

Conservation Biology

BIOL 4423

Instructor: Dr. Zoe Panchen

Office: BIO 430

Office hours: 9:30-10:30 M, W

E-mail: zoe.panchen@acadiau.ca

Lecture: M-W-F, HSH 141, 8:30-9:20am

Lab: WI01: M 20th Jan – 24th Mar

BIO 210, 1-3:50pm



I'm here to help and facilitate your learning! If you have questions or concerns, please drop by my office during office hours or by making an appointment. To make an appointment please send me an email with days and times you are available and briefly what you would like to discuss. You can also email me questions.

Emergency communication plans: if there is a class cancellations or classes need to move on-line (e.g. snow day), I will send an email to all students via Moodle at least 2 hours before the start of the class with a Teams link for an on-line class.

Evaluation	Percentage	Date
Participation	10% (see class participation and team effectiveness rubrics)	All classes and labs
Threats to biodiversity presentation	15% (see threats to biodiversity rubric)	Due: 26 Jan, 4pm Present: 27 – 31 Jan
Conservation news story	5% (see conservation news rubric)	3, 10 Feb
Mid term	20% (no make-up mid-term)	12 Feb
Mock COSEWIC report	30% (20% written report, 10% presentation, see rubric)	2 April, 4pm
Final Exam	20% (cumulative, take home)	7 – 17 April

Part 1: Course Information

Course Description

The theory and practice of conservation biology including human impacts on the biosphere, historical and present worldviews of humans and nature, Indigenous perspectives, protected area design, management and restoration, ecosystem services, extinction risk, invasive species and species at risk.

Prerequisite(s): BIOL 1113/1123 with minimum grades of C- in each.

Course Materials & Requirements

- Course textbook: Sher AA 2022 An introduction to Conservation Biology Third Edition Oxford University Press, U.S.A. pp. 434. Available in print and eBook.
- Access to Moodle and a computer or tablet to access online material (please let instructor know if this is an issue)
- Warm clothes and footwear for outside labs (please let instructor know if this is an issue)

Course Structure

- Lecture material will be presented in 50 min lecture slots.
- There will be 10 labs starting Jan 20th 2025.

Student Learning Outcomes

1. Define biodiversity

2. Understand the value of biodiversity.
3. Describe threats to biodiversity.
4. Evaluate species risk status.
5. Describe different approaches to conservation planning and management.

How to Meet the Learning Outcomes

1. Attend lectures and labs, take notes and ask for clarification when something is not clear.
2. Participate in discussions, group work and ask questions.
3. Work on COSEWIC project throughout term and ask if not sure about something.
4. Study on a regular basis, rather than leaving it to the last minute.

Part 2: Course Plan

The instructor reserves the right to amend the course plan with reasonable notice, and in consultation with the class.

Lecture:

Dates	Lecture #	Topic
Jan – 6		Introduction to Course
8	1	Defining Conservation Biology
10	2	What is Species Diversity
13	3	Plant Genetic Diversity and Conservation Guest Lecture – Dr. Zoë Migicovski, Department of Biology, Acadia
15	4	Ecosystem Diversity
17	5	Global Biodiversity
20	6	COSEWIC Guest Lecture – Dr. Sherman Boates, Department of Biology, Acadia
22	7	Value of Biodiversity
24	8	Ecosystem Services
27	9	Presentation Threats to Biodiversity (human pop, destruction, threatened habitats)
29	10	Presentation Threats to Biodiversity (fragmentation, degradation, exploitation)
31	11	Presentation Threats to Biodiversity (invasive species, disease)
Feb – 3	12	Threats to Biodiversity - Climate Change
5	13	Threats to Biodiversity - Climate Change
7	14	Protecting Species at risk Guest Lecture – Lori Phinney, Species at Risk Biologist, MTRI
10		Review of course material, questions and answers
12		Midterm
14	13	Make-up class if needed
17		No Lecture Heritage Day – Study Break
19		No Lecture – Study Break
21		No Lecture – Study Break
24		Extinction
26	15	Extinction – Theory of Island Biogeography
28	16	Extinction Risk
Mar – 3	17	Use of Species Distribution Modelling in Conservation Biology Guest Lecture – Terrell Roulston, Research Assistant, Migicovski Lab
5	18	History of Protected Areas in Nova Scotia Guest Lecture – Alain Belliveau, Manager, E.C. Smith Herbarium

