DALHOUSIE UNIVERSITY

Faculty of Science Course Syllabus
Department of Biology

BIOL 3065.01
Conservation Biology

Winter 2021-2022

Instructor: Derek Tittensor (Derek.Tittensor@dal.ca), LSC 7060, 902 494-7720

TA: Amy Irvine (amy.irvine@dal.ca), LSC 7060

Lectures: MON 11:35-12:25 & WED 11:35-12:25 Henry Hicks 217

Tutorial: MON 2:35 – 4:25 LSC C338

Office hours: After lectures or by appointment

Course delivery: (if possible) In person. Lectures will not be recorded.

(first two weeks) Lectures will be recorded and uploaded for asynchronous viewing, available at 8am on the day of the lecture (M, W). The tutorial will be **synchronous**, online via the link on Brightspace.

Class Web Site: BIOL3065 on BrightSpace

Course Description

This course offers an introduction to conservation biology: the science of understanding and conserving biodiversity on Earth. Students learn how biodiversity change is assessed and what tools are used to prevent the extinction of species and the disruption of ecosystems. Tutorials involve oral presentations (accompanied by a written essay) and an in-depth discussion of controversial topics in conservation. Over the course of the term students will also engage in a personal conservation project aiming to apply lessons learned during the class to their own personal life practises.

Course Prerequisites

BIOL 2060.03 or BIOL 3001.03

Course Objectives/Learning Outcomes

- Learning about the basics of conservation biology, such as fundamental processes that affect populations, species, and communities in today's world
- Learning how specific human impacts influence animal and plant populations, as well as the communities and ecosystems in which they are embedded.
- Learning about diverse conservation and management approaches including topics such as conservation genetics, protected area design, international biodiversity policy, and restoration ecology, among others
- Researching (on your own or in a small group) a current topic in conservation biology, and presenting orally and in a short essay the state of knowledge, conservation actions, and possible controversy
- Discussing current topics in Conservation Biology in class and critically evaluating the science and societal discourse surrounding this topic
- Applying the lessons learned to your own daily life practices

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Course Materials
All course materials (class slides and any relevant scientific papers) will be posted on Brightspace.
A complementary but non-prerequisite textbook (Sodhi NS, Ehrlich PR 2010. Conservation biology for all. Oxford University Press Oxford, UK) is freely available as PDF from:
http://www.mongabay.com/conservation-biology-for-all.html
Scroll down that page and click on FREE FULL TEXT DOWNLOAD

Course Assessment Overview
Students will be graded according to the weighted scheme below, weighing their grades in the online quizzes, the personal conservation assignment, the weekly tutorial with its presentation and written research assignments, and attendance and active participation in the tutorial. Details on these assignments are found below.

Component	**Weight (% of final grade)**	**Date**
Personal conservation assignment (term project)	30	Final project due Apr. 6th, but requires work over the duration of the semester
Tutorial research assignments (15% talk, 15% paper)	30	Assigned individually
10 online quizzes (3% each)	30	Mondays from 17 Jan. Quizzes open from 8am to midnight each Monday; 20 minutes to complete quiz once started.
Participation and contribution to discussion (tutorial)	10	Ongoing throughout semester

Major rubrics for grading lecture style presentations and written proposals (15% of final grade each):

- Clarity and Organization (5%)
  - Well-organized, easy-to-read slides/paper
  - Good structure
  - Well-explained content
  - Clear take-home messages
- Speaking/Writing Style (5%)
  - Well-worded and comprehensible
  - Loud and clear and well-paced
  - Projecting voice to audience, engaging
  - Properly cited and formatted references
- Content (5%)
  - Well-thought-out representation of the argument
  - Demonstrated knowledge and proper citation of relevant papers
  - Intelligent discussion
  - Conclusions are clear and sound

Online (brightspace) quizzes:

Quizzes will ONLY be available on Mondays starting on the 17th January for 10 weeks, from 8am until midnight, with each quiz being worth 3% of the final grade. Each quiz will have a 20 minute time limit once started, and be based on the previous week's lecture material only.

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Other course requirements
Attendance and engagement in the tutorial will be mandatory. Lack of participation and engagement during the tutorial discussion will result in a lower participation mark, worth 10% of the final grade.

