SYLLABUS
Wildlife Ecology and Management
NRE 501/ENV 463
Winter Semester 2016

Lecture: Tuesdays, Thursdays 12:00PM - 1:00PM (1046 Dana)
Discussion/Lab/Field Trips: Fridays 1:00pm – 4:00pm (1024 Dana or G556 Dana), unless otherwise noted.

Primary Instructor: Johannes Foufopoulos
Office: Dana Hall, Rm 2064; Office hours: By appointment (either email or contact after class).
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Graduate Student Instructor: Zachary Gizicki
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Course description:
This course focuses on the ecological processes and conservation management tools relevant to the survival of free-ranging mammal, bird, reptile and amphibian populations. Students will utilize a diversity of approaches ranging from field research to computer exercises to address wildlife ecology, management and conservation issues. Topics that will be discussed include wildlife habitat assessment, population abundance and density estimates, nutritional ecology, wildlife disease management, as well as endangered species restoration, both in an US and international context.

Learning Objectives:
It is expected that students are already familiar with the basic evolutionary and ecological principles and have completed at least 2 courses in ecology and evolutionary biology.

Over the course of the semester students will:
- become familiar with the ecology, population biology management and conservation of vertebrate wildlife species through case studies and appropriate readings.
- be introduced to the complex problems associated with the management of small or declining vertebrate populations.
- become acquainted with the historical and socio-political background of wildlife conservation sufficiently to understand the real-world constraints, traditions, and diverse viewpoints involved in vertebrate biodiversity conservation and management.
- develop analytical problem-solving skills and will gain experience in data interpretation and graphical and mathematical models.
- expand their ability to conduct wildlife research and utilize the primary wildlife literature.

Thus, by the end of the semester... students should be intimate with many current wildlife ecology issues, demonstrate an ability to analyze data, work in groups, apply primary scientific literature to management decisions, be objectively skeptical and able to ask critical questions, have enhanced written and oral communication skills, and gain exposure to wildlife professionals and conservation agencies.

Required Readings:
1. Diversity of scientific publications (to be downloaded from the Canvas website)
2. Additional background materials are placed on reserve at the Reserve Desk in the Undergraduate Library.

Course Outline

Lectures (subject to change)

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
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<tbody>
<tr>
<td>Thursday Jan. 7</td>
<td>Wildlife Ecology – Focus, origins and historical developments of the discipline</td>
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<tr>
<td>Tuesday Jan. 12</td>
<td>Wildlife habitats – characteristics and management</td>
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<td>Thursday Jan. 14</td>
<td>Methods for estimating population size, growth</td>
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<tr>
<td>Tuesday Jan. 19</td>
<td>Resource availability and its impacts on wildlife populations I</td>
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<tr>
<td>Thursday Jan. 21</td>
<td>Resource availability and its impacts on wildlife populations II</td>
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<tr>
<td>Tuesday Jan. 26</td>
<td>Guest Lecture-Nyæma Harris: Predator-prey relationships and their management</td>
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<tr>
<td>Thursday Jan. 28</td>
<td>Wildlife parasitism and disease – I</td>
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Tuesday Febr. 2  Wildlife parasitism and disease - II
Thursday Febr. 4  Wildlife nutrition
Tuesday Febr. 9  Wildlife energetics
Thursday Febr. 11  Water and other aspects of wildlife physiology
Tuesday Febr. 16  Migration and migratory species: ecological and physiological aspects
Thursday Febr. 18  Wildlife life histories and behavior
Tuesday Febr. 23  Tools for managing and restoring small or declining wildlife populations
Thursday Febr. 25  Sustainable harvest management
Tuesday March 8  Ecology and management of invasive species as they relate to wildlife
Thursday March 10  Wildlife population control: When and How?
Tuesday March 15  Global climate change & wildlife: When environment meets physiology
Thursday March 17  Applied wildlife management (Guest Lecture: MI Dept. of Nat. Resources)
Tuesday March 22  Farmland wildlife ecology
Thursday March 24  Tropical wildlife conservation and management
Tuesday March 29  Urban wildlife ecology: ecology challenges and opportunities
Thursday March 31  Habitat management and wildlife
Tuesday April 5  Legal landscape regulating wildlife
Thursday April 7  Societal dimensions of wildlife ecology conservation and management
Tuesday April 12  Wildlife management and conservation success stories
Thursday April 14  Review of course – Take home exam

Discussions / Labs / Field trips  (subject to change)

Locations will vary according to discussion subject.

