

MOUNTAIN LAKE ECHOES

MOUNTAIN LAKE BIOLOGICAL STATION

Fall/Winter 2010

SILENE CENSUS

Peter Fields

"What exactly are you doing?" is a question we have attempted to answer to innumerable residents of Giles and Craig Counties. Perhaps it is a reasonable question to ask when you happen upon a group of academics scrutinizing the vegetation along a stretch of meandering country road. While the specific reply will vary, and the rebuttal even more so, the basic idea we express to both residents and grant panels alike, is that we're tracking a plant and its disease through time and space.

Since 1988, Janis Antonovics, Douglas Taylor (Biology Department, University of Virginia), and many of their students and staff, have conducted an annual



census of the invasive plant species *Silene latifolia* and its sterilizing fungal pathogen *Microbotryum violaceum*. The census encompasses a 25km x 30km area, with the "weedy" plant predominantly along roadsides. The pathogen is a sexually transmitted disease, and is a useful model for studying those types of epidemics.

The annual census has become a ritual at Mountain Lake, and the 23 year-old dataset is remarkable in many respects, having catalyzed numerous research projects. But 2008 saw a major expansion in data

collection and scope of the research. Propelled by an explosion of genomic resources for *Silene*, and a National Science Foundation grant, the census expanded to include high throughput genotyping to study how migration and colonization affect genetic diversity and evolution. New experiments are exploring how spatial isolation and disease history are factors in the evolution of disease resistance. This expanded census promises to advance our understanding of the ecology and evolution of spatially distributed populations of organisms and their diseases.



Upcoming Deadlines

- REU APPLICATION DEADLINE FEBRUARY 20
- COURSE APPLICATIONS ACCEPTED UNTIL CLASS IS FILLED—FINANCIAL AID REQUESTS DUE MARCH 15
- SUMMER COURSES BEGIN MAY 16
- REU PROGRAM STARTS MAY 23

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Mountain Lake Echoes

From the Director

Butch Brodie

It seems impossible that the 2010 MLBS season ended months ago. The buzz and the thrum of the Station in full swing seems just out of reach from my office on Grounds, but a look at the calendar reveals it was further off than that.

Among the many causes for self-congratulation over the past season, our REU site was renewed for an additional 5 years. With the help of several partners including Barbara Abraham from Hampton and others contributing additional undergraduate support, we were able to welcome one of our largest REU classes to

MLBS – 15 participants in all. They were a typically diverse bunch, both socially and intellectually. Like many of the REU classes before them, they served as a critical backbone of the community,

uniting labs, course students and faculty into one cohesive group.

While we finished some major construction projects, new ones came along and still more are perched just over the horizon. Facilities

Management contributed to substantial renovations of Tawney Cottage, the historical caretaker's home named for the Station's original caretaker family. Our current Facilities Manager, Tom Mc Namara, will be moving into Tawney this year and hopefully continuing his popular Two Burner Bistro on a new

porch.

We also have been the fortunate beneficiaries of the interest and creativity of the University Landscape Architect, Mary Hughes, and David Hill of Hill Studio who have helped us develop plans for improvements to various parts of the Station grounds. Eric Nagy has spearheaded this effort for the Station, which has successfully netted funds from the University Grounds Improvement Fund and the Arboretum and Landscape Committee to begin the first phase of these improvements in the coming year, beginning with a re-envisioned entry area to Lewis Hall and improved traffic flow on the east end of the grounds.

Finally, it is with a conflicted mix of despair, regret, joy, and pride that I must announce the departure of Anne Marie De Marco Rehm from the MLBS office (but not its



family). Anne Marie will be moving on and up to share her considerable talents with the Department of Anthropology. The move is a substantial promotion within the University and we are thrilled that others recognize her potential and rewarded her so. Anne Marie's ability to negotiate the sometimes torturous bureaucracy of the University with grace and style, and to keep MLBS running smoothly in two places at once are remarkable. We will miss her professionally and personally, but expect great things from her in her new post.



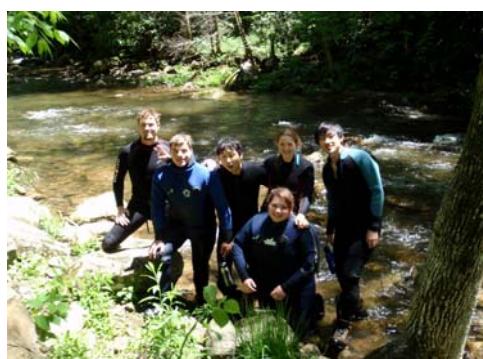
Student Corner

Hunter Doughty

Three months of fish, plants and experimental design is definitely not a bad way to spend a summer. Taking all three sessions of classes offered at MLBS in 2010, I was given the opportunity to study organisms in an ethological manner, bond with my professors and classmates, and gain first hand exposure to scientists and their current research. A main part of my

experience at Mountain Lake was complete immersion in the subject matter that each course presented. Only through a month of electrofishing and field data analysis could I have learned such an in-

depth understanding of Virginia's fish ecology.



