

WFS 433/533
AMPHIBIAN ECOLOGY AND CONSERVATION
Spring 2014

- Instructor:** Dr. Matthew Gray (*mgray11@utk.edu*)
- Student Assistant:** Jordan Chaney (*jchaney6@utk.edu*)
- Office:** 247 Ellington Plant Sciences Building, 974-2740
- Website:** <http://fwf.ag.utk.edu/mgray/wfs493/493home.htm>
- Time & Place:** T, Th 5:05 – 7:05 p.m., 113 PBB (2 field trips required: see page 3)
- Course Credits:** 3 credits
- Required Text:**
- The Ecology and Behavior of Amphibians, 2007 (ISBN 9780226893341)
 Author: Kentwood D. Wells (*reserved at Pendergrass and available online*)
 - The Amphibians of Tennessee (<http://utpress.org/>)
 Authors: Matthew Niemiller and R. Graham Reynolds
- Journal Papers:** Occasionally journal papers or chapters from other books will be assigned instead of or to supplement the required text. These will be provided in class or on the website.
- Course Goal:** To expose students to the life history, diversity, ecology, conservation, and management of amphibians through a combination of lectures, readings, class discussions, labs, and field experiences.
- Expected Outcomes:** Students that successfully complete WFS 433/533 will have a basic understanding of amphibian identification (larvae and adults), anatomy, life history, and ecology. They will be aware of potential mechanisms of amphibian declines, understand how to identify and sample amphibians, and be aware of conservation strategies.

Weights of Academic Assessments:

WFS 433		WFS 533	
• Test #1	20%	• Test #1	20%
• Test #2	20%	• Test #2	20%
• Test #3	20%	• Test #3	20%
• Amphibian ID Exam	15%	• Amphibian ID Exam	10%
• Mini-Presentation ¹	15%	• Lecture ²	20%
• Participation ^{3,4}	10%	• Participation ^{3,4}	10%

¹Mini-presentations will be 8-10 minute persuasive presentations attempting to convince the audience of a specific cause of amphibian declines. Two minutes will be allowed following presentations for questions. The class will vote on the top 3 presentations, and the winners will receive a gift certificate to Gander Mountain (see p. 4).

²Graduate student lectures will be 40-50 minute presentations on an approved amphibian ecology topic. Topics must be approved by 6 February.

³Participation includes attendance for two field trips and one lab, and conducting one amphibian breeding call survey at the UT Cherokee Woodlot. You will earn 3% for attending each field trip, and 2% each for the call survey and amphibian disease lab. You must sign up for a Cherokee Woodlot survey (nights of 11 and 25 Feb; 6, 13, and 25 Mar; or 1, 8, and 15 April).

⁴If you miss a field trip, you can either: (1) attend the Southeast PARC meeting (1 day), (2) write a 10-page scientific paper on an amphibian topic of your choice, or (3) accept the 3% deduction in your final grade.

Your course grade will be determined using the following scale:

Grade	Final Weighted Percent		Grade	Final Weighted Percent
A	90 – 100%		C	70 – 76%
B+	87 – 89%		D	60 – 69%
B	80 – 86%		F	<60%
C+	77 – 79%			

Extra Credit:

You can positively influence your grade as much as **4.5%** by volunteering for extra credit. Volunteer work must be related to herpetofauna, and can include work on university projects, with government agencies, or NGOs. For every **8 hours** of volunteer work, your final grade will be increased by **1.5%** up to **4.5%** (24 hours total). All volunteering must be completed by **2 May 2014**. A volunteer form (see website) must be filled out by the supervising individual. Scott Dykes (TWRA non-game biologist) is often looking for volunteer assistance (Region 4 Office: 1-800-332-0900; scott.dykes@tn.gov). You also may participate in TAMP surveys (organized by the UT Student Chapter of The Wildlife Society).

Extra credit can be earned by attending the Annual Meeting of the Southeast Partners in Amphibian and Reptile Conservation (<http://www.separc.org/>). The meeting is 13 – 16 February at Lake Cumberland State Park in Kentucky. Your final grade will be increased by **3.5%** for attending the meeting from **14 – 15 February**. Transportation will be provided. If interested, you need to sign up by **4 February** if you are planning to travel with Dr. Gray. Registration (\$50 for students) is required. Inexpensive accommodations are available (see website).

NOTE: A maximum of **4.5%** can be earned in extra credit in WFS 433/533.

