



# SYLLABUS

## ENR 5362

Wildlife Ecology Methods  
Autumn 2021 (full term)  
3 credit hours

Lectures: T-Th 11:30 am - 12:25 pm, 370 Kottman Hall  
Labs: F 9:20 am – 1:20 pm, 370 Kottman Hall

## COURSE OVERVIEW

### Instructor:

Robert J. Gates, Ph.D.

Email address: [gates.77@osu.edu](mailto:gates.77@osu.edu) (preferred contact method)

Phone number: 614-292-9571

Office hours: By appointment

### Graduate Teaching Assistants:

Brian Tsuru

Email address: [tsuru.1@buckeyemail.osu.edu](mailto:tsuru.1@buckeyemail.osu.edu) (preferred contact method)

Phone number: To be shared at a later date

Office hours: By appointment

Marissa Roseman

Email address: [roseman.37@buckeyemail.osu.edu](mailto:roseman.37@buckeyemail.osu.edu) (preferred contact method)

Phone number: To be shared at a later date

Office hours: By appointment

## Course Prerequisites

ENR 2000 or STAT 1450, ENR 3000, or graduate standing. Not open to students with credit for ENR 662.

## Course description

ENR 5362 is a required course for Wildlife Science, Wildlife-Pre-veterinary Science, Fisheries and Wildlife Science, and Forestry and Wildlife Management specializations in the Forestry, Fisheries, and Wildlife major in SENR. The course meets part of the educational requirements for professional certification as an associate wildlife biologist by The Wildlife Society (<https://wildlife.org/learn/professional-development-certification/>). The course also is well-suited to undergraduate and graduate students in Environmental Science, Sustainable Resource Management, Evolution Ecology and Organismal Biology.

The course introduces students to current field, laboratory, and computer methods used by wildlife scientists and managers to acquire information necessary to understand and manage ecological processes that affect wildlife populations. The course focuses on two primary areas: (1) estimation and analysis of wildlife abundance and demographic characteristics and (2) measurement and analysis of wildlife habitat quality. Professional ethics and proper application of scientific method are stressed throughout the course.

## Course learning outcomes

By the end of this course, students should further develop or enhance their knowledge and proficiency with the following:

- Reading and comprehending technical literature and application of scientific principles to the study of wildlife habitat relationships
- Study design, logistics, observational methods, and field equipment used to study wildlife population - habitat relationships
- Enhanced capacity to listen attentively and carefully follow instructions to accurately and efficiently collect and record wildlife data in the field
- Proficiency with entering, summarizing, and statistical analysis of wildlife field data.
- Advanced development of critical thinking, interpreting results, and formulating conclusions to answer questions or solve problems to conserve wildlife
- Apply standards of personal and professional ethics in the field of wildlife ecology and management.

## HOW THIS COURSE WORKS

**Mode of delivery:** This course is 100% resident instruction (~27 hours of lecture, ~ 40 hours outdoor labs and 12 hours of indoor labs). You will access Carmen/Canvas for lecture material, lab preparation instructions, materials, and required readings.

**Pace of online activities:** This course is divided into **bi-weekly lectures** that are delivered in-person. Lab materials, readings and other resources posted before scheduled field (outdoor) and lab (indoor) exercises which are completed synchronously in person. Three weeks of lab are completed asynchronously in small teams as part of the term research project. Please discuss your personal circumstances with us privately as you feel compelled.

**Credit hours and work expectations:** This is a **3-credit-hour course**. According to Ohio State policy ([go.osu.edu/credithours](https://go.osu.edu/credithours)), students should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average.

