



# Mountain Lake *Echoes*

UNIVERSITY of VIRGINIA

Produced by the University of Virginia's Mountain Lake Biological Station [mlbs.org](http://mlbs.org)

## Navigating a Pandemic

by MLBS Staff



Mountain Lake Biological Station was left scrambling last spring to figure out how to handle operations as safely and sensibly as possible during the Summer of COVID-19. Every one of the Station staff put out an amazing effort to offer what functionality we could for users while placing a priority on community health and prevention.

### Sudden Challenges

Planning for the 2020 season was in full swing when the shutdown hit in March. Undergraduate classes were already largely enrolled, REU students were admitted and connected with mentors, workshops were scheduled, and many researchers were already booked. In the matter of about a single week, we went from full steam ahead to canceling every activity, backtracking on the dining hall operation, and notifying so many disappointed students that summer experiences were not going to happen.

The University placed a ban on all out-of-state visitors to facilities, which meant traveling researchers like the NEON crews had to be turned away. Students and faculty were forbidden from accessing research facilities, including field stations. The immediate budget uncertainties led to hiring freezes that prevented us from filling our usual seasonal support positions. We even felt the direct hit of COVID-19 as one of our own staff became infected and fought through a serious case in early spring. We literally had to lock the gate and walk away for most of the spring.

### The Groundhog Sees its Shadow

In late spring, the University began to talk

about a phased reopening that would allow limited access to research facilities. It was a painfully slow process to figure out how the institution would supervise and approve the hundreds of research labs that needed to conduct critical work on grounds. Special cases represented by the University's three field stations meant that they were the last to be worked out. Finally, in mid-June, we were given parameters for a Phase I Reopening that would allow us to approve access to facilities for "essential researchers" only. On a positive note, we were given some latitude in determining what essential means. For MLBS, we took the standard to mean ongoing long-term research that would suffer irrecoverable harm if a field season were missed. Unfortunately, the timing was too late for some of the researchers' field seasons.

One disappointment in the early reopening plan was students being excluded from participation. The rationale was not unreasonable – the administration wanted to protect graduate students from being pressured to return to conduct work for supervisors. But this perspective missed the reality for many graduate students who conduct independent projects that rely on long term data. They were desperate to get back to their work to keep their dissertation project viable and on course. Eventually, this message was heard, and special considerations allowed some grads to return to labs and field stations in June. Phase I Reopening was presented as a short trial with the most restrictive conditions for active research. As of this writing, we are still in Phase I.

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UVA's social distancing and mask protocols extended to its remote field Stations early on as new signage and supplies were installed.

## From the Director

The Station, like everyone else these days, is learning how to operate under a new normal. Elsewhere in this issue, we have explained some of the changes to operations we had to go through during the Summer of 2020, but perhaps the hardest part for us all currently is the uncertainty of what we will be able to accommodate in the coming season. We have decided to plan for a full active season with classes, research teams, an REU program, and workshops. We are already trying to imagine how to conduct our regular business under fully safe conditions, without a clear sense of what our risk factors and mitigation strategies will be in May 2021. To be clear, if there are activities that we do not think we can do safely, we will not do them at all. I continue to be grateful for the understanding our users have expressed about the restrictions we have had to put in place.

The hardest part for all the staff and other long-termers at the Station was the huge loss of community that we've come to take for granted. In past years, we got to share our world with an eclectic collection of old and new friends who bring so much enthusiasm, perspective, and wisdom to the mountain. The Summer of 2020 was a brutal reminder that we should not be taking our time, and our community, at the Station lightly. For the small handful of researchers that were able to use the facilities, it was an even more precious experience than ever to escape our various lockdowns and have a tiny, distant community to interact with. The shutdown was also a reminder that as urgent and important as our data collection and projects can seem at times, they are inconsequential when compared to the health and welfare of those that work with us and provide support for our activities.