7	19	Ex-situ Conservation Guest Lecture – Alain Belliveau, Manager, E.C. Smith Herbarium
10	20	Indigenous perspective – The Teachings of Grass and the Honourable Harvest
12	21	Apoqnmattuli'tk: working together for marine conservation Guest Lecture – Benjamin Henger, MSc candidate, Stokesbury Lab, Acadia
14	22	Indigenous knowledge and conservation biology
17	23	Small Populations
19	24	Conserving Populations
21	25	Environmental Law Guest Lecture – Jamie Simpson, Juniper Law
24	26	Impact assessment
26	27	Restoration Ecology
28		Sustainable Development
31	28	The Future of Conservation Biology
Apr – 2	29	Review of course material, questions and answers
4		

Lab:

Day	Date	Lab	Topic
M	Jan 20	1	COSEWIC Project
M	Jan 27	2	COSEWIC project
M	Feb 3	3	Conservation news story
M	Feb 10	4	Conservation news story
M	Feb 24	5	Outdoor lab – Harriet Irving Botanical Garden – M. Priesnitz
M	Mar 3	6	Mark/recapture
M	Mar 10	7	Nova Scotia Protected Area Design and Ex Situ Conservation –A. Belliveau
M	Mar 17	8	Invasive species – Dr. Trevor Avery
M	Mar 24	9	COSEWIC Presentations
M	Mar 31	10	COSEWIC Presentations

Part 3: Assessment and Grading

Schedule: The assessments schedule is given above.

Participation: Please see rubrics for class participation and team effectiveness in Moodle.

Threats to biodiversity presentation: Please see threats to biodiversity rubric in Moodle.

Conservation news story: Please see conservation news rubric in Moodle.

Midterm: If you are sick or have other valid reasons for missing the mid-term, the value will be added to the final exam. There will be no make-up midterm.

COSEWIC report: Please see mock COSEWIC report rubric. Please run your report through Turn It In, prior to submission through Moodle. Plagiarism or use of AI will result in a mark of 0% for the project (see university commitment to integrity policy below). Late reports will be penalised 10% per day.

You are required to attend at least 75% of the lectures in order to pass the course.

Attending labs is mandatory. You are required to pass the lab to pass the course.

Part 4: Course Policies

All materials covered in lecture, information from the textbook and information from guest speakers may be included in the midterms and final exam. Thus, in-person attendance is strongly encouraged. You may use laptops or tablets to take notes in lectures but please limit their use to classroom material only.

A missed test requires a medical note or similar supporting documentation. Makeup tests will not be given, rather the value of the midterm will be added to the final exam. Attendance in person for the labs is mandatory. If you must miss a lab contact me in advance.

Part 5: University Policies

University policies are available in the Acadia University Academic Calendar or through the Registrar's website: <https://registrar.acadiau.ca/welcometotheregistrarsoffice.html>

Equity, Diversity and Inclusion

Acadia University is committed to becoming a culturally safe and anti-oppressive community. This can only be achieved where there are simultaneous efforts to eliminate all forms of discrimination and harassment from our campus community, including the elimination of all discrimination, harassment and violence based on one's identity, including but not limited to, gender, race, class, ethnicity, sexual orientation, disability, gender identity, gender expression, and Indigeneity. The policy against harassment and discrimination, and resources for students who believe they may have experienced, or witnessed, discrimination or harassment, are available here: <https://www2.acadiau.ca/student-life/equity-judicial/equity.html>

Last Drop Day

Last day to drop a course and receive a "W". Please check the Acadia University calendar dates, which are available here: <https://registrar.acadiau.ca/AcademicCalendars.html>

Inform Your Instructor of Accommodations

Acadia University is dedicated to improving access to campus life for all students with disabilities. While we attempt to ensure that all courses are accessible, we recognize that there are barriers that need to be addressed on an individual basis. Students who require accommodations to complete coursework or otherwise fully participate in class should contact Accessible Learning Services directly as soon as possible. <https://www2.acadiau.ca/student-life/accessiblelearning.html>

The Use of Animals in Teaching and Research

The use of animals in teaching and research at Acadia University is done in accordance with guidelines on the care and use of animals published by the Canadian Council on Animal Care (CCAC). For more information on the CCAC, please visit their website at <http://www.ccac.ca>

Commitment to Integrity

It is standard practice in Biology to check exams and assignments for cheating and plagiarism. Cheating in the class and/or lab, including plagiarism, will not be tolerated. Please read the appropriate sections of the current Acadia University Academic Calendar: <https://registrar.acadiau.ca/AcademicCalendars.html>

Information on copy-write and course content from Acadia University is available through the Vaughan Memorial Library: <http://libguides.acadiau.ca/c.php?g=433650&p=5027078>

The spoken and written course content (including the syllabus, handouts, lectures, presentations, labs, assignments, quizzes, tests, and exams) are the intellectual property of the instructor and may only be copied for personal use. Sharing these materials or uploading them where they may be accessed by others is a violation of copyright.

