Syllabus

FIELD BIOLOGY AND ECOLOGY

NR 5224 (CRN 17159) 3 Credits
SPRING SEMESTER 2009
Northern Virginia Center
Virginia Polytechnic Institute and State University
College of Natural Resources

CLASS LOCATION
Virginia Tech Northern Virginia Center
7054 Haycock Rd., Falls Church, VA

MEETING TIMES
Saturday, times TBA

PREREQUISITES
Introductory Biology (preferred), Botany or Zoology, or permission of instructors

PRIMARY INSTRUCTOR
Steve Sheffield, Ph.D., Adjunct Professor, College of Natural Resources, Virginia Polytechnic Institute and State University, 1615 Parkridge Circle, Crofton, MD 21114. Phone: 301-860-3309; Email: srsheffield@comcast.net.

OTHER INSTRUCTORS
Gary Evans, Ph.D., Professor, College of Natural Resources, Virginia Polytechnic Institute and State University, Northern Virginia Center, 7054 Haycock Rd., Falls Church, VA 22043. Phone: 703-538-3762; Email: gaevans1@vt.edu.

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Office hours by appointment.

COURSE DESCRIPTION
Field biology deals with the study of organisms and their ecological systems under natural conditions (or in their natural habitat) with special emphasis upon classification, identification, natural history, and ecology of ecosystems and their components (species, populations, communities). This is a unique and valuable course for anyone interested in natural resources at any level. It is crucial that today's natural resources professionals gain field experience and have a strong familiarity, understanding, and appreciation of field biology and the flora/fauna and ecology of the region in which they work, as well as some of the methods that are being used by field biologists. With this in mind, this course is designed to provide valuable field experience in

the observation, interpretation, and identification of a wide variety of plant and animal taxa and their associated ecosystems. In the process, students will be provided with a perspective on the ecology, behavior, natural history and taxonomy of these organisms. Emphasis will be placed on the organisms and ecosystems of the mid-Atlantic states. The instructors, all highly experienced field biologists, will facilitate this experience through initial training in the classroom followed by extensive time at a wide variety of locations in the field, where a naturalist-ecologist approach to the study of biological systems will be pursued. Careful observation of biological events in the field and accurate recording of those events will be emphasized. A variety of field methods will be discussed, demonstrated, and/or carried out by students at each field site whenever possible.

GOAL AND EDUCATIONAL OBJECTIVES

Goal: To provide students with a strong foundation, through actual field experience, in learning the skills of observation, interpretation, and identification of a wide variety of plant and animal taxa and their associated ecosystems of the mid-Atlantic states (VA, MD, DE, PA, WV). Further, students will be provided with a perspective on ecology, behavior, natural history, and taxonomy of these organisms, which could serve as a basis for future field research and monitoring endeavors.

Course Objectives: Upon completion of the course, students will be able to:

- Properly make field observations and take/maintain careful records (written notes, photos, audio recordings, etc.) of field observations.
- Possess experience conducting fieldwork including observation, interpretation, and identification of a diversity of plant and animal taxa and their associated ecosystems of the mid-Atlantic states.
- Identify organisms, populations, communities, and ecosystems in the field through knowledge gained throughout the semester, and have an understanding of the ecology, behavior, natural history, and taxonomy of selected area plant and animal taxa.
- Competently use field guides, taxonomic keys, the internet, and other references of field-related information to conduct further field biological activities.
- Discuss and demonstrate a variety of methodologies used by field biologists in research and monitoring.
- Discuss the recent technological advances that will improve our abilities and understanding of field biology in the future.
- Incorporate current scientific knowledge and technologies into holistic analysis that affect field biology issues.
- Recognize and appreciate how changing environmental conditions (e.g., global climate change, increasing human population, etc.) may impact organisms and their ecosystems as well as biodiversity.
- Identify factors and processes that threaten biological/ecological integrity and estimate potential impacts on the environment and the role that field biology might play in ameliorating these impacts.
- Recognize the overall importance of both basic (biological/ecological sciences) and applied (conservation biology, wildlife management, restoration, etc.) aspects of field biology.

- ❖ Recognize and appreciate the wide range of conditions a field biologist encounters and what it takes to become a professional field biologist
- ❖ Recognize future employment trends and opportunities in field biology and explore interests in careers related to field biology.

