WFS 433/533
AMPHIBIAN ECOLOGY AND CONSERVATION
Spring 2015

Instructor: Dr. Matthew Gray (*mgray11@utk.edu*)

Office: 247 Ellington Plant Sciences Building, 974-2740

Website: http://fwf.ag.utk.edu/mgray/wfs493/493home.htm

Time & Place: T, Th 3:40 – 4:55 p.m., 160 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 (*available online*: http://www.lib.utk.edu)
- 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	
• Test #1	20%
• Test #2	20%
• Test #3	20%
• Amphibian ID Exam	15%
• Mini-Presentation[1]	15%
• Participation[3,4]	10%

WFS 533	
• Test #1	20%
• Test #2	20%
• Test #3	20%
• Amphibian ID Exam	10%
• Lecture[2]	20%
• Participation[3,4]	10%

[1]Mini-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).

[2]Graduate student lectures will be 40-50 minute presentations on an approved amphibian ecology topic. Topics must be approved by 5 February.

[3]Participation 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 12 and 24 Feb; 3, 12, 24 and 31 Mar; or 9 and 16 April).

[4]If 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 **5 May 2015**. A volunteer form (see website) must be filled out by the supervising individual. Scott Dykes (scott.dykes@tn.gov), Chris Ogle (Chris.S.Ogle@tn.gov), and Chris Simpson (Chris.Simpson@tn.gov) with TWRA are often looking for volunteer assistance. 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 19 – 22 February at the Clarion Inn and Suites Conference Center in Covington, Louisiana. Your final grade will be increased by **4.5%** for attending the meeting from **20 – 21 February**. Transportation will be provided. If interested, you need to sign up by **5 February**. Registration ($60 for students) is required. Hotel rooms are $88/night under the SEPARC rate.

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: 23 April 2015 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 ½ 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 male 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., 1/22/15), 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	8	Introduction	Gray
	13	Evolution of Amphibians	Hardman (UT)
	15	Amphibian Diversity	Hamed (VHCC)
	20	TN Anuran ID	Gray
	22	TN Salamander ID	Sutton (TSU)
	27	Anuran Courtship	Gray (UT)
	29	Salamander Courtship	Hamed (VHCC)
February	3	**Amphibian ID Exam**	Gray
	5	Tadpole Ecology	Gray
	10	**Test #1**	
	12	Phenotypic Plasticity – Podcast (*no class*)	Hoverman (Purdue)
	17	Post-metamorphic Life	Gray
	19	SEPARC Meeting: Covington, LA (*no class*) Extra Credit Opportunity (see p.2)	No class (attend if possible)
	24	Guidance for Mini-Presentations: Literature Review and Persuasive Talks	Gray
	26	Amphibian Behavior: Parental Care	Pierson (UT)
March	3	Amphibian Immunology	Kania (UT)
	5	Movement Ecology – Podcast (*no class*)	Earl & Kershenbaum (NIMBioS)
	10	WFS 533 Presentation	C. Yarber
	12	**Test #2**	
	17, 19	Spring Break (*no class*)	No class
	24	Amphibian Declines	Gray
	26	Amphibian Sampling Techniques	Gray
	28 (Sat)	**Great Smoky Mountains Field Trip** (*leave at 8:00 am*)[1]	Gray and others
	31	**Amphibian Anatomy and Pathology Lab** (*Meet until 5:30 pm in A235 CVM Parasitology Lab*)	Miller & Gerhold (UT)
April	2	Ranavirus	Gray
	7	Conservation Strategies	Gray
	9	Mini-presentations #1	5 Undergraduates
	10 (Fri)	**Field Trip** **Nashville Zoo** (*leave at 7:00 am*)[1]	Dale McGinnity
	14	Mini-presentations #2	5 Undergraduates
	16	Mini-presentations #3	5 Undergraduates
	21	Mini-presentations #4	5 Undergraduates
(*meet until 5:15 pm)*	23	Mini-presentations #5 Debate and Vote on Presentations	3 Undergraduates Class
May	5	**Test #3** (2:45 – 4:45 pm in 160 PBB)	Gray

[1]University transportation will be provided for the Great Smoky Mountains and Nashville field trips.

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

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 23 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.