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Friday Jan. 8</td>
<td>History of Wildlife ecology Reading &amp; Film screening followed by discussion (Dana 1024)</td>
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<tr>
<td>Discussion/Lab 1.</td>
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<td>Friday Jan. 15</td>
<td>Birds: Morphology, ecology and identification Lab (Dana G556)</td>
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<td>Discussion/Lab 2.</td>
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<tr>
<td>Friday Jan. 22</td>
<td>Mammalian Evolutionary Ecology Lab (Dana G556)</td>
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<td>Discussion/Lab 3.</td>
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<tr>
<td>Friday Jan. 29</td>
<td>Mammal Identification Lab (Dana G556)</td>
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<td>Discussion/Lab 4.</td>
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<td>Friday Febr. 5</td>
<td>Wildlife disease and parasite diversity – Lab (Dana G556)</td>
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<td>Discussion/Lab 5.</td>
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<td>Friday Febr. 12</td>
<td>Field Trip - Arboretum: Introduction to animal detection and identification (meet at the Reader Center)</td>
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<td>Discussion/Lab 6.</td>
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<td>Friday Febr. 19</td>
<td>Ethics and public perceptions in Wildlife Conservation: Deer management in the US - Class Debate. (Dana 1024)</td>
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<td>Discussion/Lab 7.</td>
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<td>Friday Febr. 26</td>
<td>Field Trip - Wetland: Avian Ecology and Behavior (meet in Dana G556)</td>
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<td>Discussion/Lab 8.</td>
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<td>Friday March 4</td>
<td>No Discussion – SPRING STUDY BREAK</td>
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<td>Friday March 11</td>
<td>Field Trip - Arboretum: Introduction to wildlife censusing. (meet at the Reader Center)</td>
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<td>Discussion/Lab 9.</td>
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<td>Friday March 18</td>
<td>Censusing and estimating wildlife populations – exercise</td>
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<td>Discussion/Lab 10.</td>
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Friday March 25 Discussion/Lab 11. Population Viability Analysis: Age structured populations and sustainable harvest.

Friday April 1 Discussion/Lab 12. Field Trip Saginaw Forest: Wildlife vegetation evaluation I (meet in Dana G556)

Friday April 8 Discussion/Lab 13. Field Trip Saginaw Forest: Wildlife vegetation evaluation II. (meet in Dana G556)

Friday April 15 Discussion/Lab 14. Group presentations and Social Event (Dana 1024)

Field Trips
Locations will vary but will be mostly located in Washtenaw country (e.g. Nichols Arboretum, Barton Ponds, Saginaw Forest etc.). Field trip details will be announced the week before. Come dressed for appropriate field conditions!

Evaluation
15% Lab reports and lab handouts
15% Leading a discussion
30% Final group paper (18 pages)
10% Oral presentation of group research project
25% Exam (take home)
5% General class participation

Assignment / Evaluation Details

Leading discussion
Small groups of 3-4 students are expected to lead one discussion/lab session. Working with the GSI each group will design a brief powerpoint presentation providing background to the material covered in a given week. Group members are also expected to lead the discussion of the assigned reading for that week.