COURSE CALENDAR

Date	Location (tentative)
24 Jan	No class
31 Jan	Introduction I (Northern VA Center – Falls Church)
7 Feb	Open
14 Feb	Introduction II (Northern VA Center – Falls Church)
21 Feb	Open
28 Feb	Prince William Forest State Park (Quantico, VA)
7 Mar	No class (SPRING BREAK)
14 Mar	No class (SPRING BREAK)
21 Mar	Vernal pools, Clifton, VA (Note – evening field trip)
28 Mar	Catoctin Forest State Park (Thurmont, MD)
4 Apr	Huntley Meadows (Alexandria, VA)
11 Apr	Battle Creek Cypress Swamp/Piney Point Salt Marsh (MD)
18 Apr	Open
25 Apr	Deadline for field reports/writeups for 1st 6 fieldtrips
25-27 Apr	Powdermill Biological Field Station, PA (**overnight**)
2-4 May	Blackwater Falls, Canaan Valley, Dolly Sods, WV (**overnight**)
11 May	Deadline for field reports/writeups for the two overnight fieldtrips
15 May	Final grades due

FIELD LOGISTICS

As we will be spending a vast majority of our time in the field, proper field dress is required, which during winter usually includes warm clothes, proper footwear, gloves, etc. In cases of field trips to wetland areas, rubber boots or waders may be appropriate. Also, students should bring binoculars, field guides, and any other necessary field equipment with them to each field trip. Regarding inclement weather conditions, we will attempt to make a determination on this by Friday afternoon before a field trip if necessary. We will avoid traveling in snow and icy conditions that would pose an unreasonable hazard, and we have open dates scheduled throughout the semester in which to make up a given field trip in case of postponement due to inclement weather.

LIABILITY WAIVER

Students will be required to sign standard Virginia Tech waiver forms to cover liability issues on field trips. The waiver forms will be provided at the first class meeting.

COURSE REQUIREMENTS AND GRADING

The course will be focused entirely on field observation, interpretation, and identification of plant and animal taxa and their associated ecology including the ecosystems in which they occur. Each field trip will address a variety of taxa and ecosystems that will be used to guide class discussion and promote critical inquiry. In addition, a wide variety of field methods will be discussed, demonstrated, and/or carried out by students at each field site, but this will be dependent upon the situation/conditions at each field site. Certain field skills, such as proper use of field guides and taxonomic (dichotomous) keys, taking accurate field notes, and some basic ecology will be covered at the beginning of the course prior to going into the field and will continue to be reinforced at each fieldtrip. The course will require research on the student's part prior to each trip and extensive readings in field guides and other references along with internet searches. Students are expected to keep and maintain carefully written field notes for each field trip that will be submitted following each field trip.

Class attendance and participation in class field trips, discussions and field notes are critically important and will account for 50% of the final grade. Arrangements may be worked out for a maximum of **ONE** absence due to conflicts in work or other schedules, but these arrangements must be made **PRIOR** to the absence and must include a make-up of the missed fieldtrip. Written reports resulting from each fieldtrip will account for the other 50% of the grade. Field reports/writeups for each fieldtrip should be submitted via Blackboard 1-2 weeks following the fieldtrip.

GRADUATE HONOR CODE

The tenets of the Virginia Tech Graduate Honor Code will be strictly enforced in this course, and all assignments shall be shall subject to the stipulations of the Graduate Honor Code as outlined in the 2001-2003 Graduate Catalog. For more information on the Graduate Honor Code, please refer to the GHS Constitution, located online at http://fbox.vt.edu/studentinfo/gradhonor/ Please contact the instructors immediately if you have questions.

WEATHER ISSUES
As a general rule, we are not going to attempt to hold a fieldtrip if weather conditions pose a driving hazard. We will keep a close eye on the weather and will advise students by Friday pm (afternoon or evening) if a fieldtrip will be postponed due to weather. Communication will be through email, Blackboard, and/or phone.

SPECIAL ACCOMMODATIONS
Students with special needs or circumstances are encouraged to meet with the instructors after the first class or ASAP. Please do not wait until later in the semester. In all cases, please feel free to contact the instructors should you have any questions.

COURSE EVALUATIONS
In the spirit of continuous improvement, we seek ways to improve this course and value your input. To that end, you will be asked to complete a detailed (2-page) evaluation questionnaire the last week of class to help modify the course. At any point during the course, your suggestions and comments are welcome.

REQUIRED TEXTS
Alden P, Cassie B, Kahl JDW, Oches EA, Zirlin H, Zomlefer WB. 1999. National Audubon Society field guide to the Mid-Atlantic states. Alfred A. Knopf, NY, 447 pp.

Kricher JC, Morrison G. 1988. A field guide to eastern forests of North America. Houghton Mifflin Co, Boston, 368 pp.

Conant R, Collins JT, Conant IH, Johnson TR, Collins SL. 1998. A field guide to the reptiles and amphibians of eastern and central North America. Fourth edition, 634 pp.

National Geographic Society. 2006. A field guide to the birds of North America. Fifth edition. National Geographic Society, Washington, DC, 503 pp.

