

The Berry Biodiversity Conservation Center

A rare event for biologists occurred on our campus in January when the Robert and Carol Berry Biodiversity Conservation Center opened. With a brand new building, made possible by a \$10 million gift from the Berry's and matching funds from the state, UW has greatly strengthened its capacity for research, teaching and outreach in conservation biology. **Greg Brown**, head of our department, was appointed as the first director and was heavily involved in the design and opening of the new facility.

Bob and Carol Berry are long-time residents of Wyoming, living west of Sheridan, and they have contributed to conservation efforts in numerous ways. Greg Brown says, "We cannot thank Bob and Carol enough for their confidence in UW and for their extraordinary generosity in helping us improve our programs in teaching, research and service. They have elevated the profile of biodiversity on campus; our challenge is to now do the same elsewhere, always us-

ing the most accurate information available."

Having such a center on our campus is a logical development, as there are numerous faculty members in various departments with pertinent expertise—not just botany and zoology. Recent rounds of academic planning have identified natural resources as an area in which UW should excel.

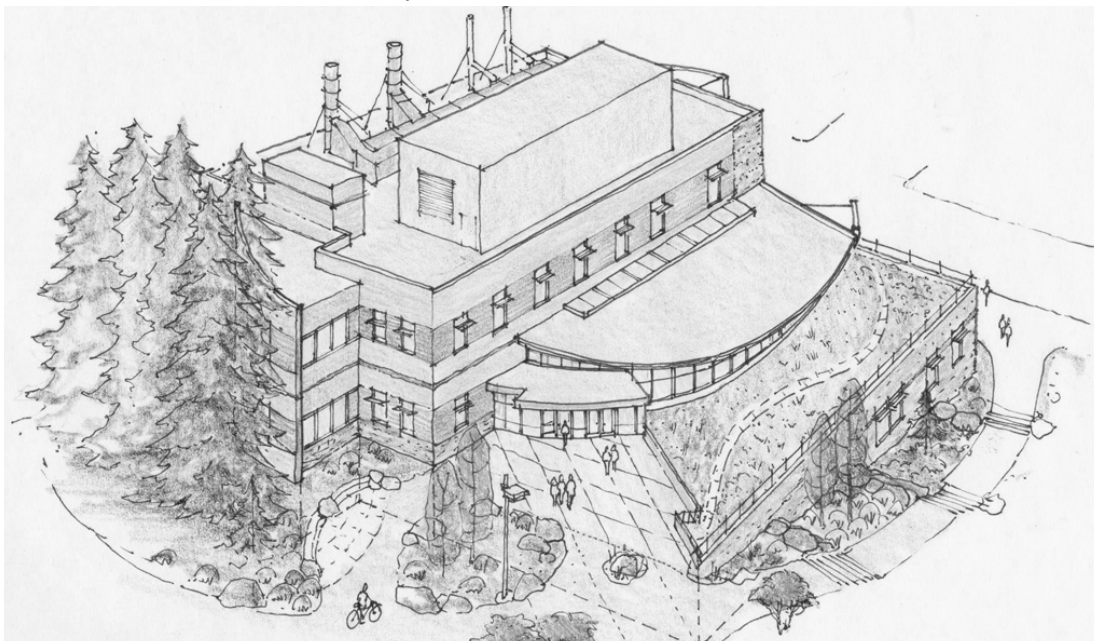
One 3-story building could not house all biodiversity programs on campus, but it has brought together an interesting mix of experts that some of our readers may not know about. It's logical that the Wyoming Natural Diversity Database (WYNDD) would be located there, with its 12 full-time staff members. A part of the university since 1998, its mission is to maintain an accurate, comprehensive database on the distribution and ecology of rare plants, rare animals, and important plant communities in Wyoming. Such information for specific

areas is available upon request and is widely used by land managers.