Butch Brodie

*Navigating a Pandemic continued...*

### How MLBS Reopened

The College of Arts & Sciences, with approval from the Office of the Vice President for Research, developed a protocol system that is still currently in practice for any group proposing research at the Station. The [online template](#) walks users through a series of questions and policies that detail how we maintain social distance in buildings and the field, and asks team leaders to develop their schedules and plans to limit occupancy within buildings. To date, we have been able to get the full slate of approvals within 2-3 days, including revisions to plans, so we feel like it is an efficient process. We expect this protocol procedure to be in place at least through spring 2021, and probably longer.

The general policies will not be a surprise at this point. Labs are limited to a maximum of 2 occupants at a time. All users must wear masks in any building other than a residence, even if alone, and within 3 meters of another person outdoors. One of our biggest challenges has been accommodating all users in private residences with separate cooking and cleaning facilities. We have had to house some small lab groups together in cottages with separate sleeping rooms, so they function as pods or family groups. We are especially grateful to Tom McNamara for installing sinks and kitchenettes in Reed and LeConte to increase the number of cottages in which users can prepare meals for themselves. Throughout the summer, we were able to maintain a 3-day break between occupancy periods in each cottage to "clear the air." Perhaps the easiest task at MLBS was to make sure all social interactions took

place outside! Users were all amazingly conscientious about the policies and kept things moving smoothly.

With all these procedures in place, we somehow were able to accommodate all researchers who requested access. The numbers were small, reaching a peak of about a dozen people at a time during July, but they were able to do some critical work. NEON was able to resume sending sampling crews through the summer of 2020. Because they travel between sites, we chose to devote all of Murray dorm to their crew and isolate them from the rest of the Station population. The only visiting group we were able to host was the Virginia Tech Wildlife Field Techniques course with an adapted experience.

### What the Future Holds

The only thing that is clear about the 2021 season at MLBS is that it will not be a business-as-usual operation. As of early December 2020, we are still in Phase I of research reopening with new surges of COVID-19 nationwide. There is, however, positive news about vaccines and a long time between now and the summer season. We are currently scheduling summer classes and the REU program, and hope to be able to offer those experiences that may be needed more than ever. However, we ask that everyone be patient and understanding as we try to navigate the road ahead. There will undoubtedly be some unexpected changes to our operation, but we will do our best to provide the best Mountain Lake experience we can for our users in 2021.



Sanitizing stations became a common sight throughout the Station.

# Wildlife Field Techniques Course Adapts to Restrictions

Virginia Tech's Wildlife Field Techniques course (taught by Marcella Kelly) faced numerous unexpected hurdles this year due to the pandemic, but a little creativity and a lot of logistical coordination enabled the Station to host the course for its 16th consecutive year.

In previous years, the class has consisted of a 10-day, overnight, immersive field experience. Students have lived in Station dorms, prepared meals in a shared kitchen, and spent their days (and sometimes nights) learning techniques for monitoring, handling, trapping, and studying wildlife. They have collected data that contribute to long-term monitoring projects, and have conducted group research projects focused on salamanders, birds, and small mammals.

The fate of this year's field experience was uncertain due to the many COVID-related operating restrictions at both UVA and Virginia Tech, which had implications for virtually every aspect of the course. Thanks to the flexibility and creativity of course organizers, students were able to come to the Station in the fall of 2020 and gain the same hands-on, in-depth training and experience as in previous years. Rather than staying overnight for two weeks, students visited during the day, spread over two weekends, in a highly choreographed rhythm that maintained no more than 10 people in groups at any one time. The Station also facilitated follow-up visits for students wrapping up research projects. Additional precautions included using only outdoor spaces, social distancing, wearing masks and gloves, and sanitizing surfaces regularly.

After a long, exceptionally quiet spring and summer, it was truly

refreshing to find groups of students searching for salamanders along White Pine Trail, setting up mist nets in front of Laing Hall, and assembling Sherman traps by Riopel Pond. The Station was pleased to be able to host this unique course again and facilitate the continuation of its long-term projects despite the extra challenges this year presented.



