

BIO-217 Mammalogy-Lab

Fall 2018

Course Instructor

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COURSE DESCRIPTION

The lab is an integral part of the course. The lab work accounts for 40% of your grade in this course. 12:00 to 3:00 pm on Wednesdays or 1:15 to 4:15 pm on Thursdays at the Blundell House in the Red Stone Campus.

The major objectives of this lab are:

1. To provide you with a wealth of knowledge about mammals,
2. To reinforce the use of the scientific method to address questions and problems,
3. To utilize the use of data and statistical, bioacoustics, comparative, and other methods to address hypotheses, and
4. To integrate the summarizing of data by means of figures and table combined with scientific writing to prepare a research paper.

Laboratory Handouts

Lab handouts will be posted on Blackboard. You will need to print off a copy of each week's labs and bring them with you to lab. Other lab resources include:

Martin, RE, Pine, R. H., and A. F. DeBlase. 2001. A Manual of Mammalogy with keys to families of the world. 3rd edition.

Grading

Quizzes (8 quizzes, 10 pts each)	80
Reports (2 reports 25pts each): Report I: Camera Traps; Report II: Bioacoustics Note: Student can opt to in the museum under the supervision of Dr. Bill Killpatrick instead of writing these reports. Max 4 students.	50
Practical exam	150
Independent Research	350
Total	630

Laboratory Quizzes: will be given at the beginning of the lab, during the weeks denoted with a **Q** in the calendar over the material covered in the previous lab exercise.

Reports: You will turn two practical reports. These reports are meant to give you tools traditionally used in mammalian studies for your potential projects. See calendar for due dates.

1. Camera Traps
2. Bioacoustics

Students that opt to dedicate time to the museum under the supervision of Dr. Bill Kilpatrick are exempt of this report. Only 4 students are allowed to take this exemption. These students will have to show evidence of regular work at the museum. This is a great opportunity to learn about museum curation, and to do a research project with the museum collection.

Laboratory Practical: Consists 150 pts each. The exam is done during your scheduled lab time.

- **Mammals of New England:** Closed book with coverage of identification, taxonomy, adaptations, natural history. (100 pts)
- **Mammals of the World:** Key [supplied] may be used; coverage restricted to identification and taxonomy. (50 pts)

Field Trip (graded on participation and field notes)

You are invited to participate in one of two scheduled field trips, however, participation is not mandatory. Location and dates to be determined.

Independent Research Project

The independent project is a research project, **NOT A REVIEW!** Students can work individually or in pairs. However, expectations will be higher for group projects. We expect students to develop questions. We expect students to take charge of their independent projects, be independent and resourceful readers of scientific literature related to their projects and demonstrate initiative in learning new programs or analysis that can help them address their research questions. We have designed workshops on Phylogenetics, Bioacoustics, and Camera Traps to help you designed questions that are achievable during the timeframe we have, but that at the same time allows you to ask interesting questions. In the past some of these questions have resulted in publishable manuscripts! You are encouraged to use the data resources described below instead of aiming to generate field data yourself, and at all times you should be discussing your ideas with Dr. May-Collado and myself.

Proposal: The proposal must consist of the following parts.

- **Introduction** –
 - **Background** to problem with citations of papers or other sources that document the information you are presenting. This background should include the observations that lead to your question or hypothesis.
 - **Purpose and scope** - Statement of the purpose of your paper, this may be how you are testing your hypothesis. If you use hypothesis you need to make predictions about the hypothesis.

