California State University, Fresno
Department of Biology

Biology of Reptiles and Birds

Lecture and Lab

Fall 2007

Course No: ZOOL 174	*Instructor:* Dr. Madhusudan Katti, Biology Dept.
Unit Value: 4	*Office:* Room 218B, Science Building
Location: Science 300	*Email:* mkatti@csufresno.edu
Lectures: TuTh 11:00-12:15	*Telephone:* 559•278•2460
Laboratory: Tu 8:00-10:50 (*or field trip at other agreed time*)	*Office Hours:* Tu: 9:30-12:00; Wed: 1:00-3:30 PM

Catalog Description:

Not open to students with credit in ZOOL 137 or ZOOL 172. Prerequisite: BIOSC 130. Ecology, ethology, and evolution of the reptiles and birds of the world. Encompasses the traditional areas of herpetology and ornithology. (3 lecture, 3 lab or field hours)

Other Prerequisites

The formal prerequisite course is BioSci 130. You may take that course concurrently with instructor approval. The course builds upon your knowledge of vertebrates, ecology, evolution, and animal behavior. Therefore some basic understanding of these topics will be expected. I will bring to class my own personal experiences studying some of these creatures in the Old and New Worlds.

What You Will Need to Purchase for this Course

Textbooks: *(available (used copies also) through the Kennel bookstore)*

Herpetology, *Third Edition*
Authors: F. H. Pough, Robin M. Andrews, John E. Cadle, Martha L. Crump, Alan H. Savitsky, Kentwood D. Wells
Hardcover 10 July, 2003 Prentice Hall ISBN: 0131008498
List Price: $117.60; Amazon New Price: $94.08; Amazon Used Price: $40.00

Ornithology, *Third Edition*
Author: Frank B. Gill
Hardcover, 06 October, 2006 W.H. Freeman & Co. ISBN: 0716749831
List Price: $97.40; Amazon Used Price: $49.99

Field Guides (*strongly recommended*): These days, you can find an increasing number of field guides for identifying reptiles and, especially, birds, using a variety of formats and presentation styles. You may already have your favorites, or may find a particular author or format more appealing than others. In general, if you can only afford to purchase one field guide each, I recommend the following:

A Field Guide to Western Reptiles & Amphibians (Peterson Field Guide Series)
Authors: Robert C. Stebbins, Roger Tory Peterson
Paperback 27 March, 2003 Houghton Mifflin ISBN: 0395982723
List Price: $22.00 (Amazon Price: $14.96; Used: $9:00)

National Geographic Field Guide To The Birds Of North America, 5th Edition
National Geographic Society
Paperback 07 November, 2006 National Geographic ISBN: 0792253140
List Price: $24.00 (Amazon Price: $16.32; Used: $7.68)

Both of these books will serve you well if you maintain even a casual interest in observing wildlife and nature – and I hope you will after this class. If you are unable to purchase your own copy, I will have one available for use during the field trips.

This course is also *web-enabled* so I will make additional material available on Blackboard. Please make sure to use that site frequently.

Other requirements: A decent pair of binoculars will be required for the field trips and exercises. If you do not have your own, I may be able to provide some for you through the department. Please wear clothing appropriate for ecological fieldwork – with adequate protection from the sun, thorny plants, insects, and other joys of nature. Also, avoid bright colors as they may scare off our study subjects.

Assessment

Lecture:

Examinations: there will be two midterm exams (75 points each) and a final (150 points). The final will be comprehensive.

Critiques: During the course of the semester you will choose (with my approval) 2 recent peer-reviewed papers from the literature and asked to write an approximately 2 page (double spaced) critical review of each paper. These critiques are intended to be posted on the evolution blog (http://evolvefresno.blogspot.com/), and should be written accordingly. Each of these critique is worth 25 points (50 points total). You may submit additional critiques and relevant essays to the blog for extra credit (5-20 points per item posted).

Literature Review: Each of you will choose either 1) a single reptile or bird taxon (a single species, or genus, or family, or a recognizable ecological assemblage); or, 2) a concept or phenomenon unique to the ecology / ethology / evolution of reptiles / birds (e.g. behavioral thermoregulation; temperature-dependent sex determination; molt; migration), and use the Madden Library and Google Scholar to gather information for an approximately 4 page (double spaced) summary of the current state of knowledge regarding your chosen topic. Worth 50 points. Precise requirements will be circulated at the time of the assignment. Your choice of topic must be pre-approved by me.

Laboratory & Field:

Examination: There will be a lab final, worth 100 points.

