Getting Wildlife Students Outside

HANDS-ON LEARNING WINS HANDS DOWN

By John McDonald

Even though I don't feel that old, there are now more educational pathways to becoming a wildlife professional than when I started my undergraduate training in 1985. Although many students still attend traditional wildlife programs at land grant and other state universities like I did, a 2009 report on collegiate wildlife programs by an ad hoc committee of The Wildlife Society identified more than 400 academic institutions in the United States and Canada that offer undergraduate degrees in wildlife or wildlife-related coursework.

The expanding number and variety of undergraduate programs is also evident from a quick review of TWS student chapters. The list includes a wide range of more than 130 institutions, including universities, four-year colleges, community colleges and even an online-only degree program. Many of these wildlife programs are rather small, with one or just a few faculty members with a wildlife background, which can be a limitation when it comes to providing a wide variety of courses, especially immersive, field-based courses.

▼ **William Healy (center), TWS Fellow and retired member, demonstrates how to handle and tag a white-footed mouse (*Peromyscus leucopus*) for a group of students in a two-week field course organized by the Northeast Section of The Wildlife Society, Vermont Department of Fish and Wildlife and Castleton University.**

Credit: John McDonald

Making it stick

When I was a student, the material seemed to stick best in lab courses that gave me the chance to actually do things outside. In particular, I learned many skills in a four-week spring forestry camp at my school. It was an immersive experience where I got to do, in long-format sessions, all the things I'd learned in lecture courses — everything from establishing and marking stand boundaries to forest inventory cruises to marking and conducting thinnings. Those types of field-camp experiences were common in most forestry and wildlife programs prior to the 1990s. Some schools still have them as part of their curricula. However, for a wide range of reasons — including tight budgets, a drive to reduce the number of credits required for graduation and liability concerns — others have dropped them altogether, made them optional, incorporated some elements into campus-based lab sessions or replaced them with internship requirements or other outdoor experiences.

The same report noted the importance of field-based, experiential education in the wildlife profession. By definition, what wildlife professionals do requires a variety of outdoor skills. Lectures and campus-based lab sessions can only go so far in providing the types of field savvy that young professionals need in entry-level jobs and graduate programs.

The Northeast Section of The Wildlife Society recognized this need and in 2008 began planning a camp-style field course in an attempt to provide just this type of educational opportunity for undergraduate students. Since 2009, we've offered a two-week field course each year, relying on a strong partnership with the Vermont Department of Fish and Wildlife and Castleton University. Initially, we expected to attract undergraduate students, but we also get graduate students and early- to mid-career professionals who are trying to change fields or gain field-technique experience to be more competitive in the job market.

Our experience has helped us identify a number of philosophies that have contributed to the course's success and the value it provides to students and instructors alike. None of these are groundbreaking developments in pedagogy, but combined they result in a positive learning environment that reinforces previously learned skills or exposes students to new material in a way that gives them a degree of confidence. These elements include a simple course structure, ample time for hands-on field activities, low emphasis on grades and a focus on networking.

Simple structure

Instead of being research intensive and focusing on study design and data analysis, we devised some straightforward course goals. Basically, we aim to expose students to field skills they will need to demonstrate when applying for summer jobs, full-time entry-level jobs and master's programs and give them an opportunity to practice them. In some cases, we spend time on things that may seem basic but may not be covered in a typical on-campus lab session or field trip.

Credit: John McDonald

The discussions begin with how and why to keep a field notebook and how to use a compass, read a topographic map and use common, hand-held GPS units to navigate and mark waypoints. Then we go out to a local wildlife management area and do all those things.

Groups of four or five students are given a compass bearing to follow and instructed to establish survey transects of 800 to 1,000 meters. Students have to mark sampling points at 100-meter intervals and record cover type transitions and incidental sightings of wildlife and wildlife sign in their field notebooks and GPS units.

This exercise might seem rudimentary, but students who feel confident with their ability to use a compass after shooting a bearing or two on trees around the parking lot are often less so a couple hours later after being dropped off in the woods. After successfully navigating over rocks and streams, they build some real ability and confidence.

During the remainder of the first week, we provide instruction in a variety of other techniques such as radiotelemetry, electrofishing, seining, small mammal trapping, point counts and herp species sampling along with an introduction to natural communities and local woody plant and bird identification.

During the second week, the groups collect data along their established transects. The exercise is essentially a basic biological inventory that gives students practice conducting standard field techniques such as live trapping of small mammals, bird point counts and fixed area plot samples to describe the tree community and estimate densities and basal area.