- **Significance:** How does your project advance knowledge on this field? How does your project benefit society?
- **Materials and Methods** - What type of data have you found and what additional data are you going to try to find? How will the data you collect be analyzed to address your objectives, questions or hypothesis? It is important to make it clear how the scientific method will be used to test or address either your hypothesis or the predictions you expect if the hypothesis is true.
- **Expected outcomes:**
- **Research Plan** - Schedule of steps to be accomplished with deadline dates.
- **Literature Cited** - Full reference to the papers cited in the introduction and materials and methods sections. Use format from Journal of Mammalogy (https://academic.oup.com/jmammal/pages/General_Instructions).
- **You will turn in an electronic version to both Laura and myself**
- **Based on areas of expertise students will be assigned to Laura or myself as their main advisors regarding the project.**

Note: I recommend doing a serious literature review of your topic of interest! A lot of what you write here will serve as the backbone for your research paper.

Independent Research Project Grading

Research Proposal (due Sep. 27)	100
Update-Summary of Results (Nov.1)	50
Manuscripts (draft+final) (Draft: Nov. 15)	100
Oral presentation (December 4/6 depending of your lab section; Final ms. Version)	100
Total	350

Data collection and analysis:

During the semester we will introduce to several data sources and types of analysis regularly use in mammals. Below there are several resources available to you to develop your research paper. We will dedicate the lab on November 1 to guide students to explore their data and/or start analysis. You need to bring your data set!

Databases and other resources

Dr. May-Collado behavioral, photoID, and spatial data for bottlenose dolphins (to use this data we will sign a MOU agreement).

Dr. May-Collado acoustic data for several cetaceans (to use this data we will sign a MOU agreement).

Dr. May-Collado and Dr. Agnarsson-Mammalian Phylogenetics and comparative analysis.

Elias Rosenblatt – Sighting data for 50+ species of African mammals in and outside of a Zambian National Park (to use this data we will sign a MOU agreement).

Dr. Kilpatrick Zadock Thompson Natural History Museum at UVM

MorphBank – morphological data
GenBank – genetic data (DNA sequences)
Paleobiology Database – fossil data
Mammal Fossil Database
Global Mammal Parasite Database
Searchable databases – geographic records of mammal specimens
Arctos
MaNIS
Searchable Museum Collections
Museum of Vertebrate Zoology at UC Berkely
Collection Database at University of Alaska Museum
Peabody Museum at Yale
Natural History Museum, Berne (NMBE)
University of Hawaii
Smithsonian Institute at the National Museum of Natural History
Natural History Museum of Los Angeles County
Field Museum, Chicago
Laboratorio de Vertebrados – Universidade Federal do Rio de Janeiro

Writing your research paper

We will use the format of *Journal of Mammalogy*. Go to the journal and download the guidelines for authors. Your paper will be graded based on you following the corresponding guidelines.

Author Guidelines for J.Mamm.

https://academic.oup.com/jmammal/pages/General_Instructions

Update-Summary of Results: This update should present a summary of preliminary results and their significance in relation to your question. **Electronic submission to both instructor and TA.**

Research Paper Submission I (draft): This first submission is not synonymous of a ‘incomplete draft’ we expect a complete manuscript in format with the selected journal. After figures, tables, and stats are done I recommend writing a short version of the abstract. What this does is to provide focus and a framework to write the complete draft. Save every version of your draft separately for you to see your own progress. I recommend that you read your paper over carefully and see if you can find mistakes or identify ways in which your paper could be improved. As you write keep track of the references and write the Literature Cited section as you are writing the paper rather after you are finished. **Electronic submission to both instructor and TA.**

Research Paper Submission II (final): You are expected to submit a final paper that addressed the comments and corrections from your assigned advisor. The final submission needs to come with an Author letter detailing how each the advisor comments were addressed point by point. **You will turn in one electronic version and a hard copy on the day of your final presentation.**

Oral Presentation: There are three possibilities on how to present your research.