Field Project Report & Poster: There will be 2 field projects involving original data collection, analysis and interpretation. For one of these, you will be required to

submit a **full report**, in appropriate scientific format, on your project. For the second one, you will prepare a **poster** presenting your work. Worth 50 points each.
Field notebook: You will be required to keep a field notebook. This will be handed in at the end of the semester, and should include: field observations, including descriptions of sites and taxa observed, as well as relevant thoughts and observations. Worth 20 points.

Grading: I do not usually adjust grades to a curve: you earn points and are graded accordingly. If you miss either midterm, you must take a make-up exam; you must provide a written excuse for missing an examination. There is no make-up for the final.

EXAM	POINTS	DATES *(tentative)*	GRADE CUTOFFS
Midterm 1	75	Thu Oct 04	A ≥ 90%
Midterm 2	75	Thu Nov 15	B = 75 – 89.49%
Final	150	Tue Dec 18	C = 65 - 74.49%
Critiques (2)	50	TBA	D = 55 - 64.49%
Literature Review	50	TBA	F ≤ 54.49%
Field Project (2)	150	TBA	
Field notebook	50	Hand in Thu Dec 1	
Lab final	100	Thu, Dec 1	
Total	**700**		

Subject to Change

This syllabus and schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on announcements made while you were absent.

Course Policies & Safety Issues

If you are going to come to class, please come on time. If you can't make it till half way through class, don't come. It is extremely disruptive to the learning of your fellow students to have a chain of latecomers. Generally, I will not take roll: this is your education, so if you choose not to come to class that is your choice. If you miss a class, you may consult fellow students for notes; please do not expect me to do the entire lecture a second time during office hours, although I can help you catch up if you miss something substantial for valid reasons. I like to stimulate intellectual exchange as a part of the learning process, and therefore encourage collaboration among students. In that spirit, you are welcome to come to office hours as a group to discuss / debate / argue any topic at least tangentially relevant to the course. You may team up with one or two others for some of the lab/field exercises, and can work together on assignments. At the same time, you are individually responsible for your learning, and will be tested individually. All written assignments must therefore be written individually.

Since both lecture and laboratory sessions meet in a teaching lab, no food or drink is allowed, with the possible exception of bottled water. Plenty of water, and some food are encouraged for the field trips, however! If you have electronic communication devices including cell phones, beepers, pagers, Palm Pilots, computerized watches, iPods, or whatever the next technological innovation is, **TURN THEM OFF in class**; some of these things may be useful in the field. If you need to bring a visitor to class/field, please see me before the day of the class.

Field Visits: There will be several field trips as part of the laboratory component of the course. You will be notified in advance of the dates and locations. If available, we will use a University vehicle to car-pool. In case an official vehicle is not available, we may car pool with our own cars.

Copyright: You will be provided with digital and/or print materials to support your learning in this course. As all of these materials are proprietary in nature, and most are protected by copyright, you may not reproduce or retain any of the materials for purposes other than class work.

University Policies: I fully support the university's policies, including, but not limited to, the following:

Students with Disabilities: Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in the University Center Room 5 (278-2811).

Honor Code: "Members of the CSU Fresno academic community adhere to principles of academic integrity and mutual respect while engaged in university work and related activities." You should:

a) understand or seek clarification about expectations for academic integrity in this course (including no cheating, plagiarism and inappropriate collaboration)
b) neither give nor receive unauthorized aid on examinations or other course work that is used by the instructor as the basis of grading.
c) take responsibility to monitor academic dishonesty in any form and to report it to the instructor or other appropriate official for action.

I may, during the course of this class, require you to sign the following statement about your work on exams and assignments: *"I have done my own work and have neither given nor received unauthorized assistance on this work."*

Cheating and Plagiarism: "Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work." Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more

information on the University's policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

Computers: "At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services or the University Bookstore. In the curriculum and class assignments, students are presumed to have 24-hour access to a computer workstation and the necessary communication links to the University's information resources."

Disruptive Classroom Behavior: "The classroom is a special environment in which students and faculty come together to promote learning and growth. It is essential to this learning environment that respect for the rights of others seeking to learn, respect for the professionalism of the instructor, and the general goals of academic freedom are maintained. ... Differences of viewpoint or concerns should be expressed in terms which are supportive of the learning process, creating an environment in which students and faculty may learn to reason with clarity and compassion, to share of themselves without losing their identities, and to develop an understanding of the community in which they live. ... Student conduct which disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class."