Just like the constant intake alone of plant morphological and taxonomic information, while studying plants in the field, aided me to form a solid foundation of the subject matter. Over all Mountain Lake Biological Station was both a vigorous academic push and a growing personal experience.

Fall/Winter 2010

VT Wildlife Field Techniques

Marcella Kelly



Every year I teach a required undergraduate Virginia Tech Wildlife Field Techniques course in August at the Mountain Lake Biological Station. We spend a total of ten very intensive days on site. Work days can be as long as 16 hours and are spent in classrooms, laboratories, forests, creeks and ponds.

Every year the number of students increases. We had

a total of 43 students this year. As you can imagine, this takes quite a bit of organization.

A group that size, for that long, under such intense circumstances becomes a very close-knit community.

Students perform short, but in-depth, studies of bats, herps, birds, and mammals utilizing a variety of tools including mist nets and Sherman traps. They catch, weigh, measure, identify, mark and release the captured specimens. Because of the wide variety of research that is conducted, a day can start as early as dawn and end at midnight.

During these ten days, the group cooks, eats, and studies wildlife science together at the Station.

On the last day of the course, the students often realize that they have experienced their first real taste of a career in wildlife science at a field research station. Some students are so moved by the experience that they promptly change their majors.



AN INTENSIVE
TWO-WEEK COURSE
IS CONDUCTED IN
WILDLIFE TECH-
NIQUES EACH
AUGUST

NEON Site Preparation Underway

Eric Nagy

Survey work and preliminary soil testing is underway on the newly established National Ecological Observatory Network (NEON) site at MLBS.

NEON is a National Science Foundation funded research infrastructure platform designed to observe and forecast continental-scale ecological patterns and processes.

MLBS, Oakridge National Laboratory and Great Smokey Mountains National Park have formed a partnership to host NEON's "Domain 7." NEON is composed of twenty domains in all, distributed across the United States. Three field installations make up each Domain.

NEON is, in essence, a single piece of equipment - a 3,000 mile wide "observatory" de-

signed to measure environmental and ecological processes synchronously and uniformly across the Earth's surface. In addition to being the first piece of equipment of its kind and size, and providing a wide range of real-time, and freely available data, it will play host to a whole new generation of ecological research, impossible before the NEON instrument was developed.

The NEON installation at MLBS will occupy a rectangular plot of forest (ca. 250 x 40 meters) north of the station's wastewater treatment plant. Infrastructure on the site will include a 28m walk-up canopy tower and a 200m soil pit array, both equipped with a wide array of atmospheric and soil sensors. Other experimental and biodiversity moni-

toring plots will be installed in and around the NEON site. An "equipment hut" on the site will supply power, data processing, and a data link back to NEON.

NEON will collect data on invasive species, disease dynamics, changes in biodiversity, atmospheric chemistry, and biogeochemistry resulting from regional or global processes such as urbanization and climate change.

NSF is actively soliciting proposals to use the NEON instrument in, for example, the new Macrosystems Biology program. MLBS has submitted a proposal to this NSF program in an effort to bring the "Discover Life" project to the station.

Construction at MLBS is scheduled to begin in 2012. Mountain Lake Biological Station will be one of the first NEON sites to come on line.



Flag in forest at MLBS marks location of NEON

MOUNTAIN LAKE BIOLOGICAL STATION CONTACT INFO

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SUPPORT MLBS

You can support Mountain Lake Biological Station by making a tax-deductible donation.

Your gift promotes learning, education, scholarships, and research and has the potential not only to impact students' lives but to change our world. Help support our students and researchers today by making a donation on-line at www.mlbs.org.

For more information about the Department of Biology at the University of Virginia please visit virginia.edu/biology

SUMMER 2011 COURSES



SESSION I, May 16—June 10

PLANT CONSERVATION AND DIVERSITY (*BIOL 4510/7510, Sec 1—4 cr*)

Zack Murrell, Appalachian State University

BIOLOGY OF BIRDS (*BIOL 3510, Sec 1—4 cr*)

Eric Liebgold, University of Virginia



SESSION II, June 13—July 8

PLANT-ANIMAL INTERACTIONS (*BIOL 4510/7510, Sec 2—4 cr*) Lorne Wolfe, Georgia Southern University

FIELD METHODS IN WILDLIFE ECOLOGY (*BIOL 3510, Sec 2—4 cr*) Tami Ransom, University of Virginia



SESSION III, July 11—July 29

BIOLOGY OF FUNGI (*BIOL 4510/7510, Sec 3—3 cr*) Rytas Vilgalys, Duke University

BEGINNING DRAWING I and III—The Landscape, Small and Large (*ARTS 1610/1620—3cr***) Megan Marlatt, University of Virginia

** Please note that this class will be held July 17—July 29