Quaranteam of students participating in Wildlife Field Techniques Course.

# News & Notes

## Cottage Improvements

Once UVA began Phase I of reopening, the Station was eager to safely provide support and access to researchers who had ongoing projects on the mountain. During a typical field season the dining hall provides three meals a day, and Station users are often housed in shared cottages/dorms. With the dining hall closed and social distancing required in all aspects of life (obviously including housing), the Station was faced with the challenge of arranging more private housing and, especially, cooking facilities for folks staying on site. To meet these new needs, the Station installed kitchen sinks in Le Conte and Reed Cottages and outfitted them with kitchen appliances (hotplates, toaster ovens, microwaves, and refrigerators), basic cooking equipment, and other supplies. These additions were critical to the Station's ability to host multiple lab groups this summer, and will be welcome improvements for residents in future years as well.



## Seeking New Boat

MLBS is in need of a new row boat that is watertight, pond-worthy, and in possession of all its parts - none of which were attributes of the much-beloved boat that was retired last summer. If you would like to donate a 12-14' boat that fits this description, please get in touch!



## Remembering Patricia Peroni



Patricia Ann Peroni  
Professor of Biology and  
Environmental Studies  
Davidson College

December 22, 1956 -  
December 24, 2019

[Davidson College memorial page.](#)

Our dear friend and colleague Pat Peroni passed away from lung cancer in December 2019. She was a Professor of Biology at Davidson College and a researcher at the Station in the 1990s. She was also the MLBS REU Coordinator at the beginning of the program (1993-1995). For many years after that, she continued to bring her Davidson classes to the Station.

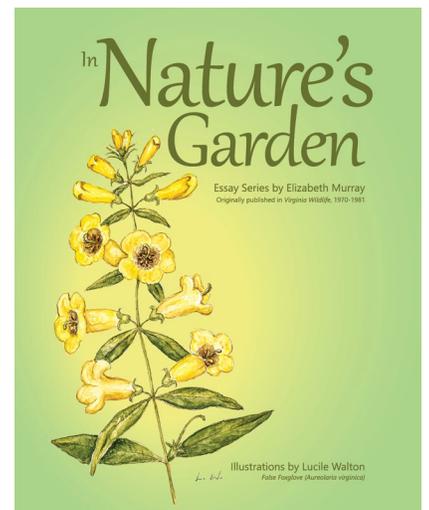
Pat and her sister-in-law, Jules Peroni, started working on a quilt during the last six months of her life. Jules finished it the day after Pat died. Jules and Luke Peroni are donating the quilt to MLBS where we hope to display it prominently. Look for it next time you are here. The familiar images are of course from Pat's collection of old Mountain Lake T-shirts. We learned from, and will miss, Pat's fearless approach to science, her tireless dedication to her students, and her ever-present laugh.



## In Nature's Garden eBook Now Available

The collaboration between Elizabeth Murray from Charlottesville and Lucile Walton from Danville, Virginia, began at Mountain Lake Biological Station in 1970. During that summer, they produced the first of 89 essays that were published in *Virginia Wildlife* magazine as part of the "In Nature's Garden" series from 1970-1981.

This collection of essays from *Virginia Wildlife* magazine has been compiled by Mountain Lake Biological Station staff and reproduced in digital format with permission from the Virginia Department of Wildlife Resources.



Click the image to view the eBook.



# How Things Work at MLBS

A Periodic Feature for Those Mountain Lakers Who Always Wanted to Know  
by MLBS Staff

## Electricity

Electric power, landline telephone, and internet are the three services we pipe in on physical cables from the outside world. All three wires are carried by the poles you see in the power cut as you arrive at the Station.