In addition, the Berry Center now houses three programs that illustrate the modern tools used in modern conservation biology—the Nucleic Acid Exploration Facility, the Macromolecular Core Equipment Facility, and the Stable Isotope Facility. Also, there are offices and laboratories for 22 graduate students, four faculty members, and eight staff members and visiting scientists, plus several conference rooms, a lecture hall, and badly needed space for the vertebrate collection of the Zoology Department.

The Rocky Mountain Herbarium continues to be a highly valued resource for the mission of the Center, but the building was not large enough to accommodate this collection—with over a million specimens. Along with the Solheim Mycological Herbarium,

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Bird's-eye view of the Robert and Carol Berry Biodiversity Conservation Center, one of the most energy efficient buildings at UW. Designed by Malone Belton Abel P.C., Sheridan, Wyoming.



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Berry Center (cont...)

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the RM continues to be located on the top floor of the Aven Nelson Building. The College of Agriculture and Natural Resources continues to house UW's Insect Museum.

Aside from fostering the interaction of various programs across campus, an important mission of the Berry Center is to help develop a higher level of appreciation for the native flora and fauna of the region, and the ecosystems on which they depend. There are plans for local and state-wide activities for adults and students of all ages. A novel part of this outreach program is the "green roof," which will be planted this spring and is intended to represent a patch of native prairie—using only plants that occur in the Laramie Basin. We'll let you know how that works out!

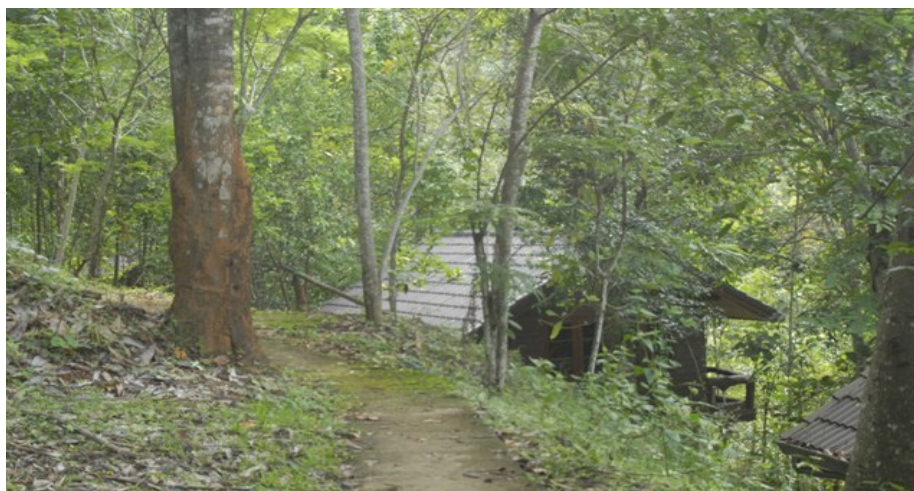
Next time you are on campus, be sure to visit the Berry Center, located a short distance to the north of the Botany Department on Lewis Street, between the Geology Building and the Western Research Center. Until then, check out the Center's website for more details (www.uwyo.edu/berrycenter).



Photo courtesy: University of Wyoming

Professor Greg Brown, speaks during the dedication ceremony of the Berry Biodiversity Center

Studying Fungal Biodiversity in Thailand



Mushroom Research Center near Chiang Mai, Thailand (above). Students from Thailand, China, Myanmar, Sri Lanka, Vietnam and the U.S. participated in a workshop on slime molds (below right) as part of the NSF sponsored Fungal Biodiversity of Northern Thailand Project in 2010.

Tropical forests are thought to be the terrestrial ecosystems characterized by the highest fungal biodiversity, but a major portion of this biodiversity has yet to be documented. Professor **Steve Miller**, along with co-PIs from the University of Arkansas and San Francisco State University, received funding from the National Science Foundation for a project entitled "*Studies of Fungal Biodiversity in Northern Thailand*."