Scientific Paper: (Make up for Missed Field Trip) DUE: 24 April 2014 or before

Choose an amphibian topic of interest (related or unrelated to a lecture topic) and write a ≥ 10 -page paper. The title page and literature cited are not included in the length requirement and over $\frac{1}{2}$ of the 10th page must have text. The paper must be written scientifically and include ≥ 5 non-internet references (e.g., journal article, book chapter). The style of headings, in-text referencing, and the literature cited format must follow the *Journal of Wildlife Management* (Volume 70[1]:304-320). Your paper must be double-spaced using 10- or 12-pt Times New Roman font with 1" margins.

ADA Accommodation:

Any student who, because of disability, may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make such accommodations as may be necessary.

Religious Holy Day Observance:

A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence IF, not later than the FIFTEENTH day after the first day of the semester (i.e., 1/23/14), the student has notified the instructor of each scheduled class that the student would be absent for a religious holy day.

Tentative Schedule: WFS 433/533

Month	Day	Topics ¹	Instructors
January	9	Introduction and TN Anuran ID	Gray
	14	TN Anuran ID and TAMP	Gray
	16	TN Salamander ID	Sutton (Clemson)
	21	Evolution of Amphibians	Hardman (UT)
	23	Reproductive Strategies (<i>start at 5:30 pm</i>)	Echternacht (UT)
	28	Salamander Courtship	Hamed (VHCC)
	30	Anuran Courtship	Gray
February	4	Amphibian ID Exam	Hardman
	6	Tadpole Ecology	Gray
	11	Phenotypic Plasticity – Podcast (<i>no class</i>)	Hoverman (Purdue)
	13	SEPARC Meeting: Lake Cumberland, KY (<i>no class</i>) Extra Credit Opportunity (see p.2)	No class (attend if possible)
	18	Test #1	
	20	Guidance for Mini-Presentations: Literature Review and Persuasive Talks	Gray
	25	WFS 533 Lectures	Grad Students 1 and 2
	27	WFS 533 Lecture	Grad Student 3
March	4	Movement Ecology	Earl & Kershenbaum (NIMBioS)
	6	Community Ecology – Podcast (<i>no class</i>)	Hoverman (Purdue)
	11	Amphibian Immunology	Williamson (UT)
	13	Test #2	
	18, 20	Spring Break (<i>no class</i>)	No class
	25	Amphibian Declines	Gray
	27	Amphibian Sampling Techniques	Hamed (VHCC)
	28 (Fri)	Field Trip UT Cherokee Woodlot (<i>leave at 5:00 pm</i>) ¹	
April	1	Ranavirus	Gray
	3	Amphibian Disease and Pathology Lab (<i>Meet until 7:30 pm in 124 South Greenhouse</i>)	Miller & Gerhold (UT)
	5 (Sat)	Great Smoky Mountains Field Trip (<i>leave at 8:00 am</i>) ¹	
	8	Conservation Strategies	Gray
	10	Zoological Facilities in Conservation (<i>Meet in 156/157 PBB</i>)	Mendelson (ATL Zoo)
	15	Mini-presentations #1	8 Undergraduates
	17	Mini-presentations #2	8 Undergraduates
	22	Mini-presentations #3 Debate and Vote on Presentations	4 Undergraduates Class
	24	Test #3	Gray

¹University transportation will be provided for the Cherokee Woodlot and Great Smoky Mountains field trips.

Mini-Presentation Topics on Amphibian Declines
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- (1) Climate Change
- (2) Ozone depletion and UV-B radiation
- (3) Acid rain
- (4) Silviculture
- (5) Fragmentation
- (6) Urbanization
- (7) Roads
- (8) Exploitation
- (9) Introduced predators
- (10) Introduced competitors
- (11) Livestock
- (12) Insecticides
- (13) Herbicides
- (14) Fertilizers
- (15) Endocrine disruption
- (16) *Saprolegnia*
- (17) *Batrachochytrium dendrobatidis*
- (18) Ranavirus
- (19) *Aeromonas hydrophila*
- (20) Trematodes (*Ribeiroia*)
- (21) Alveolates (i.e., perkinsus-like organisms)
- (22) Pathogen Pollution
- (23) Heavy Metals

Details on presentation requirements will be provided.

Randomization: Students will be randomly assigned to one of the above possible factors. The order of presentation will occur as listed above.

Debate and Awards: An open forum debate will occur on 22 April where students can voice their opinion once more for why their factor is the primary cause of amphibian declines. The discussion will be facilitated by Dr. Gray. After 30 minutes, a confidential vote will be taken for the most convincing arguments. Students cannot vote for their own presentation. Votes will be tallied following the final presentation and gift certificates to Gander Mountain for \$40, \$20, and \$10 will be awarded to 1st, 2nd, and 3rd places. If there is a tie, a revote will occur between the tied factors only.