

Biodiversity of North Carolina

Spring, 2012

6:15-8:45 pm
Room 155 Bio Sci.

Instructors:

Paul Manos, 330 Biological Sciences (660-7358; pmanos@duke.edu)

Jon Shaw, 331 Biological Sciences (660-7344; shaw@duke.edu)

Please note: This course has a fee of \$325 in addition to tuition. The fee covers room, transportation, lab fees, and one dinner for the week at the Highlands Biological Station. In addition to this fee, students need to budget for meals that they will prepare at the Highlands Biological Station.

Students taking more than one course MUST contact their professors for permission to miss on-campus courses the week of April 9.

North Carolina is a hotspot for biodiversity because of the rich variety of habitats and because the state was not covered by glaciers during the recent ice ages. This course will examine biodiversity in the southern Appalachian mountains of western North Carolina, with an emphasis on the plant communities. We will have four class meetings during the Winter and Spring months (January to April) and then spend six (glorious) days at the beautiful Highlands Biological Station, which is situated in one of the richest areas of the southern Appalachians. Each day in the mountains we will visit natural habitats ranging from the protected cove forests along the Blue Ridge to subalpine Spruce-Fir forests. At the Station we will examine plants that we collect during our field trips. Lectures/discussions will deal with land use history in North Carolina, conservation of mountain biodiversity, and the ecology of natural ecosystems.

Our week in the mountains at the Highlands Biological Station will feature daily field trips complemented by ample time in the laboratory for close-up examination of plants, and discussion. We will focus on the plant communities and learn skills needed to identify plants, because these organisms create the habitat structure on which animal communities depend. We will nevertheless make observations and discuss animal diversity in the southern Appalachians as well.

On Monday, Wednesday, and Friday while in the mountains, we will undertake half-day field trips and leave afternoon time for lab work back at the field station. On each of those days we will have an (early) evening lecture / discussion focusing on a topic related to southern Appalachian biodiversity; for example, land use patterns and the preservation of critical habitats, local conservation efforts. On Tuesday and Thursday we will undertake field trips to sites that require a longer drive (Great Smoky Mountain National Park, Blue Ridge Parkway); these will be full day trips.

This course does *not* require an academic background in biology; enthusiasm for nature and spending some time outdoors will suffice! Moderate hikes will be included with an emphasis on hands-on experiences identifying plants and observing natural communities.

Schedule:

Tuesday, 17 January	Biodiversity: what is it? Why do we care?
Tuesday, 31 January	North Carolina geography, geology, and ecology
Tuesday, 27 March	Biogeography of Appalachian forests / Discussion: <i>Song of the Dodo</i>
Tuesday, 3 April	An overview of plant diversity / field trip orientation / Discussion: <i>Song of the Dodo</i>
Sunday, 8 April	Travel to Highlands Biological Station (see http://www.wcu.edu/hbs/)
Monday, 9 April	Field trip (morning: local mountain “balds”) Laboratory examination of plant collections (afternoon) Evening lecture / discussion
Tuesday, 10 April	All-day field trip: Joyce Kilmer Memorial Forest
Wednesday, 11 April	Field trip (morning: mountain “bogs” and forests) Laboratory examination of plant collections (afternoon) Evening lecture / discussion
Thursday, 12 April	All day field trip: Blue Ridge Parkway (high elevation)
Friday, 13 April	Field trip (morning: “Escarpment gorges”) Laboratory examination of plant collections (afternoon) Evening lecture: Paul Manos – <i>Biotic interconnections and co-evolution</i>
Saturday, 14 April	Return to Durham

Expectations / evaluation: (1) A field journal detailing observations made during field trips, and (2) a term paper. The term paper will be due no later April 24.

Required Text: Quammen, D. 1996. *The Song of the Dodo. Island Biogeography in an Age of Extinctions*. Simon & Schuster. New York.

We will ask students to read this enjoyable book before our second two Durham class meetings (27 March, 3 April) so we can have discussions in class and during our Highlands field trip.

We will also use several guides to plants of the southern Appalachian region plus a variety of publications about conservation, land use, and biodiversity the Appalachians (available for purchase or free use during our mountain field trip), including:

Kilpatrick, J. A. Weakley, & T. Massengale. 2004. Southern Appalachian Conservation Assessment. Open Space Institute.

Ouzts, E. 2007. Losing our Natural Heritage: Development and open space loss in North Carolina. Environment North Carolina Research and Policy Center, Raleigh, North Carolina.

Yarnell, S. 1999. Southern Appalachians: A History of the Landscape DIANE Publishing.

and internet resources provided by various NGOs:

North Carolina State Wildlife Action Plan:

http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c1.htm

Blue Ridge Forever:

<http://www.appalachian.org/blueridgeforeverinfo/ConservationVisionES.pdf>

The Land Trust for the Little Tennessee River:

<http://www.ltlr.org/citizensguide.html>

One North Carolina Naturally:

<http://www.onencnaturally.org/>

<http://www.onencnaturally.org/pages/mapviewer.html>

North Carolina plant identification resources:

Will Cook: <http://www.duke.edu/~cwcook/trees/>

Weakley, A. S. 2010. Flora of the Southern and Mid-Atlantic States. Available for electronically for free at: <http://www.herbarium.unc.edu/flora.htm>