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ (90-100)	**B+** (77-79)	**C+** (65-69)	**D** (50-54)
A (85-89)	**B** (73-76)	**C** (60-64)	**F** (<50)
A- (80-84)	**B-** (70-72)	**C-** (55-59)	

Course Policies

- This is a highly interactive class and students need to attend tutorial sessions at all times and contribute to class discussions, activities, and feedback. Missing more than 2 tutorials without a Student Declaration of Absence (SDA) form will lower the grade on in-class activities.
- All assignments have a strict deadline; late assignments will be docked 10% per day late; missed assignments and exams will count 0%; with the following exceptions:
- In case of illness, please use the Student Declaration of Absence (SDA) form for late or missed academic requirements. Late penalties will not apply if SDA is submitted prior to the due date. Maximum 2 uses of the SDA per term. Students who are ill for an extended period and thus miss multiple requirements should be referred to Patricia Laws, Assistant Dean (Student Affairs).
- If excused, we will provide the following alternative arrangements:
  - missed assignments: an extended deadline will be offered.
- In case of group projects, each student is required to contribute to the group's work, and the group will be assigned one grade.
- Plagiarism software will be used to check for the originality of each student's written assignments.

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Lecture Schedule:

Block 1: Introduction: Conservation of biological diversity

- Jan 5 Introduction
- Jan 10 What is conservation biology
- Jan 12 Basic threats to biodiversity (1)
- Jan 17 Basic threats to biodiversity (2)
- Jan 19 Climate change and biodiversity
- Jan 24 Extinction, the Anthropocene, and the future of biodiversity

Block 2: Conservation at the population and species level

- Jan 26 Population and species-level conservation
- Jan 31 Conservation genetics and metapopulations
- Feb 2 Conservation genetics and extinction
- Feb 7 Population viability analysis
- Feb 9 Valuing biodiversity

Block 3: Conservation at the community and ecosystem level

- Feb 14 Macroecology and conservation
- Feb 16 Conservation and advocacy (guest lecture)
- Feb 28 Protected area design and selection
- Mar 2 Marine protected area networks
- Mar 7 Conservation of highly migratory species
- Mar 9 Marine conservation in Nova Scotia (guest lecture)
- Mar 14 Conservation and resource management
- Mar 16 Restoration ecology

Block 4: Conservation and sustainability

- Mar 21 Technology and software approaches to conservation biology
- Mar 23 International biodiversity policy
- Mar 28 TBA
- Mar 30 Global approaches to conservation
- Apr 4 Synthesis: conservation for the future

Tutorial Schedule and Topics:

- Jan 10 Introductory Tutorial, choice of topics, information on assignments
- Jan 17 Talks and discussion: The role of Conservation Biology
- Jan 24 Talks and discussion: Climate change and conservation
- Jan 31 Talks and discussion: Extinctions
- Feb 7 Talks and discussion: Population conservation
- Feb 14 Talks and discussion: Biodiversity benefits to people
- Feb 28 Talks and discussion: The economy vs conservation
- Mar 7 Talks and discussion: Protected Areas
- Mar 14 Talks and discussion: Human-environment relationships
- Mar 21 Talks and discussion: The social factor in conservation
- Mar 28 Talks and discussion: The future of conservation
- Apr 4 Overflow slot for missed talks

Six talks will be held at Monday Tutorials, papers are due the same day and to be submitted electronically in Microsoft WORD via email to **Amy Irvine** (amy.irvine@dalca).

Details on Assignments (PLEASE READ CAREFULLY)

1. **Personal Conservation Assignment**

There is a term project for each student that aims to document a personal conservation project that is conducted by each student over the course of the term. Each student will engage in his or her own project worth 30% of their final mark. This will be a personal project aiming to apply lessons learned during the class to your own personal life practises. Students will engage in either a research project, communications initiative, or a personal lifestyle change over the duration of the term and will report on this through a detailed written report that must also a 150-word lay audience summary and include visual material (photos, graphs, or videos). Students can work on this alone or in groups of two or three. Groups will receive the same mark for each student.

