SYLLABUS

Biology 627 / EVSS 627  Marine Tetrapod Biology  Fall 2019

Lecture 202 Grice  4hrs credit total with co-requisite 627L (lab/field component)

Instructor:  Andy Shedlock
Office:  Hollings Marine Lab - Room H212-J
Hours:  HML Fridays 11-1PM (or by appointment)
Phone:  Office: 843-725-4874; Cell: 843-469-0393
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Dropbox:  Shared folder “Tetrapods F19”

Meeting Times  2 pm - 5 pm Grice Lecture Room 202, Monday and Tuesday
THIS WILL NEED TO BE FLEXIBLE FOR FIELD TRIPS

Prerequisites  Ecology (BIOL 341) or its equivalent and at least one additional advanced biology course such as Genetics or Vertebrate Zoology.

Texts


Fitzpatrick: Field Guide to the Birds of North America  National Geographic Society Edition ISBN 0792268776  Suggested volume but can use similar field guide such as Peterson’s or Sibley’s

Supplemental References  On reserve in the Marine Resources Library (MRRI Bldg)

Attendance Policy: Attendance is not monitored but attendance is expected and strongly encouraged. Please notify the Instructor immediately if you have a schedule conflict with a class meeting or a field trip schedule.

Grading: The course grade will be based on: (1) a written term paper; (2) two-part oral presentation on the term paper topic; (3) two lecture exams; (4) a field/lab notebook; and (5) active class participation. Each item (1-5) is worth 20% of the grade.

A 90 above  
B+ 86-89  
B 80-85  
C+ 76-79  
C 70-75  
F below 70

Synopsis

Over the past 200 million years vertebrates have repeatedly evolved adaptations that take advantage of the extensive estuarine and marine habitats of our planet. This course emphasizes the comparative evolutionary perspective and historical processes that have led to both the diversity and the common themes of physiological, behavioral and anatomical adaptations which characterize amniote lineages of reptiles, birds and mammals that exploit a wide array of marine situations. The adaptations of turtles, crocodiles, snakes, the iguana, birds, pinnipeds, sirenians, polar bears, otters, and cetaceans will be addressed in lectures, discussions, labs and field work. Special attention will be given to the faunas of South Carolina. In this course we will review the research and natural history literature regarding marine tetrapods and place this literature in the context of current research priorities and needs for understanding the basic biology and conservation of these species. We will evaluate marine tetrapods as models for advanced studies in evolution, physiology, behavior and ecology. Each student will also review the literature in an area of higher marine vertebrate biology and develop a term paper and seminar on this topic. Lab and field work will be integrated each week with the lecture and will emphasize hands-on techniques, conservation and behavioral physiology.

Since several Charleston area faculty work on marine tetrapod questions, we will take advantage of their expertise as guest lecturers and lab/field trip hosts during the semester. **We must maintain a flexible laboratory schedule and flexible attitude** since we need to take advantage of the many opportunities as they happen. For example, if a marine mammal strands, we need to be able to adjust our schedules to assist with the necropsy under the direction of adjunct faculty member Wayne McFee at the NOS laboratory. Thus this laboratory may occur at any time during the semester, depending on availability of specimens. Likewise, weather may preclude going into the field on a Tuesday but we might be able to adjust for this by switching to a Monday.
Learning Outcomes

1. Develop a solid working knowledge of the biological diversity of the marine reptiles, birds and mammals.
2. Understand the evolutionary significance of secondary marine adaptations.
3. Evaluate the evolutionary relationships of the extinct and living marine tetrapods.
4. Understand the basics of marine tetrapod physiology, ecology, behavior, anatomy and field identification.
5. Understand and help implement the primary laboratory and field techniques for the study of marine tetrapods.
6. Appreciate the wide diversity of conservation issues related to marine tetrapods.

Schedule & Syllabus
Standard 2.5 hour lecture format will be: 1-hour lecture, short briefing about weekly field trip/lab logistics, 15-minute break, video presentations or primary literature and group discussion, especially regarding conservation issues.