**Attendance and participation requirements:** Your grade is partially determined by your engagement, level of participation, and attendance of lecture and lab periods. The following is a summary of students' expected participation:

- **Participating in online activities for attendance:** You will be expected to log in to Carmen to access course materials at least three times per week (you will probably log in many times most weeks). Attendance of all synchronous sessions is required and will determine part of your participation score. **Excused absences must be approved in advance by Dr. Gates or the Teaching Assistant (Brian Tsuru) as soon as possible. Notify us of absence due to illness or family/personal emergency as soon as you are able.**
- **Access to recorded lectures will be granted only to those with excused absences.** You are responsible to learn material and complete all assignments regardless of whether absences are excused or not.

## COURSE MATERIALS AND TECHNOLOGIES

### Textbooks

#### Required

Readings and other materials posted on Carmen/Canvas

## Recommended/optional

- Silvy, N.J., Editor. 2012. The Wildlife Techniques Manual. Volume 1: Research & Volume 2: Management. 7<sup>th</sup> edition. John Hopkins University Press, Baltimore, Maryland, USA. (2 volume set)

## Course technology

### Technology support

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at [ocio.osu.edu/help/hours](https://ocio.osu.edu/help/hours), and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** [ocio.osu.edu/help](https://ocio.osu.edu/help)
- **Phone:** 614-688-4357(HELP)
- **Email:** [servicedesk@osu.edu](mailto:servicedesk@osu.edu)
- **TDD:** 614-688-8743

### Technology skills needed for this course

- Basic computer and web-browsing skills
- Navigating Carmen ([go.osu.edu/canvasstudent](https://go.osu.edu/canvasstudent))
- CarmenZoom virtual meetings ([go.osu.edu/zoom-meetings](https://go.osu.edu/zoom-meetings))
- Recording a slide presentation with audio narration ([go.osu.edu/video-assignment-guide](https://go.osu.edu/video-assignment-guide))
- Recording, editing, and uploading video ([go.osu.edu/video-assignment-guide](https://go.osu.edu/video-assignment-guide))

### Required equipment

- Computer: current PC (Windows 10—preferred) or Mac (MacOs—adequate for most uses) or with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

## Required software

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Full instructions for downloading and installation can be found at [go.osu.edu/office365help](https://go.osu.edu/office365help).
- Students will need a laptop the current version of R and R Studio already installed. R installation instructions can be found here: <https://cran.r-project.org/> R Studio can be found here: <https://www.rstudio.com/>
- Other open source or free software available from secure sites may also be used as needed. You will be directed to the URL as need arises.

## Carmen access

You will need to use BuckeyePass ([buckeyepass.osu.edu](https://buckeyepass.osu.edu)) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions ([go.osu.edu/add-device](https://go.osu.edu/add-device)).
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application ([go.osu.edu/install-duo](https://go.osu.edu/install-duo)) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357(HELP) and IT support staff will work out a solution with you.

# GRADING AND FACULTY RESPONSE

## How your grade is calculated

Total Points (1000): Itemized breakdown is as follows: Exams (275 points), Assignments and Data Sets (300 points), Term research project (375 points), and class participation (50 points).

## Descriptions of major course assignments

### Class Participation (50 pts)

**Description:** Due to the hands-on nature of this course, attendance and active participation is critical to comprehension of material and completing class assignments. Class participation points will be awarded based on active engagement with instructors and material, attendance of lectures, preparation for and participation in laboratory exercises, and completion of assignments.

### Exams (275 points)

**Description:** Mid-term lecture (100 points), mid-term lab (75 points), and final examination (100 points) will test students on information, concepts, and quantitative skills that are introduced in lectures, laboratories, and assigned readings.