At the beginning of term students will self-assess where in their life they could affect realistic changes that may result in a positive difference for the planet and its biodiversity. It is advised that you discuss project ideas with the instructor/TA. You will carefully document over the course of the term:

- What you did and why you did it (a clear rationale needed, best supported by relevant facts and literature)
- How you kept track of outcomes (what you measured)
- What the total cost and benefit of the project was (in financial, time, or other terms)
- How this has changed your life, or your views
- How results were shared, communicated, and received by others

Examples from past projects include, for example:

- Attempts to reduce or eliminate plastic waste
- Organising beach cleanups

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- Giving up fast food
- Reducing or eliminating meat consumption
- Volunteering for an environmental organisation
- Developing a strategy to conserve endangered species on a Caribbean homeland

EXAMPLE: if the goal is to reduce meat consumption, you would assess the amount of meat consumed in a week or two prior to making the change, then keep track of any meat consumption after you made the change, then graph the results over time. It would be interesting to also measure the effect this change has on the weekly grocery bill, carbon footprint, and personal health and well being, for example. At the end of the term, the student would **hand in a 3-part assignment**

1. **A write-up of the project results in an essay or report form**, explaining what was done, how outcomes were assessed,
2. **A visual presentation of the data or results in graphical form** (infographic, photos, video, data tables and graphs)
3. A **maximum 150-word summary aimed at explaining the results to lay audiences** that explains how this life-style change worked out overall and you learned.

The completed assignments will be sent to **your TA Amy Irvine** (amy.irvine@dal.ca) at the end of term (April 6). Ideally, there would be an effort to communicate results to others in your circle, for example through social media.

Students will **NOT** be assessed on whether a large or small change was attempted or whether the project was overall successful. They **WILL** be assessed on how well the project is documented, in terms of the quality of the writing, the data, and the content of the project. Projects **MUST** include data that were collected. Extra points will be given for truly original ideas and efforts to reach and inspire other audiences.

2. Tutorial Research Assignment

There is one written and one oral assignment in the tutorial portion of this class, worth 15% of your final grade each (30% combined). At ONE tutorial in the term you are expected to give **a NO MORE THAN 10 min science talk** and write a short (**NO MORE THAN 500 words) scientific summary paper** which examines a principal question in conservation biology (see topics on class website). We expect both of these assignments to be based largely on information extracted from the primary scientific literature, i.e. academic journals, which can be accessed easily by Dalhousie library data bases, or via science search engines such as http://scholar.google.ca/. We consider these assignments to be a very important component of the course as they should indicate whether you have understood the relevant theoretical concepts, whether you can critically read, evaluate and synthesize the scientific literature, and whether you are able to present your findings, both orally and in writing. It is very important in the context of this class to present a balanced argument - that is to look at a question from different angles. Conservation topics are usually multifaceted and do not typically present themselves to easy 'quick-fix' solutions. It would be good to bring out these complexities in your assignment, while also attempting to arrive at a clear conclusion. After your presentation there will be a discussion of your topic by the class, whereas different groups will argue for or against different viewpoints.

All scientific summary papers should be written in an objective scientific style (see below), with appropriate documentation of sources. Marks will be given both for content and for presentation. In addition we will award bonus points for truly original ideas, and for original analysis. They are due at the end of the week when you give your presentation (i.e. the following Sunday) and will be **submitted via email to your TA Amy Irvine** (amy.irvine@dal.ca).

Suggested procedure for preparing your assignments

1) Think carefully about the question, what it means, read up on the topic in textbook, make sure you understand the topic and question well. If in doubt, discuss with Instructors.
2) Read the primary scientific literature and find out what the main viewpoints and discussions on this topic or question are.
3) Think about how these relate to the principal question.

- Which of the information is relevant, which addresses a different question?
- Do different authors disagree, and if so, what is their source of disagreement?
- Can you extract some of the underlying data and summarize or analyze it yourself?

4) Outline your paper and talk, focusing on a clear but balanced discussion. Summarize some of the underlying data to illustrate your main points; you would typically do this in a data graph, or in some cases in a map or flow chart. Substantiate your statements with citations from the literature (see below).
5) End your paper with a concluding paragraph, where you briefly sum up what you think is the key message.
6) The graph (it could be one or several) is presented after the text, and must have a descriptive legend that helps the reader to interpret the graph. Also the graph is referred to at an appropriate section of the text, e.g. as Figure 1, or Table 2.
7) All sources are cited in the text with author name and year, e.g. **(Carpenter et al. 1985).** In the very end of your assignment please add the section entitled 'references' which lists alphabetically all the literature sources cited in the main text. Use a common, standardized style that you find in scientific papers, e.g.
Carpenter, S. R., Kitchell, J. F., & Hodgson, J. R. (1985). Cascading trophic interactions and lake productivity. BioScience, 634-639.

