



WMCC students help track radio telemetry-collared moose in New Hampshire's North Country.



Community COLLABORATION

COLLEGE STUDENTS GET REAL-WORLD EXPERIENCE
ASSISTING WITH FISH AND GAME RESEARCH

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by RACHEL E. D. **WHITAKER**
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IN 2012, one of my two dream jobs was created. The New Hampshire Experimental Program to Stimulate Competitive Research (EPSCoR) partially funded a new Assistant Professor of Environmental Science at White Mountains Community College (WMCC) in Berlin, N.H. The goal was to revamp the Environmental Science program and incorporate research opportunities for environmental science students. Okay, okay, I also would have loved to be a New Hampshire Fish and Game fisheries biologist, but teaching at a local community college and incorporating as much field work as possible is pretty awesome!

As the Assistant Professor of Environmental Science, I have worked hard to incorporate as many field work and networking opportunities as possible into my courses. Community colleges are not traditionally known as “research institutions.” Let’s be honest, scientists who really want to do research do not seek out a position at a community college. They tend to target a better-funded state university or college system where they can have an up-to-date laboratory and research dollars at their disposal. However, with the stated goal of EPSCoR being to “stimulate competitive research,” and my determination to incorporate research into the Environmental Science program, we either had to figure out how to support a research project or find collaboration that would introduce those research opportunities.

It turns out, you do not have to look far if you want to collaborate in northern New Hampshire. We were able to work with the University of New Hampshire to help collect data through the Community Collaborative Rain, Hail and Snow Network, and with Plymouth State University assisting with collection of water quality data. But perhaps the most impactful research opportunities were presented to my students through collaboration with the New Hampshire Fish and Game Department.

My Start in Field Work

Let's step back in time a decade. As a wide-eyed, 19-year-old environmental science undergraduate, I happened to fall into the best summer seasonal position ever: a Fisheries Technician for Fish and Game's Region 1 Office in Lancaster. For five exciting summers, I worked with Coldwater Fisheries Project Leader Dianne Timmins, Fisheries Biologist Andy Schafermeyer and Fish Habitat Project Leader John Magee, including collecting

data for my master's thesis in tandem with the Nash Stream Restoration Project throughout 2010 and 2011.

The field work opportunities these seasonal positions afforded were truly life-changing. I remember one poignant conversation with my father (an avid brook trout fisherman) one morning before leaving for work during my first summer with Fish and Game. My father asked what I was headed out to do that day. My answer was simple: fishing. I was literally taking my rod and reel to spend a day up in the Dartmouth College Grant angling for brook trout big enough to put telemetry transmitters into for a fish migration study! Needless to say, my father was a bit jealous. These field-work opportunities regularly put me head-and-shoulders above my peers throughout my seven years of post-secondary education. They allowed me to bring in real-world datasets to use for projects in school and ultimately led me to attaining my master's in biology, with a focus on high-elevation brook trout movement, at Plymouth State University.

WMCC ENVIRONMENTAL RESOURCES PROGRAM

The Environmental Resources Program at White Mountains Community College prepares students for careers and continuing education in natural resource fields. Through this program, students gain an interdisciplinary understanding of the natural world and the science behind current environmental issues. The school offers exciting opportunities for students to engage in hands-on learning in the classroom and afield. Students have worked extensively with natural resource professionals in the North Country to experience fall fyke netting for trout, tracking radio telemetry-collared moose, identifying and sampling forest plots, maintaining water quality sensors in the Androscoggin and Dead Diamond watersheds, and using GIS to evaluate the connections between underlying bedrock geology and forest cover.



WMCC students measure and weigh fish following fall fyke netting for trout in Success Pond.



WILDLIFE RESEARCH

An Environmental Projects Capstone Course gave Ashley Newell (right, with Assistant Professor Rachel Whitaker) the opportunity to work with Fish and Game Bear Project Leader Andrew Timmins, Regional Biologist Will Staats, and bear rehabilitator Ben Kilham to evaluate black bear denning ecology. Student Dakota Lurvey helped Fish and Game staff evaluate wood duck nesting box usage.



STUDENT SUCCESS STORIES



Fish and Game biologist Andrew Timmins (plaid shirt), working with WMCC students, counts ticks on a moose at the Berlin moose hunt check station. This data is integrated into an ongoing study of moose mortality.

Continuing Connections

As a result of the relationships I built while working with Fish and Game biologists, I now can pick up the phone and ask Dianne if she has any field work opportunities for me and my White Mountains Community College students. Over the years, many of my students have helped with field work and fisheries research because Dianne, Andy and John have been so willing to host us and co-mentor students for internships.

Perhaps the most meaningful connection between my students and Fish and Game has been through the Research Experience for Undergraduates (REU) internship. These internships are hosted by professors at many college and university campuses throughout the state and allow a small group of select college students to spend 7-10 weeks conducting research under the mentorship of college faculty. Again, since community colleges are not typically research institutions, I enlisted Dianne's help to co-mentor students over the 2013, 2014 and 2015 summer field seasons. Each student has been exposed to a host of the data collection methods that the Fish and Game crew conduct on a daily basis: electrofishing, macroinvertebrate sampling and identification, fish identification and measurement, culvert assessments, stream temperature monitoring, and more.

Not only were these students able to help collect and work with data sets for their internship, they were helping to create multiple real-world data sets that will be used for habitat and species conservation projects throughout the state. All of these students have gone on to work with Fish and Game-affiliated projects and data collection since – furthering their research experience and giving them a strong start as they went on to other institutions to finish their bachelor's degrees. 

Rachel E. D. Whitaker is the Assistant Professor of Environmental Science at White Mountain Community College in Berlin, N.H.



Ashley Andy started at WMCC in the Environmental Science program and later transferred to Paul Smith's College in New York to double-major in Biology and Environmental Science, while minoring in GIS and Chemistry. During her REU internship, Ashley worked mostly in the Upper and Middle Ammonoosuc Watersheds, collecting data for the Eastern Brook Trout Joint Venture. After her first week in the field, she confirmed, "These past few days just further solidify that this is what I want to do for a career!"



Ashley Newell completed her Associates in Science (A.S.) in Environmental Science at WMCC and transferred to Lyndon State College in Vermont, where she majored in Environmental Science. Ashley worked on many different projects throughout the summer of her REU internship, including building a dataset from the Second College Grant to evaluate the effects of storms like Tropical Storm Irene on brook trout.

"My peers are always impressed, and even envious, when they hear about the great opportunities I had at WMCC because of small class sizes, the closeness of the community in the North Country, and the relationship Rachel Whitaker has with the New Hampshire Fish and Game Department," she said. "This experience gave me the kind of knowledge, technical field experience and skill sets I needed to compete for other natural resource positions."



Dakota Lurvey completed his A.S. in Environmental Science at WMCC and worked as a New Hampshire park ranger during the summer 2016 field season. An avid outdoorsman who enjoys hunting and fishing, Dakota worked throughout many watersheds during his REU internship and became talented at electrofishing. Ultimately, he worked with a long-term brook trout telemetry dataset collected in the Second College grant, producing a research presentation called Brook Trout Migration Patterns in the Dead Diamond Watershed. "The field work I've done with Fish and Game and at school has made me appreciate my surroundings so much more," says Dakota.

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