### Quizzes, Assignments and Data Sets (300 points)

**Description:** Assignments and data sets (collected during laboratory exercises) will cover a variety of topics aimed at developing critical skills necessary in the wildlife field. See table below for a complete list of assignments or data sets with due dates, times, and point values. *Data sets must be complete, collected properly, and submitted in the format provided by the instructor to receive full credit.*

Due Date	Time	Assignment/Data Set	Points
30 Aug	11:25 am	Lecture Reading Quiz #1	15
2 Sep	2:00 pm	Compiling Study Area Information Worksheet	25
6 Sep	11:25 am	Lecture Reading Quiz #2	15
13 Sep	11:25 am	Veg and Bird ID Quiz	15
17 Sep	2:00 pm	General Wildlife Surveys Data Worksheet	25
20 Sep	11:25 am	Lecture Reading Quiz #3	15
23 Sep	2:00 pm	Detection Probability Worksheet	25
11 Oct	11:25 am	Lecture Reading Quiz #4	15
18 Oct	2:00 pm	AWRO Data Submission	25
21 Oct	2:00 pm	Statistical Analysis in R Worksheet	25
28 Oct	2:00 pm	Radiotelemetry worksheet	25
4 Nov	5:00 pm	Food and Habitat Selection Worksheet	25
11 Nov	5:00 pm	Wildlife Population Estimation Worksheet	25
25 Nov	5:00 pm	Estimating Survival and Reproduction Worksheet	25

## Term Research Project (375 pts)

**Description:** The term research project will comprise assignments completed throughout the semester (see table below) that sequentially build into the final research paper and oral presentation. Each team (4-5 students) will investigate the same general research question with individuals studying a different focal species or guild. Teams will work throughout the term to build knowledge on the question, accurately collect data, analyze data, and interpret the results.

Due Date	Time	Term Project Assignments	Points
9 Sep	5:00 pm	Term Paper Study Area Draft	20
16 Sep	5:00 pm	Biosketch and ID Slide Study Species	20
20 Oct	5:00 pm	Term Paper Methods Draft	20
3 Nov	5:00 pm	AWRO Data Summary Statistics	15
10 Nov	5:00 pm	AWRO Candidate Model Set	15
17 Nov	5:00 pm	AIC Table and Multi-model inference	15
22 Nov	5:00 pm	Graph(s) of Top Model(s)	15
2 Dec	5:00pm	Oral Presentation	100
6 Dec	9:20am	Peer Participation Evaluations	30
6 Dec	5:00 pm	Final Report	125

### Professional integrity and collegiality:

#### CODE OF ETHICS FOR THE WILDLIFE SOCIETY

All members of The Wildlife Society are expected to uphold ethical standards in keeping with the standards of their profession. The following, taken from the Bylaws of The Wildlife Society, detail the code of ethics members are expected to adhere to:

Section 1. CODE OF ETHICS -- Each member, in striving to meet objectives of the Society, pledges to:

1. Subscribe to the highest standards of integrity and conduct
2. Recognize research and scientific management of wildlife and their environments as primary goals
3. Disseminate information to promote understanding of, and appreciation for, values of wildlife and their habitats
4. Strive to increase knowledge and skills to advance the practice of wildlife management
5. Promote competence in the field of wildlife management by supporting high standards of education, employment, and performance

6. Encourage the use of sound biological information in management decisions
7. Support fair and uniform standards of employment and treatment of those professionally engaged in the practice of wildlife management.

Section 2. ENFORCEMENT -- Violations of this Code by a member may result in censure, or censure and suspension, from membership in the Society. All reported violations will be reviewed by a Presidentially appointed Board of Inquiry or by the Council of the Society, hereinafter referred to as "the Council."

## Late assignments

Late submissions will be accepted with reduction of points (5% for each day). Due dates will likely change with circumstances. Please refer to Carmen for planned and updated due dates.

## Grading scale

93–100: A  
 90–92.9: A-  
 87–89.9: B+  
 83–86.9: B  
 80–82.9: B-  
 77–79.9: C+  
 73–76.9: C  
 70–72.9: C-  
 67–69.9: D+  
 60–66.9: D  
 Below 60: E

## Instructor feedback and response time

We are providing the following list to give you an idea of our intended availability throughout the course. (Remember that you can call **614-688-4357(HELP)** at any time if you have a technical problem.)