Kays R, Wilson DE. 2003. A field guide to the mammals of North America. Princeton Univ Press, Princeton, NJ, 240 pp.

Newcomb L. 1989. Newcomb's wildflower guide. Little Brown Publishers, 490 pp.

TEXTS ON RESERVE
Molles MC. 2004. Ecology: concepts and applications. 3rd edition. McGraw-Hill, 636 pp. (Note – two copies of this text are on reserve in the VT library at Falls Church)

OTHER TEXTS THAT MAY BE USEFUL
(HERPS)
Green, NB, Pauley TK. 1987. Amphibians and reptiles of West Virginia. Univ. of Pittsburgh Press, Pittsburgh, PA, 241 pp.

Martof B, Palmer WM, Bailey JR, Harrison JR III. 1980. Amphibians and reptiles of the Carolinas and Virginia. Univ. of North Carolina Press, Chapel Hill, NC, 264 pp. (note – reprinted May 1989)

(BIRDS)
Sibley DA. 2000. The Sibley guide to birds. A. A. Knopf, New York, 544 pp.

Sibley DA. 2001. The Sibley guide to bird life and behavior. A. A. Knopf, New York, 608 pp.

(MAMMALS)
Webster WD, Parnell JF, Biggs WC Jr. 2004. Mammals of the Carolinas, Virginia, and Maryland. Second Edition. Univ. of North Carolina Press, Chapel Hill, NC, 272 pp.

Whitaker JO Jr, Hamilton WJ. 1998. Mammals of the eastern United States. Third edition. Cornell Univ. Press, Ithaca, NY, 608 pp.

BLACKBOARD

Course announcements, information, assignments, and documents will be posted on Blackboard, accessible with your PID and Password at www.learn.vt.edu or the Virginia Tech Home Page. We will be using Blackboard extensively in this course, so please check Blackboard frequently!

USEFUL INTERNET SITES

University of Michigan Animal Diversity http://www.ummz.umich.edu/
West Virginia DNR http://www.wvdnr.gov/wildlife/wdpintro.shtm
Maryland DNR http://www.dnr.state.md.us/wildlife
Virginia DGIF http://www.dgif.virginia.gov/wildlife
Pennsylvania GC http://www.pgc.state.pa.us/pgc/site/default.asp
http://www.pgc.state.pa.us/pgc/cwp/view.asp?a=496&q=162214 (herps, fishes), q=161654 (mammals), q=162144 (birds)
Marshall University Herp site http://www.marshall.edu/herp
Smithsonian Institution Mammals site http://web4.si.edu/mna
Birds/Birding http://www.birdzilla.com

Tree of Life http://tolweb.org/tree/phylogeny.html
NatureServe http://www.natureserve.org (a network connecting science with conservation)
Electronic Field Guides (NWF sponsored) http://www.enature.com/fieldguides
(includes mammals, birds, reptiles, amphibians, fishes, seashore creatures, seashells, insects, butterflies, spiders, wildflowers, trees, with special sections on poisonous species, threatened/endangered species, native gardening and invasive species guide, and mammal tracks)

Specific Field Sites

Prince William Forest National Park http://www.nps.gov/prwl

Amphibians http://www.pwrc.usgs.gov/nearmi/species - NE Amphibian Research and Monitoring Initiative – amphibian species
http://www.pwrc.usgs.gov/frogquiz - frog call quiz
http://www.pwrc.usgs.gov/armiatlas - Amphibian Research and Monitoring Initiative – National Atlas for Amphibian Distributions

Catoctin Mountain National Park http://www.nps.gov/cato

Huntley Meadows http://www.fairfaxcounty.gov/parks/huntley
http://friendsofhuntleymeadows.org

Battle Creek Cypress Swamp Sanctuary http://www.dnr.state.md.us
http://calvert-county.com/cypress.htm

Piney Point http://www.co.saint-marys.md.us/recreate/facilities/pineypointlighthousepark.asp
http://www.chesapeakebay.net/baybio.htm

Powdermill Biological Reserve http://www.powdermill.org
http://pitt.edu/~biohome/Dept/Frame/powdermill.htm
http://westol.com/~banding/About_banding.htm

Canaan Valley http://canaanvalley.fws.gov
Blackwater Falls http://www.blackwaterfalls.com
Cranesville Swamp
http://www.nature.org/wherewework/northamerica/states/westvirginia/preserves/art1202.html
http://frostburg.edu/6thlCPS/cranesville_brochure.pdf
http://www.wvu.edu/~agexten/wildlife/cranesvi.htm
http://www.wvexp.com/index.php/cranesville_swamp

Dolly Sods http://www.patc.net/hiking/destinations/dolysods.html
http://www.fs.fed.us/r9/mnf/sp/dolly_sods_wilderness.htm