Group 18-page paper
- 1 paragraph topic summary Due: February 12 (in Discussion)
- Final version due: by the end of the semester (last day of classes).
- Length: 18 pages text (not including literature cited, tables, and figures), double-spaced, 1-inch margins, 12-point font.
- In groups of 3-4, students will focus on a specific wildlife issue to discuss in the paper. Both topic and approach are open, as long as the academic/intellectual level is sufficiently rigorous. Students are encouraged to pick a research question that can be answered through collection of one's own field data. Such data will then be analyzed and presented in the paper (possible examples of such possible topics include: quantification of deer damage to vegetation in Ann Arbor parks, analysis of foraging strategies in chickadees, antipredator defenses in fox squirrels, etc.). If a field problem is not possible, students may pursue a library project, especially if it involves a quantitative analysis of existing data (e.g. a meta-analysis) and a substantial review of the literature. Possible topic examples include: effects and management of livestock grazing on wildlife, human-predator conflict, invasive diseases and their impact on wildlife, illegal hunting of bushmeat etc.
- Some suggestions: Define the problem in detail with special attention to the biologically pertinent dimensions of the situation. Draw on the primary literature to explain the biological and ecological dimensions of the topic. Articulate clearly any hypotheses you might be testing. If appropriate, explore potential management solutions to the problem, that are scientifically sound and socially/economically feasible, drawing on concepts and tools learned throughout the course.
- See 'TERMPAPER Guidelines.doc' in Canvas for further writing guidelines and criteria.

Group Oral Presentation
- 1 paragraph topic summary Due: February 12 (in Discussion). Topic should, but does not have to, be related to the group research paper topic.
- You will give your presentation in the last discussion section of the semester. Come prepared with your presentation on a Jump Drive, or CD, or bring a laptop to hook up to the projector!
- Length: 15 minutes plus 5-minute question/answer period. (Strictly enforced!)
- In groups of 3-4 people, select a topic that you wish to present—educate us about something interesting. The only stipulations for the presentation are (1) that your presentation is grounded in wildlife science; and (2) that
each member of your group delivers a portion of the presentation. You will be evaluated on the depth of your analysis, and on your organization and delivery of the topic.

- Be careful to avoid a few common mistakes when developing and delivering your presentation:

  * Avoid putting too much information on any one slide. Your listeners should be paying attention to your verbal delivery of the material. To avoid this, use broad headings or bullet points to highlight the topics you wish to discuss.
  
  * Don’t forget to Practice Your Talk! You have 15 minutes to inform us about your topic, and every person in the group must have a chance to talk. As interesting as your material may be, you will have to be cut off at the 15 minute mark, to ensure that everyone has adequate time to present.
  
  * Don’t wait until the last minute to ask questions about your presentation. Come to office hours, email me or your GSI, to get any issues worked out early!

Exam

- The exam has a take-home format and is open book. It allows you the opportunity to showcase your knowledge, understanding and synthetic ability of the materials covered in the course of the semester. It is challenging, as you will be evaluated on your ability to integrate diverse principles from the ecology, physiology and population biology of vertebrate wildlife. Questions will be geared towards conceptual understanding although you should also expect substantial questioning on fact-based details. You are expected to know species names (both common and scientific name) for those cases where the species is mentioned as an example of an important concept. Unless stated otherwise, you are not expected to memorize equations, but you are expected to understand their meaning and the relationship between the different variables, and be able to manipulate them.

  - For discussions, you will find that readings focus mostly on articles from the primary literature. While you may find reading these articles challenging, their inclusion serves a dual purpose. First, they familiarize you with the language that scientists use to communicate in, and second, inform you about some of the cutting edge issues in wildlife biology.

Class Policies

Assignment Submission. All assignments are due at the beginning of the discussion or lecture session listed on assignment overviews. Two percent of your final grade will be reduced per day your assignment is late, unless you have received prior permission from one of the instructors to turn it in late.

Grade Changes. Once a graded assignment has been returned to you, you have one week to appeal for grade changes or re-grading if you feel your assignment has been unfairly or incorrectly judged in some way. You must make your case in writing to one of the instructors if this is the case. After this one week period, no appeals will be accepted. Be aware that re-grading involves “starting from scratch” on the grading process and may possibly result in you earning fewer points than the initial grade given.

Extra Time on Exams. If you have been diagnosed with a condition that necessitates the allocation of extra time on exams, then you should make the instructors aware of your situation before the exam takes place. The instructors reserve the right to request official documentation of your condition from the UM Office of Services for Students with Disabilities or another qualified source.

