also collecting the insects in each plot to quantify which types might prefer the warmer temperatures. Finally, she is tracking changes in plant and insect species composition within the plots.

Welshofer hypothesizes that native plants will be at a double disadvantage as the climate warms. She expects her plot comparisons to show that invasive plant species tolerate the elevated temperatures better than native plants. Moreover, she expects herbivores to prefer native plants over invasives.

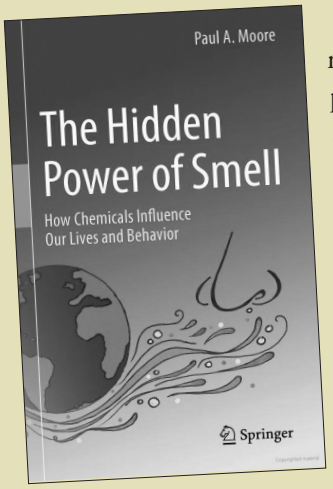
Welshofer is a M.S. student at Michigan State University.

# New Faculty Books

by Mackenzie Myers and Alicia Farmer

*The Biological Station inspires in many ways. Just as students absorb their professors' enthusiasm, creativity and knowledge, faculty, too, are inspired by the science, surroundings and community at Bug Camp. This is apparent in each of these late summer/early fall publications, all available from their publishers.*

**PAUL A. MOORE**, *The Hidden Power of Smell: How Chemicals Influence Our Lives and Behavior*

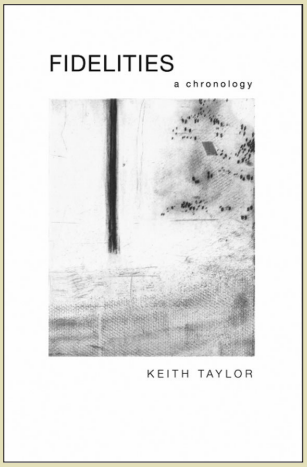



For many humans, a certain perfume or food aroma can trigger a tide of memories, sensations, and sentimentalities. But for many other animals, sense of smell means much more. It means locating food, navigating, sensing danger, or finding a mate. Paul Moore's new book, *The Hidden Power of Smell* (Springer, 2016), explores how sense of smell actually affects humans in more ways than we think, and why there should be further study of it.

Moore, who runs the Laboratory of Sensory Ecology at Bowling Green State University, teaches limnology at UMBS during the summer. His book is a direct result of three decades spent working in the chemical senses, Moore says that even the olfactory environment of UMBS has helped shape this text.

"The smell of cabins or the forest after a rain allows me to immerse myself in the odorous world," Moore says. "Walks around camp, through the Gorge, or biking on trails allows my mind to wander about looking for stories. Interactions with students and faculty appear in the book. Without the stimulus of camp and its people, the book would have never been written."

**KEITH TAYLOR**, *Fidelities: a chronology*




Right from the start, Keith Taylor's most recent book of poetry, *Fidelities* (Alice Green & Co., 2015), plants readers in northern Michigan. Taylor begins on Drummond Island, but weaves through places near and far—the Kingston Plains, Greece, a fire near Newberry. Like most of his work, *Fidelities* tends to occupy a threshold between worlds: the familiar and unfamiliar, the past and present, the anthropocentric and environmental.

Taylor, who teaches the Great Lakes Literature and Environmental Writing course at UMBS, says that many of his poems are based upon things he's learned while in camp. From dinner conversations with scientists, to smaller – but impactful – moments he's experienced there, the Bio Station has played an important part in his work.

"I know I wouldn't have written those poems, and several others over different books," he says, "if I hadn't been at the Station."

KINGSTON PLAINS: THE GHOST FOREST

Grey stumps of white pines were almost charred
into immortality by a fire so hot it burned off all the
organic matter in the top several inches of soil. Little
but lichen grew here for 130 years,

and now,
finally,
a clump of small,
ripe
blueberries.