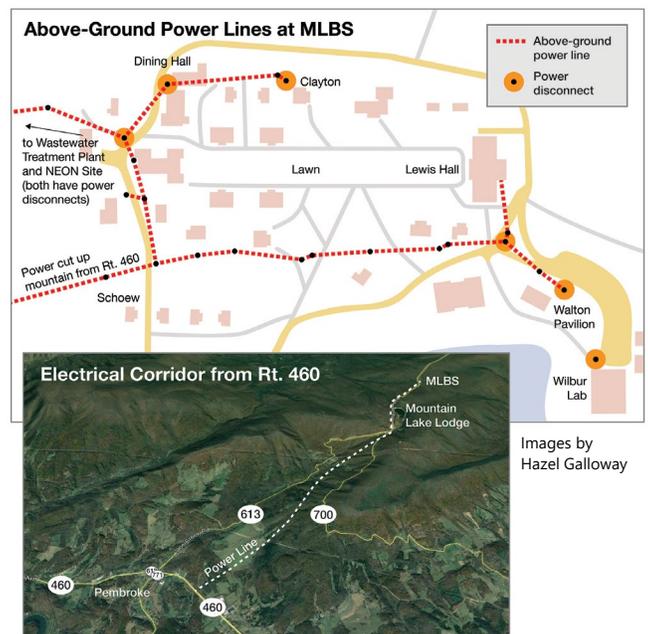
Electricity for the entire Station is supplied by a single 5.5-mile overhead transmission line that climbs 2,000 feet up the east side of the mountain. You can see it cross Rt. 700 just before you get to the Lodge. In the United States, power plants produce around 750KV (KV=thousand volts) of three-phase alternating current (AC). The voltage carried in each local grid is determined by the grid's scale; the power line supplying MLBS carries single-phase AC at about 34KV. Single-phase (one alternating current sine wave) uses one transmission wire; three-phase (three offset alternating current sine waves) uses three transmission wires.

You can always tell what is in use—just count the wires (1, 2, or 3)! Single-phase power is incompatible with some large, old, or sensitive equipment; we always warn contractors and equipment vendors that we are running single-phase AC. Higher-order phases (second or third) provide a more even electrical field structure.

Power enters the Station along the power cut that crosses the loop road near Schoew Cottage. At that point, the overhead American Electric Power (AEP) line branches to feed the eight disconnects and six electrical meters on the Station. This haphazard

transmission line layout and the large number of disconnects pose a challenge to recent efforts to install a backup generator. A separate generator would need to be installed at each disconnect site. AEP lines handoff 240V AC to five step-down transformers, and power is then carried by UVA lines underground to all our buildings. House current available in MLBS buildings is standard single-phase, 60 hertz, 240- or 120-volt alternating current.

MLBS is the end of the line on our side of the mountain. The long haul up the mountain provides many opportunities for damage by wind or lightning, and the accumulation of "noise" (dips, spikes) in the service. Hence, our power supply is still a bit dicey, and "dirty." This is why we encourage everyone to use high quality (330V clamp, LNG) surge protectors and backup power supplies. For all but the biggest jobs, Tom Mc Namara is responsible for keeping the lights (and water heaters) on. Thank you, Tom!



## Who We Are

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[mlbs.org](http://mlbs.org)



# A Look Back at the 2020 Season October 1, 2019 - September 30, 2020

## Snapshot

- 0 summer courses
- 0 internship and professional programs
- 0 REU program participants
- 238 station users
- 9 institutions represented
- 1 visiting courses and programs
- 0 Station activities
- 5 facility projects
- \$1,809 in fellowships awarded
- \$4,220 in donations received
- 44 research programs
- 55 journal publications



### Station Users

2,249 user days

238 individuals from 9 institutions:

- 55 faculty/staff
- 4 postdocs
- 17 graduate students
- 110 undergraduate students
- 37 K-12 students
- 6 K-12 educators
- 9 guests/family members

### Visiting Courses and Programs

- Wildlife Field Techniques Class, Virginia Tech

### Facility Projects

- Invasive plant removal
- Burns Garden maintenance and improvements
- Kitchenette additions and improvements
- Mattress and furniture upgrades
- Trail blazing and maintenance

