



# INNOVATION ABSTRACTS

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## TEACHING GENERAL ECOLOGY WHERE IT BELONGS—IN THE FIELD

Students learn best when they are immersed in an environment appropriate to the subject being taught. Traditional biology lectures, such as those in general ecology, most often are presented within the four walls of a classroom with students sitting at hard black tables. Pellissippi State Technical Community College offers an ecology course where the classroom is the magnificent Great Smoky Mountains National Park.

### A Cooperative Spirit

Pellissippi State's president and the Smokies' assistant superintendent attended college together. Pellissippi's summer offering, "General Ecology in the Smokies," was born from their desire to do something jointly with the community and education, and was supported by my interest in teaching ecology as a field offering, merging motivated students with the vast resources of the park.

### A "Crown Jewel" for the Classroom

Great Smoky Mountains National Park, established in 1934, and within an hour's drive of Pellissippi State, is among the nation's premiere natural treasures. What better setting for a select group of field majors than to study ecology within the expanse of this 800-square-mile neighboring international biosphere reserve!

This park, while by no means the largest among the nation's federal parks, hosts the most visitors annually, approximately ten million. It lies within the southern Appalachians near a major concentration of the country's eastern population. Seventy miles of the Appalachian Trail bisect it at the crest, with Tennessee located to the west and North Carolina to the east of the trail. There are more than 800 miles of trails and streams in 500,000 acres, with a greater diversity of flora than in all of Europe, making it an ecological wonder. This "salamander capital of the world" is also home to turkey, white-tailed deer, wild hogs, and, perhaps, the

nation's most sought-after, but seldom-seen, large mammal—the black bear.

Recognizing the value of the park to the public, the University of Tennessee established the Smoky Mountain Field School in 1978. The Field School became a noncredit program of lectures and hikes for nature-loving participants in daylong and weeklong formats. I became a field school instructor in 1980 and was joined by my wife in 1983. After nearly 20 years of providing instruction in the school and developing personal and professional relationships with park staff, it seemed plausible to draw upon the park's resources for a credit course in ecology to be offered through the college.

### Course Format—Putting Learning into Action

General Ecology is a four-credit-hour course, fully transferable to neighboring state institutions at the sophomore level. It is a field course preceded by discussion and orientation meetings, offering eight days of intensive field participation and ending with student reflection and course evaluation (to meet the college's high standards and Southern Association requirements).

The four primary topics of ecology—populations, communities, terrestrial and aquatic environments—are taught in the field. Park literature and numerous handouts from the instructor, and both flora and fauna field guides, supplement the text.

Students spend two days hiking and camping in each of the park's four regions, selected for interest and diversity. They include the southwestern area at Fontana Dam, chosen for its historical interest and sparse park intrusion by visitors; the northwestern area of Cades Cove, considered for its vast openness and chance at viewing large mammals; the northeastern Cosby region, distinguished by the old growth trees of Albright Grove; and the southeastern cove of Big Cataloochee, recently newsworthy due to the experimental reintroduction of elk.

Each area offers appropriate diversity to support course content. The "classroom" might be the front porch of a historic pioneer cabin, or students might hear lecture materials while they are seated in an amphitheater of 100-



year-old hemlock trees. Park personnel are called upon for their expertise and offer unique perspectives, as well. Students may be visited at their campsite by rangers or go to areas of the park in which personnel perform their duties for the National Park Service. Students learn about what makes particular jobs enjoyable, as well as difficult, and the qualifications necessary for gaining similar employment upon graduation.

Given the uncertainty of their schedules, park specialists' lectures and demonstrations will vary from year-to-year; among others, activities can include: shocking fish with a fisheries unit on a remote stream for a trout survey; seeing snare demonstrations and traps used to capture troublesome bears or hogs; discussing park management with the park superintendent; and hearing the most frequently asked questions law enforcement rangers must answer, including the bizarre—e.g., "When do deer turn into elk?"

### Participant Selection

This course is offered in late May, beginning just after the spring semester and ending by the time the regular summer semester begins in early June. The main campus and satellite branches are blanketed with posters in early April to attract interested students seeking instruction in this nontraditional setting. Posters explain the rigorous expectations of a strong commitment, appropriate fitness, and no tobacco—a concern among wildlife viewers and among us all, especially during the early-summer fire season.

The instructor, via interview and review by an informal committee, selects 10 students from the usual deluge of applications. Non-science majors, as well as field majors in biology, forestry, and wildlife management, are considered. Typically, there is a fairly even distribution of women and men in their mid-twenties, who are attending the college and the university, enrolled in this course. Careful consideration is given to those applicants who are perceived as gaining the most benefit from a field experience and who appear to have the skills necessary to cope in a close, small-group wilderness setting.

### Course Logistics

Reservations for the four park group campsites are made weeks ahead via the Internet. The college's 15-passenger van is used for transportation. The college provides the major camping needs of tents, sleeping pads, and cook gear. Students bring their own sleeping bags, daypacks, field clothes, and necessities—e.g., insect repellent, binoculars, and perhaps a hiking stick.

The instructor and his wife purchase most of the food for the group. Limited storage is available in the back of

the van for food, camp gear, and personal soft luggage. A cooler for drinks and perishables is loaded into the van's luggage compartment. Everything else goes in individual daypacks or is placed under the seats. Everyone must wear a seat belt when the van is in motion. The fit is adequate, but tight; and students are told ahead of time about this travel configuration that allows us to make the journey in one vehicle.

### Course Fees and Trip Costs

Students register for the course through instructor authorization and pay the usual fees for a four-credit-hour course. On the last day of the field portion of the course, the instructor passes out the receipts for all of his out-of-pocket expenditures for the group's supplies and food. The total is divided by all, with the instructor paying his share of the cost for campsites, food, and supplies; historically, this has amounted to less than \$75 per participant. Vehicle mileage cost is charged back to the science department, and the instructor is paid from a separate college instructional account for teaching the course.

### Student and Course Evaluation

Four components are involved in student evaluation: ecological definitions and concepts; identification of flora and fauna; park administration and history; and individual participation and completion of duties. Once grades are submitted to the registrar, students are asked to complete a course and instructor evaluation anonymously.

### Conclusions

The U.S. is blessed with a vast array of teaching possibilities in state and national parks and seashores that are within reasonable driving distances of most colleges and universities. There is an untold wealth of experience and knowledge to be gleaned by students from capable park professionals. Truly, such field experiences require considerable effort and safety awareness by the instructor and participants, but the value of learning outside the box is priceless.

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