The funding supports an international education program that provides the opportunity, during each of three summers, for four to five undergraduate and/or graduate students to spend a month conducting biodiversity studies of fungi associated with tropical forests in northern Thailand. The first of the three summer programs was carried out during mid-June to mid-July 2010, with two undergraduate and two graduate students who were selected from a large pool of applicants.

In Thailand, U.S. student participants interacted with graduate students from China, Sri Lanka, Laos and Thailand, and with scientists from China, Bryn Mar and Thailand. Intensive field work included trips to Doi Suthep steep mountain above a Buddhist Temple, and to dipterocarp, native pine, bamboo, and rhododendron forests on the way to the summit of Doi Inthanon, the highest mountain in Thailand. Accommodations and laboratory research were based out of the Mushroom Research Centre near



Chian Mai. As an end to the field and laboratory experiences, all students made presentations at Chiang Mai and Mae Fah Luang Universities.

The international aspects of the program represented an extraordinary educational experience for these students, since the interaction with their counterparts in Thailand involved sharing accommodations and conducting joint field work in northern Thailand. In the laboratory they worked together processing samples and preparing presentations.

Applications are currently being accepted for the second summer program, which will begin mid-June.



Circadian Rhythms in Plants

Professor **Cynthia Weinig** recently gave a talk to the Plant Genomics Program of the National Science Foundation about her research on the genetic basis for circadian rhythms, and the role circadian rhythms play in the adaptation of both plants and animals to variable environments. Circadian rhythms have a cycle of approximately 24 hours and can be influenced by environmental factors such as diurnal light and temperature changes.

People who travel are familiar with circadian rhythms that underlie our sense of jetlag when traversing several time zones. Jetlag arises from the fact that the circadian clock cannot be immediately reset to match local conditions. For plants, Cynthia's work has shown that variation in circadian rhythms plays a critical role in the expression of phenological traits, such as flowering time, as well as morphological traits.

Happily, this work has just been extended

for 5 yrs with a new \$5.5 million award. The work will be done in collaboration with botany professor **Brent Ewers** as well as researchers at Dartmouth College and the University of Wisconsin. The project will test the connection between circadian rhythms and drought resistance in plants. Several UW post-doctoral fellows, graduate students, and undergraduates will be associated with this research in the years ahead.

New Faculty

Tom Minckley was hired in 2008 as an assistant professor in our department. So far he has taught Conservation of Natural Resources, Ecology of the Past, and Biology as Culture. Tom received his BS degree in Ecology and Evolutionary Biology from the University of Arizona (1996) and an MA (1999) and PhD (2003) in Geography from the University of Oregon, where he specialized in biogeography.

His research focuses on arid and semi-arid ecosystems and how they have responded to climate change during the past 10,000 years,

Ramesh Sivanpillai received his Ph.D. in Forestry from Texas A&M University in 2002 and was hired initially as a research scientist by the Wyoming Geographical Information Science Center. Subsequently he was given a joint appointment with our department.

He works with remotely sensed data from satellite and airborne platforms for generating information about vegetation and how it changes with time and land management practices. He also is interested in the effect of measurement scale on the interpretation

of patterns, a central theme in landscape ecology. Ramesh has conducted research in the US, India, Mexico, Nicaragua, Kazakhstan, Uzbekistan and Russia. He teaches Remote Sensing for Agricultural Applications for our department and Environmental Issues in the Developing World for UW's School of Environment and Natural Resources. To learn more about Ramesh's research and teaching program, visit his web site at <http://www.uwyo.edu/botany/faculty/ramesh-sivanpillai.html>.

He also studies the effects of short-term disturbances such as floods and fires on these ecosystems. For the past six years Tom's primary study area has been the desert grasslands and fluvial wetlands along the US/Mexico border.

To learn more about Tom's research and teaching program, visit his Web site at <http://www.uwyo.edu/envvarlab/>.