- **Grading and feedback:** For weekly assignments and graded exams, and term project oral and written reports you can generally expect feedback within **7-14 days**.
- **Email:** we will reply to emails within **24 hours on days when class is in session at the university**.



## OTHER COURSE POLICIES

### Discussion and communication guidelines

Some of our interactions in this class will occur through Zoom videoconferencing. Because this mode of discussion has benefits and challenges that differ from in-person class sessions, we want to share our expectations for how we will meet and communicate if and when we use Zoom:

- **Technical Issues:** If you encounter a technical issue with Zoom during a session, first make sure you are using the latest version of Zoom. Next, contact the IT Service Desk at [go.osu.edu/it](https://go.osu.edu/it) or 614-688-4357(HELP). If issues continue, contact us after the session to learn how to make up for the missed content either via a recording or other means. We will not be able to address technical issues during a live session.
- **Preparation:** Come to the session having completed any readings or pre-work and be ready to have open, civil, and supportive discussions or Q&A in video and chat spaces. We ask that you update your Zoom profile with your preferred name and add a picture with your face.
- **Participation:** At the start of our sessions, we will share specific expectations for how to use the chat, how to interact, and how to raise questions or concerns as we go. If you are unsure about expectations or are unsure about raising a question, please follow up with us afterward to make sure your questions are answered. Plan to be present during the entire class session. For some activities, we may ask you to share your faces on camera so that we can see each other and connect. Please feel encouraged to use a non-distracting [virtual background](#). Many students and instructors prefer not to share their remote spaces for a variety of reasons. Mute your microphone when others are talking to minimize background noise in the meeting.

If you have any concerns about participating in class over Zoom in this way, please let us know. Our goal is to create a safe environment where we can benefit from seeing each other and connecting, but we want to prioritize your safety and well-being.

**Recordings:** We may record some of our sessions for the benefit of students with excused absences. These links will only be shared with students in our class, and only when a student contacts us to make this arrangement.

### Academic integrity policy

See **Descriptions of major course assignments**, above, for our specific guidelines about collaboration and academic integrity in the context of this online class.

## Ohio State's academic integrity policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's *Code of Student Conduct* ([studentconduct.osu.edu](http://studentconduct.osu.edu)), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so we recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

**If we suspect that a student has committed academic misconduct in this course, we are obligated by university rules to report our suspicions to the Committee on Academic Misconduct.** If COAM determines that you have violated the university's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- Committee on Academic Misconduct web page ([go.osu.edu/coam](http://go.osu.edu/coam))
- Ten Suggestions for Preserving Academic Integrity ([go.osu.edu/ten-suggestions](http://go.osu.edu/ten-suggestions))
- Eight Cardinal Rules of Academic Integrity ([go.osu.edu/cardinal-rules](http://go.osu.edu/cardinal-rules))

## Copyright for instructional materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

## Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at [titleix.osu.edu](https://titleix.osu.edu) or by contacting the Ohio State Title IX Coordinator at [titleix@osu.edu](mailto:titleix@osu.edu). Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit [equity.osu.edu](https://equity.osu.edu) or email [equity@osu.edu](mailto:equity@osu.edu).

## **Commitment to a diverse and inclusive learning environment**

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

## **Your mental health**

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, on-demand resources are available at [go.osu.edu/ccsondemand](https://go.osu.edu/ccsondemand). You can reach an on-call counselor when CCS is closed at 614-292-5766, and 24-hour emergency help is also available through the 24/7 National Prevention Hotline at 1-800-273-TALK or at [suicidepreventionlifeline.org](https://suicidepreventionlifeline.org). The Ohio State Wellness app is also a great resource available at [go.osu.edu/wellnessapp](https://go.osu.edu/wellnessapp).

# ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

## Requesting accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, We may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; 098 Baker Hall, 113 W. 12<sup>th</sup> Avenue.