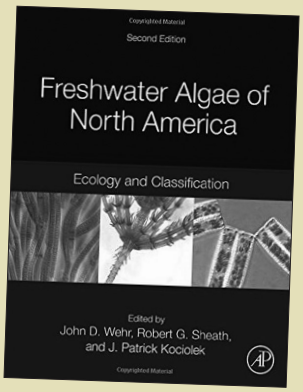
from *Fidelities: A Chronology*
*bu Keith Taylor*

**J. PATRICK KOCIOLEK,** *Freshwater Algae of North America, Second Edition*

Algae are numerous: estimates range between 30,000 and 1 million species with conservative estimates landing around 72,000. They are controversial: even within the field, phycologists disagree about group definitions. And they are diverse: they run the gamut from microscopic diatoms to 100-foot tall kelp. So even if one limits one's scope to the freshwater habitats, the North American continent and the genus level of description, compiling an algae reference book is no small task.

Nonetheless, this is what Pat Kociolek and two co-editors did with the second edition of *Freshwater Algae of North America* (Academic Press, 2015). Aside from several short chapters introducing the subject and a few concluding chapters about algal blooms and ecological assessments, the bulk of this 900-page volume describes algae: where to find them, how to collect them, and how to prepare and identify them. Kociolek, who teaches Algae of Freshwater Ecosystems at the station, says it took about two full years, including two summers at UMBS, to bring this updated edition to life.

Another challenge with algae? New species are being discovered all the time. Kociolek says "In the diatoms section alone, we treat about 30% more taxa recorded from North America – not even some tropical place! – in the 10 years since the first edition." Beyond expanding the number of organisms, the new edition includes beautiful color images, and much improved microscope photos, as well as fresh illustrations.




***Guidelines**, from front page*

frameworks that will guide management of the property to be consistent with station objectives, while allowing for administrative discretion.

As a user of the UMBS property, here is what you need to know:

- UMBS is taking a stand against eco-trash—please clean up after your work! Abandoning flags, stakes, and other equipment is littering and can present real confusions to those who come after. Any long-term site marking must be approved by the UMBS administration.
- If you're planning a project which is "disruptive" to UMBS habitats (including collections, manipulations, and disturbances), consult with the station administration to ensure your work is sited appropriately. While all of the property is available to research and teaching use, it is preferred that disruptive projects are excluded from areas containing sensitive habitats or valuable research histories.
- Any "disruptive" use of the property (not including collection of solitary specimens) needs prior permission from the UMBS administration. Project locations, methods, and data need to be reported to the information manager.
- If you propose to disturb areas larger than a few square meters or harvest more than a negligible fraction of a population's individuals, your proposal may require a period for community comment and approval by vote of the site use committee. Communicate with station staff as far in advance as possible to avoid delays.

In addition to new use expectations, the station is developing plans for active management of select habitats. Most prominent among these will be the thinning of selected pine plantations in the forms of both diversity-promoting ecological realignments and merchantable harvests. Plantation harvest activities will likely begin in 2016. Other possible management efforts include invasive species suppression, fire fuels treatment, and the creation of small demonstration habitats.

UMBS is receptive to suggestions of how landscape manipulations may benefit research and teaching. If you are interested in pairing your work with the station's active management, please let us know!

To see the full text of our new management guidelines, including specific use expectations, planned habitat stewardship, and infrastructure upgrades, go to the "Conduct Research at UMBS" section of our "Research and Data" website tab, or type "Property Use and Management Guidelines" into the green search box in the upper right corner of our website, lsa.umich.edu/umbs/. Additional supporting resources in the forms of maps and data will be forthcoming.

*Kyle Anderson worked as a research assistant for the Station in 2014-2015. He is presently learning construction and enjoying life in McCall, Idaho.*

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# FABS is back!

Friends and Alumni of the Biological Station (FABS!), you are invited to return to the shores of Douglas Lake for a long weekend, **September 16-18, 2016**.

We plan to follow the format of our previous FABS gatherings in 2011 and 2013: social and light educational opportunities, optional field trips, and lots of time for relaxing. We will post details and registration information on our website beginning in spring.

Registration will run June 1 - August 5, 2016.


How many different UMBS shirts can you spot among the 2013 FABS participants?