(this is the APA citation style, but you may choose another one – just be consistent and don't mix styles)

Some notes on paper style:

1) Use proper English, crafted into short, clear sentences. Do not use colloquial language or slang. Avoid complicated sentence structure, jargon and acronyms (if you must use acronyms define them upon first use)
2) Pay close attention to spelling, grammar, sentence, and paragraph structure.
3) Do NOT excessively quote directly from the articles you have read. Paraphrase and cite appropriately.
4) Extracting sentences from the literature (even if somewhat modified) is not appropriate and considered plagiarism. Try to explain what the author means in your own words.
4) Every idea that is not yours or that is not common knowledge MUST be cited. For example you may want to state that 'predatory fish introductions to lakes can result in trophic cascades (Carpenter et al. 1985).' Carpenter et al. is the source for that statement and needs to be listed in the References as:
Carpenter SC, Kitchell, JF, Hodgson, JR (1985) Cascading trophic interactions and lake productivity. Bioscience 35: 634 - 639.

HOW TO STRUCTURE YOUR PAPER:

Your paper should closely follow the style of a published scientific paper, only that it is a lot shorter. It should contain the following elements:
Title Should be short and convey the major idea of the paper.
Author list This is a list of the authors of the paper, i.e yourself, or the people your worked with in your group.
Text body You will need to introduce the relevance and importance of the question being asked. This first Introduction 'sets the stage' for the paper by including background information which explains why the question is being asked. Then you summarize what you found out using the available scientific literature. You will include graphs or tables which you refer to in the text as (Fig. 1A) or (Table 1). There should not be more than 3 figures in total, and each should take up no more than ½ a page. See any scientific paper for how to format tables and

graphs. It is important to discuss the relevance of your findings as well as any larger-scale implications. Finally, a discussion of future action that should be taken or studies that should be done is a good way to end the paper. *Reference list* Follow standard citation formatting. See above for examples.

HOW TO STRUCTURE YOUR TALK:

You may follow the traditional style of

- Introduction / Outline
- Methods
- Results
- Discussion and Conclusion
- Summary,

or come up with your own style. However, this should always include an Introduction and a "take-home-message" or conclusions. DO NOT simply read your paper to the audience. The talk and paper are 2 separate assignments. In your talk you should also present some graphical, scientific material (e.g. plots, graphs, maps, charts). Be prepared to engage with the rest of the class in a discussion following your presentation. Do not cram too much information into your slides, which should be simple, well organized, and clear. They are used to illustrate your talk, and should contain mostly graphical material and only brief bullet points. Use large fonts so people can actually see what is written. Explain graphs and what they are showing. Speak slowly and clearly and project your voice to the audience. Look at the class, not at the overheads. Always emphasize the key points (what people should remember) and use carefully chosen examples to illustrate them. Often one well-explained example is better than three or four that are rushed through. Do practice your talk multiple times ahead of class (ideally in front of a group). Time your talk when you practice it. If is longer than 10 minutes you need to shorten and leave some things out.

***** Please check with your instructor/TA if you have any questions about the assignments *****

University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.
Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).
Information: https://www.dal.ca/campus_life/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.
Code: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness
Statement: http://www.dal.ca/cultureofrespect.html

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) (elders@dal.ca).
Information: https://www.dal.ca/campus_life/communities/indigenous.html

Important Dates in the Academic Year (including add/drop dates)
https://www.dal.ca/academics/important_dates.html

University Grading Practices
https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Student Resources and Support

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: https://www.dal.ca/faculty/science/current-students/academic-advising.html

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Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Black Students Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: https://libraries.dal.ca/

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Studying for Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Copyright Office: https://libraries.dal.ca/services/copyright-office.html

Fair Dealing Guidelines https://libraries.dal.ca/services/copyright-office/fair-dealing.html

Other supports and services

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness/services-support/student-health-and-wellness.html

Student Advocacy: https://dsu.ca/dsas

Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Safety

Biosafety: https://www.dal.ca/dept/safety/programs-services/biosafety.html

Chemical Safety: https://www.dal.ca/dept/safety/programs-services/chemical-safety.html

Radiation Safety: https://www.dal.ca/dept/safety/programs-services/radiation-safety.html

Scent-Free Program: https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html

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