Credit: John McDonald

▲ **Volunteer instructor Herb Bergquist (right), a biologist with the U.S. Fish and Wildlife Service, watches a student set a foothold trap. The field course includes a session on trapping and using various cable-restraint equipment (inset).**

For students that have some previous experience, whether through coursework or jobs, these sessions reinforce what they have learned, and frequently they end up tutoring the students for whom the material is new. After three days of collecting data on small mammals, birds, herps, and woody plants, we reorganize the students into four new groups. Each group is given all the field data sheets on one taxa from the other groups and is asked to summarize the data and present it. For example, the mammal group needs to be able to make sense of all the mammal trapping and sighting data from

Credit: John McDonald

▲ As part of the field course, the student groups create a biological inventory along a survey transect. Here students search for amphibians in a shallow pool created by a fallen tree.

▼ Students have ample time to gain competence with hands-on field activities such as tagging a captured animal.

the different transect groups. This exercise provides valuable lessons in notetaking, following protocols, accurately filling out data sheets and the value of proofreading. It is always an eye opener for the students as they begin to enter data and find how hard it is to make sense of someone else's often incomplete entries, or when a mouse is a coded as male at first capture and female when recaptured.

Setting limits on the material covered

It is tempting to try to cover a lot of different topics over the two weeks, but typically there are two sessions per day. This limit gives the students more hands-on time with equipment or more time for practicing identification. Though most of the course is devoted to active skills and species identification, we also incorporate Vermont's basic hunter education training and students become certified in Project WILD, an environmental education curriculum provided by state agencies. Some topics such as identification of birds take place throughout the course, as in "which bird is that singing?"

Credit: John McDonald

Our objective is to give students as much time as they want to fire dart projectors or set and bed traps. We purposefully want to avoid having to quit some activity just because the clock says time is up. Most students have never done these activities; or if they have, it has been as part of a single lab session. We believe that giving students time to develop some confidence with a particular activity is important — in fact, more so than merely showing them how to do more. Of course, no student becomes an expert, but we think they leave with some competence that they can build on.

Low emphasis on grades

Students take the course for college credits; and we assign a grade based on participation in activities, demonstrated work on group projects, final project presentations and peer evaluations. However, we stress from the beginning that we want students to concentrate on interacting with the instructors, learning the techniques and the concepts behind the techniques, and not what might be on an exam or quiz. It seems hard, though, for most students to let go of the "will-this-be-on-the-test" mentality, even when there are no formal tests.

Their stress level becomes more evident in the final part of the course because we do not give the students a template for their data summaries or final presentations. Instead, we suggest ways to summarize the data and make sense of their observations and how they relate to the natural communities studied.

Evaluations commonly criticize this intentional lack of instructions. Students complain that they didn't know exactly how we wanted them to summarize their data or exactly what to present. The point of the exercise, though, is not to see how well students follow a rubric but to get the groups thinking about and discussing the most meaningful ways to sum-

marize and present their data in the context of a biological inventory. Admittedly, it is stressful for students, even with the friendly audience. But the groups typically end up doing a good job, and we think it is a useful problem-solving exercise in a low-stakes setting.

Working the network

One of the recommendations of the TWS ad hoc committee report was to enlist retirees and working professionals to help provide experiential education opportunities for students. The Northeast Section course has embraced this concept from the beginning. All of our instructors are volunteers and include retirees, state and federal agency employees, private consultants and faculty members. Some years, as many as two dozen volunteers come to share their expertise with the students, some for a few hours and others for several days. The lead instructors, myself and retired research wildlife biologist William Healy, typically spend the entire two weeks on site leading some sessions and providing a consistent theme as the guest instructors come and go.

These volunteers provide a powerful example for the students of engagement with and commitment to the wildlife profession and the conservation of natural resources. Some students have even come back to serve as instructors a few years later. Their presence gives students a role model they can relate to and works to inspire them.

We cap enrollment at 20 students and require them to stay on site during the course. This ensures that students get to know each other and also that no one can hide in the crowd. In addition, the informal setting allows for students and professionals to interact outside of the lessons, whether at meals or around an evening campfire, providing a networking opportunity not typically available even at conferences and workshops, where students and older professionals hang out with their own cohorts. We also have a Facebook group for sharing photos and staying connected, and we encourage students and professionals to connect on other social media platforms.

Other field courses

The Northeast Section Field Course is but one example of how the profession is providing field-techniques training that supplements curricula.

Credit: John McDonald

▲ **Author John McDonald instructs a student on how to measure the DBH, or diameter at breast height, of a red pine tree (*Pinus resinosa*).**

California Polytechnic University, San Luis Obispo, began its course in 2013 and takes a similar approach to teaching techniques and identification skills to small groups of students in a residential setting. The course also includes non-faculty professionals as instructors to give students a chance to interact with people they wouldn't normally see on campus.

Guest instructors say they get a lot of value out of participating, too. It gives them a chance to get out of their routines and interact with enthusiastic people who are just starting their careers and are eager to learn. It also gives instructors an opportunity to think about how to explain skills they may use regularly, but learned some time ago, to an audience of novices. Many report they like being able to contribute to the profession in a meaningful way. And in some cases, mentoring relationships develop that are meaningful to both parties.

Best of all, we get to do it all *outside*, which is why most of us got into the wildlife profession in the first place. ■

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