Brianna Wright is from Wausau, Wisconsin and graduated from the University of Wisconsin-Stevens Point in 2005, with a B.S. in Biology, certification in secondary education, and minors in Conservation Biology and Resource Management. She completed her M.S. in our department in 2007, where she studied the dynamic nature of the introduced Canada thistle (*Cirsium arvense*) within the burned areas of Yellowstone National Park.

During her time as a graduate student, she completed the Program in College Teaching and discovered a passion for teaching and

learning in higher education. Brianna's position title is Academic Professional Lecturer and she is heavily involved with teaching the introductory life sciences courses. Her current research interests include discovering best teaching strategies in biology courses that can help students improve their reading and writing abilities.

To learn more about Brianna's research and teaching program, visit her Web site at <http://www.uwyo.edu/Botany/faculty/brianna-wright.html>.





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DEPARTMENT OF BOTANY



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Department of Botany, 3165
1000 E. University Ave.
University of Wyoming
Laramie, WY 82071

Phone: 1-307-766-2380
Fax: 1-307-766-2851
E-mail: gkbrown@uwyo.edu

<http://www.uwyo.edu/Botany/>

Copy editor: Dennis Knight

Professor Emeritus

Layout editor: Ramesh Sivanpillai

Associate Research Scientist

Old timer's perspective — Martha Christensen, Professor Emeritus

I was hired in 1962, after Dr. Bill Solheim heard me give a talk on *Mortierella vinacea*—a beautiful little fungus that lives and works in forest soils. Perhaps I had an edge over the other applicants because I played the viola; the Solheims and Northens liked classical music and apparently there were only three other violists in Laramie at the time! At the first orchestra rehearsal, I was seated in the first chair! Music at UW was fun for me during the next 30 years.

I was motivated to join the UW Botany faculty in part because of its fine reputation. **Henry Northen** was department head and had designed and taught all of the introductory botany courses. His national reputation, however, came from his textbook, *Introductory Plant Science*, which was used at colleges and universities all over the country. He and his wife Rebecca also collaborated in publishing several books about plants for the general public, including one titled *Ingenious Kingdom: The Remarkable World of Plants*. **Ted Porter** had taken over as curator of the now world-famous Rocky Mountain Herbarium and also had written a widely

used textbook, *The Taxonomy of Flowering Plants*.

The other senior professor at the time, **Bill Solheim**, was an internationally known mycologist and had played a prominent role in the Mycological Society of America. Bill also had served as department head, dean of the College of Arts and Sciences, and after he “retired” he became the head of UW’s large extension program in Afghanistan, where he and his wife Ronnie lived for several years.

When I inquired about opportunities for research at UW, Bill said “Keep in mind that this is a teaching position.” And indeed it was. In my first year I taught dendrology, plant morphology and general botany in addition to mycology. What a load! In retrospect though, I enjoyed learning along with the students, and the classes were small. Other faculty did much the same. Everyone taught a general botany course at least once each year.

Over the years our teaching loads were reduced as a greater emphasis was placed on research—much to the benefit of the stu-

dents who took our courses and worked in our labs. The equipment that students now use daily was unimaginable back in the ‘60s. The botany faculty is much larger and, just as when I was hired, continues to enjoy a fine reputation among their peers.

In retrospect, Solheim, Porter and Northen, along with **Aven Nelson**, surely were the primary founders of the botany program at UW. I never met Aven Nelson, but I’m sure they all would be pleased with how it has grown.

***Editor's note:** Martha officially retired from UW in 1989 but continued her research with the support of Pfizer and the National Science Foundation. In 2003 she moved to Madison, Wisconsin, where she continues to play the viola — and also the saw, which she played regularly at Botany Department Christmas parties. During her career, Martha was elected president of the Mycological Society of America. She also took the lead in establishing and endowing the Northen, Porter and Solheim scholarships for our students. Contributions to these scholarships are much appreciated.*