### Financial

Fellowships Awarded \$1,809

- 5 researchers \$1,809

Donations Received \$4,220

- Friend of MLBS \$3,670
- Undergrad Students \$250
- Walton Lecture: \$300

### Cancellations this Season

MLBS had a full slate of activities and programs planned for the 2020 season. Unfortunately, many had to be canceled due to the pandemic, including the following:

#### Summer Courses

- Field Herpetology
- Natural History of the Appalachians
- Field Biology of Fishes
- Stream Ecology

#### Internship and Professional Programs

- Research Experiences for Undergraduates program
- Grant Writing Workshop
- Evolutionary Biology Graduate Student Workshop
- ArtLab Artists-in-Residence

#### Station Activities

- Annual Open House
- Walton Lecture and Reception
- July 4th Festivities
- Other recreational activities

Support MLBS



Click to support the programs at Mountain Lake Biological Station by donating online.  
All donations are tax-deductible.

## Research Programs

- A culture-based assessment of fungal diversity in low-bush blueberry roots
- Aestivation survivorship of a biological control agent against the hemlock woolly adelgid
- Coevolutionary arms races driven by conflict: A test in social amoeba
- Combining NEON and remotely sensed habitats to determine climate impacts on community dynamics
- Cryptic host specialization in a generalist plant parasite
- Cryptic host specialization in a plant-parasitic nematode
- Development of an unmanned aircraft system (UAS) to collect mosquitoes from remote areas
- Ecological drivers of behavioral diversity among larval stream salamanders
- Environment as a selective force on plant reproductive traits
- Evolution of blueberries (*Vaccinium*) in Eastern North America
- Evolution of social behavior in *Bolitotherus cornutus* (forked fungus beetle)
- Evolutionary divergence of pheromones in garter snakes
- Flora of Mountain Lake Biological Station
- Foliar traits and terrestrial ecosystem variability across NEON domains
- Global change impacts on microbiome mediated plant pollinator interactions
- Habitat requirements and population genetics of fungus-inhabiting beetles in old-growth forests
- Heritability of social network position in *Bolitotherus cornutus*
- Host-seeking, feeding behavior, and pathogen transmission in *Culex territans* mosquitoes
- Host-Seeking, Feeding Habits, and Pathogen Transmission in *Culex territans*
- Integrative and evolutionary biology of the dark-eyed junco
- Investigations on nitrogen fixing capabilities of termites and wood-feeding cockroaches
- *Junco* Census
- Landscape genomics of American chestnut: Conserving genetic diversity for climate change resiliency
- Landscapes, life histories, and anuran population genetics
- Maternal effects and mating system evolution in American bellflower
- Mechanistic niche modeling and physiological evolution of plethodontid salamanders
- Molecular, neuroendocrine, and developmental mechanisms regulating timing of reproduction
- Multispecies interactions: Milkweeds, pollinators and herbivores
- National Ecological Observatory Network
- Phenological LAI and multitemporal forest ecosystem physiology
- Phylogeography and species delimitation in North American *Castanea*
- Pine bark adelgid on red spruce and white pine
- Plasticity in the shape of phenology across an elevational gradient
- Pupation success of *Laricobius* spp.
- Reproductive ecology of flame and swamp azaleas
- Role of disturbance and abiotic factors on carbon sink in eastern oak-dominated forests
- Sugar feeding ecology of mosquitoes
- The effect of social context on expression of behaviors
- The influence of climatic dipoles on plant and animal populations at continental scales
- The relationship between skin chemistry and microbiome diversity in Appalachian salamanders
- The reproductive ecology of southeastern azaleas (*Rhododendron* spp.)
- The role of habitat structure on social networks of forked fungus beetles
- The role of mating systems in colonization
- Thermal biology and ecology of *Aedes japonicus* mosquitoes



A list of publications related to MLBS are housed in a searchable [Zotero database](#).