

Biology 4211: Mammalogy

Origin, relationship and structure of mammals. A survey of the families of living mammals: past and present distribution of important groups. Special attention is given to Ontario forms.

Instructors, Time and Place

Dr. Brian McLaren, BB 1005B – Ph. 343-8686 or brian.mclaren@lakeheadu.ca

Lectures RB 3044 Monday & Wednesday 8:30-10:00; Lab CB 3015 **unless otherwise indicated**;
Thursday 2:30-5:30; Instructor Dan Brazeau, CB 3020 – Ph. 346-7739 or dbrazeau@lakeheadu.ca

Teaching Assistants: Marissa Wegher (mewegher@lakeheadu.ca) & Adam Pun (akpun@lakeheadu.ca)

Required Texts

The Eternal Frontier. 2001, by T. Flannery, Atlantic Monthly Press, New York.

Mammalogy: Adaptation, Diversity and Ecology. 2015 (4th) edition, by Feldhamer, Drickamer, Vessey, Merritt, and Krajewski. Johns Hopkins. (Fourth edition has current taxonomy.)

Mammals of the Great Lakes Region. 1995 edition, by A. Kurta, University of Michigan Press, Ann Arbor.

Note on the texts: It is your responsibility to read the assigned portions of each text in a timely fashion. Exams will test material not necessarily covered in lectures but from the text. To help you organize your reading in the main text (Feldhamer et al.), focus on the words highlighted in **bold type**. When working through Flannery's book, make use of a **concept map** (notes to follow the main concepts), and consult chapters 4-6 in Feldhamer et al. for help with organizing ideas. The lecture portion of this course emphasizes **concepts**, while your **practical** experience comes from directed and independent work in the lab sessions.

Note on lab portion: **Students can opt out of portions of the lab work involving carcasses if they arrange prior permission with Dan Brazeau.** Dissections and digestions constitute a minor risk of biohazards; students must be trained to a Biosafety Level 1 use of facilities for these labs. You will be required for dissecting labs to bring in your own dissection kit, or one you sign out from Dan. There will be one optional, but informative field trip to the International Wolf Center, Ely Minnesota. It will be held on a Friday and Saturday, March 25-26. We will leave at 2:30 pm on Friday and plan to return to Thunder Bay at 8:00 pm on Saturday. Please sign up by paying \$60 to Emma Lehmborg (Herbarium Curator, CB 3014) by February 28. The international border crossing will require you to have a valid passport or NEXUS card. Bring a copy of your passport, your health card and your LUSU health insurance identification number to Barbara with your payment if you are travelling to Ely with us.

Goals of the Course

1. To understand the classification, structure, and natural history of mammals, including physiological, behavioral, and ecological adaptations.
2. To become familiar with some field and laboratory techniques involving study of mammals.
3. To learn about the distribution and identification of mammals, especially those species found in the western Great Lakes region.
4. To become acquainted with how mammals are valued by people.

Assignments, Due Dates and Grading

February 13 Quiz on Flannery's <i>The Eternal Frontier</i>	Questions on Flannery's interpretation of the ecological history of North America, emphasizing mammals. Also includes chapters 1-6 & 20 in Feldhamer et al. text.	10 %
Student presentations Please see the rubric below the table. Refer to chapters 13-21 in Feldhamer et al. To be scheduled for after Reading Week.	Student pairs will present on main characteristics used to classify members of a mammal (sub) order together, and provide detailed information on an extinct and an extant member of the (sub) order. Plan 10-15 minutes for a class presentation.	5 %
Independent lab projects. Due on the day of project presentation. Dates will vary depending on venue.	Students will work in small groups on dissections and other displays of mammal morphology, study skins and anatomy; a poster presentation may substitute for this project.	20 %
Necropsy Labs. March 16-23.	Following the completion of necropsy labs student will complete a report outlining the anatomy of a furbearer. Topic will vary depending on specimen availability. A report on marten morphometrics may substitute for this project.	5%
Lab Quiz. March 30	Students are responsible for species level identification and life history information at the family level for all mammals studied in lab.	15%
Mammals as part of human life: a report. Plan to be communicated to Dr. McLaren on February 13; report due April 3.	Each student will develop a research question to answer in essay format (3-5 pages double-spaced) using literature and a questionnaire with someone who works regularly with mammals. Ideas include a dairy farmer, a trapper, a veterinarian, a police dog trainer, handlers at Fort William Historical Park.	10%
Wolf behaviour report. Optional trip to International Wolf Center March 25-26.	Students will work in small groups with videos and ethograms to construct a report on wolf pack behaviour.	15%
Final exam- Date TBA	The final exam will cover all components of the course except material from Flannery's <i>The Eternal Frontier</i>	20 %

NOTE: -- Late reports will not be considered for grading.

Rubric for student presentations (total 50):

Has information on the (sub) order's evolution been provided? (1-5 for detail)

Are the two examples rich in detail? (1-10 for detail) Are other examples mentioned to assist the classification? (1-5 for organization) Are adaptations discussed? (1-5 for detail) Is the classification explained? (1-5 for detail) Has class discussion been prompted? (1-5 for earnest discussion) Are questions well answered? (1-5 for detail)

Organization of the Course

- Topic 1.***Reasons to study mammals and techniques used to study mammals**
Feldhamer, chapters 1 & 3; Lab: introduction to preparation of specimens and dissections; N.B. this portion of lab work is an **independent** project that you will keep on track during the first half of the semester; mammal snow tracking
- Topic 2.***Early evolution, shifting dominance from reptiles to mammals**
Feldhamer, chapters 4-6, 12 & 20; Flannery, Acts 1 & 2
- Topic 3.***Modern North American fauna and conservation issues**
Flannery, Acts 3, 4 & 5; Lab: introduction to boreal mammals; N.B. this portion of the lab work leads to a portion of your practical exam
- Topic 4.***Evolution of endothermy**
Feldhamer, chapter 10; Lab: dissections.
- Topic 5.***Implications of body size and body shape**
Feldhamer, chapters 7, 9 & 10; several supplemental readings; Lab: introduction to morphometrics.
- Topic 6.***Feeding and trophic relationships**
Feldhamer, chapters 8 & 25; Lab: dissections.
- Topic 7.***Behaviour and sociality**
Feldhamer, chapters 22-24; Lab: ethogram analysis of wolf behavior; optional trip to the International Wolf Center, Ely, Minnesota.
- Topic 8.***Population dynamics and life history**
Feldhamer, chapters 26 & 27