1. **Traditional oral presentations.** You will have 10 minutes, 8 minutes for your presentation, and 2 minutes for questions. If you decided on this format follow this guidelines
 - Please bring your presentations (email or thumb drive) to your GTA at least 1 hour prior to your lab period.
 - The format is PowerPoint (PPT or PPTX), standard definition, 4:3 ratio. The presentation computers will be running Powerpoint 2013.
 - Please embed any videos or audio within the presentation
 - Also include ALL videos & audio files in a separate folder on your thumb drive. This will enable us to correct any problems on site.
2. **Speed talks.** A speed talk is a four-minute presentation during which you may present key-ideas, results and their meaning/implication. Three slides should be sufficient. Questions will be asked during a 6-minute period at the end of the session. Please bring your presentations to your GTA 24-hours prior to your presentation.
3. **Video presentation:** A video presentation is of the same length as a speed-talk (four minutes) but created using various media such as high-resolution video, animation and narration. Authors should use these various media in a creative manner to clearly express the purpose of the study, results and their implication and to be understood not only by scientific peers but also by a wider audience. Questions will be asked during a 6-minute period at the end of the session. Please bring your video to your GTA 24-hours prior to your presentation. Video guidelines and tips here: <http://www.smmconference.org/videopresentationfaq> Use available resources, don't go crazy!
4. **PechaKucha presentation:** This final option is a growing method of concise and clear presentations to broad audiences. This presentation style consists of 20 Powerpoint slides, with each slide automatically transitioning to the following slide after 20 seconds. The presentation lasts a total 6 minutes and 40 seconds, with 3 minutes of questions following your presentation. The timed slide transition requires you to prepare and practice your message for each particular slide, and when tied together you can effectively weave your message and findings in a concise presentation. This format is not the best for presenting complex graphs, but can be an effective way to communicate your research broadly. For examples from any topic imaginable, check out <https://www.pechakucha.org/>.

Administrative Reminders:

If you qualify for accommodations because of a disability, please submit to Dr. May-Collado a letter from ACCESS (<http://www.uvm.edu/access>) in a timely manner (by the end of the second week of classes) so that your needs may be addressed.

All students of the University of Vermont are responsible for knowing and adhering to the academic integrity policy of the institution which can be found at <http://www.uvm.edu/cs/es/?Page=ah.html&SM=ahmenu.html>. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the

Coordinator of Academic Integrity or the Academic Integrity Council
<http://www.uvm.edu/cses/?Page=ahform.html&SM=ahmenu.html>).

Material presented in this course may not be sold and are the intellectual properties of the instructor and others.

Lab Calendar

(This calendar is subject to changes)

Any assignment, report or draft noted as due for a week will need to be submitted electronically by that corresponding Friday by 5pm via email to Laura and Elias (unless otherwise instructed).

Date	Lab
Aug.28-30	Intro to Mammals: characteristics and value of museum collections
Sep. 4-6	Skulls and Teeth Morphology-with introduction to orders key (Q)
Sep. 11-13	Mammalian Research Tools: Phylogenies and Comparative Methods -Guest Dr. Agnarsson (Q)
Sep. 18-20	Mammalian Research Tools: Camera Traps (Elias), PhotoID and Bioacoustics (Dr. May-Collado)
Sep. 25-27	Monotremes and Marsupials; Research Project Proposal due
Oct. 2-4	Paenungulata: Afrotheria and Xenarthra (Q)
Oct. 9-11	Sundatheria: Dermoptera, Scandentia, and Primates (Q) Report Due-Camera Traps
Oct. 16-18	Laurasiatheria: Talpidae Erinaceomorpha, Soricomorpha, Rodentia I: (Q)
	Rodentia I: Hystricomorpha, Sciuromorpha Report Due-Bioacoustics
Oct. 23-25	Rodentia II: Myomorpha, Anomaluromorpha, and Lagomorpha (Q)
Oct.30-Nov.1	Custom made Statistical Analysis Workshop- Project Update Due
Nov. 6-8	Artiodactyla, Perissodactyla, Chiroptera (Q)
Nov. 13-15	Carnivora and Pholidota; Research Mn. Draft Due (Q)
Nov. 20-22	Thanksgiving (no classes)
Nov. 27-29	Lab Exam
December 4-6	Mammalogy Symposium; Final Ms. Due prior to lab period