Group Project Grievances. In group projects, the situation occasionally arises where one member of the group puts substantially less effort in the project than other members, thus jeopardizing the entire group’s final performance. When such situations occur, you are encouraged to first try to work the problem out within your group. If the problem persists then you should make it known to your instructor so that appropriate action(s) can be taken. You should deal with this early on, and definitely notify instructors prior to the assignment due date.

Reserve Book List - Partial (available at the Undergrad library: Reserve desk)


First, a reminder – the quality of your paper is very much a function of the quality of the literature you make use of. One purpose of the term paper is to introduce you to the scientific literature, often referred to as “primary” literature. Examples include articles from research journals such as *Journal of Wildlife Diseases, Ecological Applications*, and the *Journal of Wildlife Management*. Textbooks and review articles that are based on primary literature are referred to as ‘secondary’. Magazine articles such as *Time, The Atlantic Monthly*, and *Audubon Magazine*, are the “popular literature”. *Scientific American*, perhaps *The Smithsonian*, fall somewhere in between popular and secondary literature. Newspaper articles are newspaper articles.

A term paper that makes sophisticated use of primary literature is likely to be much stronger than one that draws most heavily from web sites and the popular literature. **At least 80% (or at least 30) of your citations should be from the primary literature.** Forty would be better. **Avoid citations from popular literature.** Use web sites as sources only very sparingly, and be sure they are authoritative (e.g., government web sites or very reliable non-governmental organizations like The Fish and Wildlife Service; -- ‘Crazy Bob’s Weather Page’ does not cut it!). Papers that rely heavily on web sources usually turn out to be less substantive, and receive poorer grades.

**Using the Web**

The Internet provides enormous access to information. By all means, use it. There are pitfalls, however. How good is the information you get from the internet? The strength of the primary literature is its careful and rigorous review process. A study published in the *Journal of Wildlife Ecology* was submitted to the journal editor, who sent it to at least two other scientists known to be experts in the same field. After a thorough, anonymous review by these peer reviewers, the editor may reject the paper (probably the fate of three quarters of the papers submitted), or accept it after the author makes careful and thorough revisions. Then the paper is published. Now, what about that report you found on the web? No controls, no review, nothing but the author’s ideas and conclusions. How much credit should you give the author? Papers that rely heavily on web sources usually turn out to be less substantive, and receive poorer grades.

Below are some rules on the use of internet resources:

1. **Use the web as much as you like, to get started.** You’ll find interesting stuff. You can use these sites to identify primary sources which you can then access.
2. **You must still use the primary literature.** See the bolded sentences just above.
3. **You may include (a few) web citations.** Cite them appropriately (see following pages).
4. **Web sources vary in quality.** I am much more positively inclined to credit information coming from NASA’s home page than say the previously mentioned “Crazy Bob’s Weather Page”. Be careful to rely on quality web sources. It is your job to discriminate among web sources in terms of their quality.

Be aware of the temptations to plagiarize (“to steal [the language, ideas or thoughts] from another, representing them as one’s own original work”). The reason we cite the work of others, in term papers and scientific papers, is to give credit to the work of others, to add authority to our claim (we aren’t just making unfounded claims – our conclusion are based on someone’s careful study), and to be honest about our own contribution and role. Any substantial claim or argument that you make, if it evolved directly out of your reading of the works of others, should be cited. It is OK to use limited text from a specific source as long as you cite the source, and put the text in quotation marks (“”).

Typically, students encounter problems with citations and plagiarism not because they purposefully make incorrect use of the work of others, but because they are still learning the rules. We hope this will help you learn those rules. Plagiarism will not be tolerated and will result in the loss of credit for the course and the application of all university procedures for dealing with such a transgression.

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**Some helpful notes about literature citations:**


Format for Literature Citations
Literature citations in your term paper should follow the format below. For references not listed, refer to:

A journal or magazine article:

A book:

Chapter in book:

Technical report:

Newspaper article:

Personal communication:

Web Sources (use this reference for guidance if necessary):