## Accessibility of course technology

This course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Canvas accessibility ([go.osu.edu/canvas-accessibility](https://go.osu.edu/canvas-accessibility))
- CarmenZoom accessibility ([go.osu.edu/zoom-accessibility](https://go.osu.edu/zoom-accessibility))

## COURSE SCHEDULE (SEE CARMEN/CANVAS ASSIGNMENT UP-DATES)

Week	Dates	Topics, Readings, Assignments, Deadlines
1	Aug 23, 25, Aug 26	Lectures: Course introduction / Scientific Method Outdoor/Indoor Lab: Orienteering, Map Reading & Photointerpretation
2	Aug 30, Sep 1 and 2	Lectures: Wildlife habitat classification / Term Project Bird & Veg. ID Outdoor Lab: Term Project Topics, AWRO Study Area Reconnaissance
3	Sep 6, 8, Sep 9	Lectures: Population Sampling and Surveys / Estimating Abundance Outdoor Lab: General Wildlife Surveys
4	Sep 13 15, Sep 16	Lectures: Est. Abund. w/ Detection Prob./ Veg. Sampling / Habitat Suit. Outdoor Lab: Abundance estimation with detection probabilities

<b>Week</b>	<b>Dates</b>	<b>Topics, Readings, Assignments, Deadlines</b>
<b>5</b>	<b>Sep 20, 22, Sep 23</b>	<b>Lectures: Term project prospectus 2/AWRO Q&amp;A/Data Entry Outdoor Asynchronous Lab: AWRO Surveys and Data Entry</b>
<b>6</b>	<b>Sep 27, 29 30</b>	<b>Lectures: Review of Stats &amp; Intro R – I / Lecture Mid-term Exam Outdoor Asynchronous Lab: AWRO Surveys and Data Entry, continued</b>
<b>7</b>	<b>Oct 4, 6 Oct 7</b>	<b>Lectures: Review of Stats &amp; Intro R - II / Flex Day Outdoor Asynchronous Lab: Lab Mid-term Exam (online) / AWRO Surveys and Data Entry, completed</b>
<b>8</b>	<b>Oct 11</b>	<b>Lecture: Term Project Prospectus 3/AWRO Debrief No class (Th, F), fall break</b>
<b>9</b>	<b>Oct 18, 20 Oct 21</b>	<b>Lectures: Animal Capture &amp; Marking / Home Range &amp; Habitat Use Outdoor Lab: Wildlife Trapping Demo / Radiotelemetry</b>
<b>10</b>	<b>Oct 25, 27 Oct 28</b>	<b>Lectures: Estimating Vital Rates – I / II: Survival / Reproduction Indoor Lab: Term project (AWRO) Data Analysis – I: Summary Statistics</b>
<b>11</b>	<b>Nov 1, 3 Nov 4</b>	<b>Lectures: Population Estimation – I / II: Mark-recapture / Removal Indoor Lab: Term Project (AWRO) Data Analysis (candidate models)</b>
<b>12</b>	<b>Nov 8, 10 Nov 11</b>	<b>Lectures: Communicating Research I / II: Written / Oral Indoor Lab: Term Project (AWRO) Data Analysis (multi-model inference)</b>
<b>13</b>	<b>Nov 15, 17 Nov 18</b>	<b>Lectures: Data Presentation / Data Interpretation &amp; Inference Indoor Lab: Term Project Data Analysis (tables and graphing)</b>
<b>14</b>	<b>Nov 22</b>	<b>Lecture: Term Project Report Q&amp;A</b>
<b>15</b>	<b>Nov 29, Dec 1,2</b>	<b>Lecture: Emerging Techniques / Wildlife Career Paths Course Wrap up; Indoor Lab: Oral Presentation of Term Projects</b>
<b>16</b>	<b>Dec 6</b>	<b>Course Wrap-up Final papers due</b>
	<b>Dec 12</b>	<b>Congratulations, we are done! Final Examination 2:00 – 3:45 PM Happy Holidays</b>