Students may not create audio, video, photographic or transcript recordings of classes with the exception of those students requiring an accommodation for a disability, who must speak to and obtain written permission from the instructor prior to beginning to record lectures. Students requiring an accommodation for a disability may only make audio recordings, must stop/pause the recording for any material not presented by the instructor (such as class discussion), may not post, make public, or otherwise share these recordings or portion(s) thereof and must destroy the recordings before the end of the course.

Students creating unauthorized audio, video, or photographic recording of lectures violate an instructor's intellectual property rights and the Canadian Copyright Act. Students violating this agreement will be subject to disciplinary actions.

Share the Air: Acadia is a Scent-Free Campus

In consideration of the difficulties that exposure to scented products causes individuals with sensitivities and allergies, all students, faculty, staff, employees of any companies working on university property, visitors, and guests of Acadia University, or of members of the University community are asked to refrain from wearing scented personal care products such as perfumes / aftershave, lotions, hair spray and deodorant. In addition, users of tobacco and cannabis are asked to be aware that odours associated with product use may impact individuals with sensitivities and allergies. Acadia University in consultation with its contracted cleaning staff, have agreed to use products that do not leave residual odours that may cause difficulties for individuals with sensitivities and allergies.

Part 6: Program Learning Outcomes

Foundations of knowledge		Course specific examples	Proficiency 1-Introduction 2-Reinforcement 3-Proficient
Scientific method, inquiry and hypothesis testing	Find, understand and apply information from the literature; understand how to use the scientific method to examine problems from different perspectives	Threats to biodiversity presentations, COSEWIC project, designing protected areas	3
Historical concepts and contributions by important figures	Explain foundational concepts in biology, Two-eyed Seeing, and ethical implications of scientific discoveries	Tracing history of conservation biology; reconciliation, reciprocity and the interconnectedness of humans and nature	2
Biodiversity and ecology	Understand the genetic, taxonomic and ecosystem levels of biodiversity; focus on SW Nova including the Acadian Forest and Bay of Fundy ecosystems	Studying biodiversity in the context of conservation biology, protected areas and ex-situ conservation in Nova Scotia	3
Genetics and evolution	Understand the chemical basis of heredity, genetics and genomics; integrate concepts across disciplines to understand evolution	Genetic diversity as it relates to extinction risk.	2
Human and environmental health	Understand form and function in health and disease within a One Health framework, integrating human and environmental health	Threats to biodiversity from fragmentation, climate change and other human activity	3
Lab and field skills			
Experimental design	Gain experience in applying the scientific method	Ecological monitoring, study of invasive species	2
Safety	Work safely and productively in lab and field settings	Dressing appropriately for outdoor winter lab	3
Lab skills	Gain experience with basic and advanced lab techniques and understand their application in research, health science and industry		N/A
Field skills	Gain experience in basic and advanced field skills and understand their application in ecology, conservation biology and environmental change	Out-door lab, ex-situ conservation lab, ecological monitoring	2
Data acquisition, analysis and interpretations	Collect data, present results both qualitatively and quantitatively, and interpret outcomes in light of the literature	COSEWIC report, critique of literature	3
Statistical analysis	Use R and or other programs to analyze biological data	Measuring species richness and evenness	2

Professional skills			
Ethical practices	Demonstrate ethical conduct, apply principles of academic integrity, and understand the principles of EDI in science	Respectful participation in class and lab, proper citation, professional communication through email etc.	3
Collaboration and group work	Work effectively in groups within and across disciplines	Group break outs in class, threats to biodiversity presentations	3
Critical thinking	Analyze and evaluate information to make science-based decisions	Conservation news story, literature critique	3
Computer proficiency	Use common and discipline- specific software	Use of Microsoft Word, Excel, PowerPoint	3
Scientific communication	Communicate science effectively to both scientific and general audiences	Conservation news story, threats to biodiversity presentations	3