Copyright policy: Copyright laws and fair use policies protect the rights of those who have produced the material. The copy in this course has been provided for private study, scholarship, or research. Other uses may require permission from the copyright holder. The user of this work is responsible for adhering to copyright law of the U.S. (Title 17, U.S. Code). To help you familiarize yourself with copyright and fair use policies, the University encourages you to visit its copyright web page:
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For copyright Questions & Answers: http://www.csufresno.edu/library/libraryinformation/campus/copyright/faqcopyright.pdf

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Course Goals and Primary Learning Outcomes

This course provides a survey of the diversity of reptiles and birds in terms of their taxonomy, form, function, ecology, behavior, and evolutionary adaptation. Reptiles have traditionally been grouped with amphibians under the umbrella of Herpetology, whereas birds are separated under Ornithology—and this persists despite it being well established that amphibians are paraphyletic to reptiles, and that birds evolved within the reptile clade and are therefore monophyletic with them. Here we take a more correct phylogenetic approach by combining reptiles and birds under a single course, and study their ecology and behavior in a comparative evolutionary framework. A primary emphasis of this course will be on developing/imparting the conceptual framework and intellectual tools to understand the rich taxonomic diversity of reptiles and birds within appropriate ecological and evolutionary contexts.

By the end of this course, successful students will be able to:

- Think in an integrated way about the form, function, and behavior of these organisms within their ecological and evolutionary contexts
- Identify locally common reptiles and birds to species
- Classify taxa from outside the local region to genus or family
- Find and employ appropriate taxonomic resources to identify unknown taxa
- Record observations on taxa and their behavior in the field
- Conduct inventory surveys, and at least preliminary censuses in most terrestrial habitats
- Critically review literature to assess state of knowledge concerning a given taxon or issue.
- Efficiently filter the vast amount of chaff on the internet to find critically validated (i.e., peer-reviewed in most cases) information, as distinct from casual observation and opinion
- Formulate hypotheses about mechanisms that connect ecological patterns with form and function
- Conceptualize potential experimental tests of such hypotheses
- Appreciate the wonderfully dynamic nature of evolutionary biology and ecology, both as fascinating natural phenomena and as challenging intellectual endeavors
- And last, but not least, enjoy bird (and reptile) watching, perhaps for the rest of your life!

Tentative Course Schedule

Lecture

Week	Date	Topic	Corresponding text reading
1	Aug 26-28	Course Introduction, What are Reptiles?	Pough, Chap. 1, 2, 4, 5
	Sep 1.	***Labor Day***	***Go watch some reptiles and birds!***
2	Sep 2-4	What are Birds?	Gill, Chap. 1-3
3	Sep 9-11	Origin of flight; Bird Anatomy	Gill, Chap 4-5
4	Sep 16-18	Foraging ecology and diets	Pough, Chap. 11, 15, Gill, Chap. 7, others to be assigned
5	Sep 23-25	Energetics and thermoregulation	Pough, Chap. 6-7, Gill, Chap. 6-9, to be assigned
6	Sep 30 - Oct 2	Movements–locomotion, ranging behavior, defenses against predators	Pough, Chap. 2, 8, 10, Gill, Chap. 4-5, others to be assigned
	Oct 7.	**Midterm I**	
7	Oct 9, 2008	Orientation and migration	Pough, Chap. 8, others to be assigned
8	Oct 14-16	Communication	Pough, Chap. 9, Gill, Chap. 11, others to be assigned
9	Oct 21-23	Social behavior and ecology	Pough, Chap. 8, 9, others to be assigned
10	Oct 28-30	Mating systems, parental care	Pough, Chap. 4, 5, 9, others to be assigned
11	Nov 4-6	Reproductive systems and ecology	Pough, Chap. 4, 5, Gill, Chap. 10, others to be assigned
12	Nov 11.	Life History	Pough, Chap. 5, others to be assigned
	Nov 13.	**Midterm II**	
13	Nov 18-20	Regulation of life history, behavior, reproduction	Pough, Chap. 5, Gill, Chap. 11, others to be assigned
	Nov 27.	***Thanksgiving***	***Go eat some birds!!***
14	Nov 25.	Population ecology	Pough, Chap. 12, others to be assigned
15	Dec 2-4	Population and community ecology	Pough, Chap. 12, 13, others to be assigned
16	Dec 9.	Conservation challenges by and for humans	Pough, Chap. 14, others to be assigned
	Dec 16.	**FINAL EXAM**	**11:00AM-1:00PM**

Tentative Course Schedule

Lab / Field