Text Abbreviations: MME (Berta et al., Marine Mammal Evolution); MB (Schreiber and Burger, Marine Birds); ST (Spotilla, Sea Turtles); SS (Heatwole, Sea Snakes)

WEEK 1 AUG 21
Introduction to the class, discussion of syllabus, review of field trip schedule for the entire semester; South Island Field Trip Logistics
Video: Incredible Journey
Reference: MME Ch. 2

WEEK 2 AUG 26-28
What do we mean by “Marine” + “Tetrapods”?
Video: Morphed
Reference: MB Ch. 6
Field/Lab: DNR Sea Turtle Nest Inventory, Yawkey Wildlife Refuge

WEEK 3 SEPT 2-4
Stem tetrapod diversity and adaptations
Discuss synoptic reference handouts of vertebrate evolution and systems
Reference: ST Ch. 1-4
Video: Kiawah turtle research in the 1970’s
Field/Lab: SC Aquarium, Sea Turtle Rescue Center

WEEK 4 SEPT 9-11
Guest Lecture, Prof Dave Owens: 35 Years of Sea Turtle Research
Reference: ST Ch. 5, 10, plus Conclusion (13)
Video: vintage excerpts from the Owens archive
Field/Lab: DNR Sea Turtle Necropsy, HML
STUDY FOR EXAM 1

WEEK 5 SEPT 16-18
Introduction to birds
Reference: MB Ch. 1, 3, 18, 19 over successive weeks
Video: Life of Birds
Field/Lab: Turtle Survival Alliance Conservation Center

WEEK 6 SEPT 23-25
Field/Lab: Bennett’s Point/Donnelly ACE Basin
Monday optional overnight stay at DNR McKenzie Field Station
ACE conservation management and coastal habitat surveys

WEEK 7 SEPT 30 - OCT 2
Guest Lecture, Dr. Melissa Chaplin, Endangered Species Biologist, USF&W
Avian conservation and shorebird ecology
Field/Lab: M. Chaplin USF&W tour of Bulls Island Wildlife Sanctuary

WEEK 8 OCT 7-9
Oral Presentations: Summary and Intro of Term Papers
MIDTERM EXAM (1 hour) + Break

WEEK 9 OCT 14-16 FALL BREAK
FLORIDA ROAD TRIP
DEPART SATURDAY 22nd 6 a.m. – RETURN TUESDAY 24th ~9 p.m.
Archie Carr NWR / Melbourne Beach UCF Field Station 1 night
Mote Marine Lab Research Center and Aquarium
Myakka River State Park camping 2 nights

WEEK 10 OCT 21-23
Tetrapod diversity and the paraphyly of convergent marine forms
Reference (a): MME Ch. 1, 3 and 5, over successive weeks (sirenians before FL)
Reference (b): ST Chap 9 and A. Carr: So Wonderful a Fishe (before FL)
Video: Galapagos
Field/Lab: The Center for Birds of Prey

WEEK 11 OCT 28-30
Mace Brown: Cetacean origins and the Mace Brown Museum of Natural History
Prof. Phil Manning: The golden age of marine reptiles; paleo research at CofC
Dr. Bobby Boessenecker: Pinniped origins, diversity, and life history
Reference: MME Ch. 4, 10, 11, 12 over successive weeks

Week 12 NOV 4-6
Curator Matthew Gibson: Charleston Museum Natural History Collections
Wayne McFee, NOAA-CCEHBR: Atlantic odontocete population research and marine mammal
stranding network operations in South Carolina

WEEK 13 NOV 11-13
Special topics in marine mammal biology and conservation
Video: Kingdom of the Blue Whale
Reference: MME Ch. 14.3.3 p.544-556, Ch 15
Field/Lab: Dolphin behavior and bird spotting, Rat Island

WEEK 14 NOV 18-20
Marine tetrapod genetics and genomics
Video: Blue Planet Coastal Seas
Reading: MME Ch. 14.3.3 p.544-556, Ch 15

ORAL PRESENTATIONS OF TERM PAPERS
Review of Exam 2 materials

Week 15 NOV 25 (NO CLASS ON WED – TG BREAK)
Addlestone Library Special Collections
Video: Frozen Planet

EXAM 2 (PART 2 MATERIALS ONLY)

Week 16 DEC 2 LAST DAY OF CLASS
Summary and prospectus for future research
Class “Open Discussion” FB Pier

Term Paper Due
Field/Lab Notes Due

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

1. **Center for Student Learning:** I encourage you to utilize the Center for Student Learning’s (CSL) academic support services for assistance in study strategies, speaking & writing strategies, and course content. They offer tutoring, Supplemental Instruction, study strategy appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at [http://csl.cofc.edu](http://csl.cofc.edu) or call (843)953-5635.

2. **Center for Disability Services ([http://disabilityservices.cofc.edu/for-faculty/faqs.php](http://disabilityservices.cofc.edu/for-faculty/faqs.php))**

   The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations are responsible for notifying me as soon as possible and for contacting me one week before accommodation is needed.
ACADEMIC INTEGRITY STATEMENT

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student’s actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student’s file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration—working together without permission—is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others’ exams, fabricating data, and giving unauthorized assistance. Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor. Students can find the complete Honor Code and all related processes in the Student Handbook at http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php