

Ecology & Evolution of Birds

Syllabus

Department of Biology
BIOL 4071, Fall 2024

Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.

Dalhousie University also acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.

Course Instructor(s)

Name	Email	Office Hours
Professor Glenn Crossin	gtc@dal.ca	By appointment – email me.

Lectures: M,W,F 13:35-14:25, Oceanography Building, room 3655

Laboratories: *n/a*

Tutorials: *n/a*

Course Description

This course will provide a current and comprehensive account of avian biology – encapsulating their evolution, ecology, life-history variation, behaviour, reproduction, physiology, morphology, flight, and conservation. Whenever possible, I will highlight research on a species in question, and will also highlight work done by my students and me from our own research programs on birds.

Class size = 24

Course Prerequisites

- A grade of B- (2.70) or better in each of the following prerequisite classes: BIOL 2003, BIOL 2040, BIOL 3026.

Course Objectives/Learning Outcomes

At the end of this course students should be able to:

- A detailed examination of the evolutionary history of birds, extending from the dinosaurs.
- An examination of the anatomy of birds, and how form meets function.
- An examination of the adaptations and behaviours that suit birds to their environments.
- An understanding of the hormonal and physiological underpinnings of reproduction, migration, and behaviour.
- An understanding of the key physiological mediators of avian life-histories variation, including the timing of breeding, egg size and egg quality, clutch size, parental care (incubation and chick rearing), and trade-offs, costs of reproduction, and carryover effects.

Course Materials

- *Various papers and reviews support each lecture, and will be assigned as readings prior to each lecture*

Course Assessment

<i>Component</i>	<i>Weight (% of final grade)</i>	<i>Approx. Date</i>
• <i>Exam 1</i>	<i>35%</i>	<i>late Sept</i>
• <i>Exam 2</i>	<i>35%</i>	<i>mid Oct</i>
• <i>Exam 3</i>	<i>15%</i>	<i>mid Mar</i>
• <i>Bird song ID test and final Quiz</i>	<i>15%</i>	<i>late Mar</i>

All exams are written exams. You will respond to short and long-answer questions. Responses must be legible. Grammar and syntax are important... points will be deducted if your meaning isn't clear.

A Bird song ID test will occur at the end of term. At the beginning of term, you will be presented with a file containing 40 bird species, with their common and family names presented and an audio file of their song. You will have all term to memorize these. At the Bird song ID test, I will play a subset of songs, and you will have to name the species. Questions may also ask you about the family name that the bird belongs to. All the information that you need to excel on this Test will be presented in the file that I give you and the course lectures.

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

Lectures are in person only, they are not recorded or broadcast synchronously. Students should attend class – all material for the exams comes directly from the class lectures. The copies of powerpoint files that I post to the Brightspace page do not contain all the details that I discuss in class, so you will not do well if you rely only on the slides without having attended the lectures. Come to class and take notes.

Concerning missed exams: I will only permit a makeup exam if I feel you have a reasonable, legitimate excuse such as a major illness or death in the family. You must contact me before the exam if you are going to miss it. If you do not notify me in advance, then you are not guaranteed a makeup exam ... these are offered at my discretion. If you contact me before the exam and have what I deem to be a legitimate excuse, then I will offer you a makeup exam. All Makeup exams must be written within 4 weekdays of the originally scheduled exam. So if the exam was on a Monday, then a makeup exam would occur sometime between Monday and Friday. Or if the exam was on a Wednesday, then the makeup would have to occur by the following Tuesday.

If you are going to miss an exam, then an SDA must be submitted prior to the exam. Only 1 SDA is permitted per term.

****Note: makeup exams are completely new exams** – they will not be the same exam that your peers wrote on exam day in the classroom. Make-up exams will ask different things and will cover different topics, but all from the material identified for the exam in the syllabus. It behooves you to take the in-class exam.

Course Content

GENERAL LECTURE TOPICS TO INCLUDE

- Phylogeny of birds
 - Evolutionary origins and complete diversity of Class Aves, includes both extant and extinct lineages.
- Form and function
 - Feathers
 - Flight mechanics
- Anatomy and physiology
 - Thermoregulation
 - Respiration and circulation
 - Carryover effects between non-breeding and breeding periods
 - Hormonal mechanisms controlling migration, reproduction, parental care, and moult
- Migration and navigation
- Social behaviour and communication
- Food and foraging

Tentative Schedule

Week of	Day	Lecture #	Topic
Sep 4 – 6	Wed	-	COURSE INTRODUCTION
	Fri	1	The Diversity of Birds
Sep 9 – 13	Mon	2a	On the Origins of Birds 1
	Wed	2b	On the Origins of Birds 2
	Fri	3	Paleognathae
Sep 16 – 20	Mon	4	Neognathae: Galloanseres to Phoenicopterimorphae
	Wed	5	Columbimorphae to Otidimorphae
	Fri	6	Caprimulgimorphae to Opisthocomiformes
Sep 23 – 27	Mon	-	Recitation
	Wed	-	EXAM 1: Lecture 1-6 (35%)
	Fri	7	Cursoriimorphae to Phaethontimorphae
Sep 30 – Oct 4	Mon	-	No Classes – Truth & Reconciliation Day
	Wed	8	Gaviimorphae to Procellariimorphae
	Fri	9	Research lecture: The Penguins & Egg Size Dimorphism
Oct 7 – 11	Mon	10	Pelecanimorphe to Strigiformes
	Wed	11	Coraciimorphae to Falconiformes
	Fri	12	Passerimorphae
Oct 14 – 18	Mon	-	No Classes - Thanksgiving
	Wed	-	Recitation
	Fri	-	EXAM 2: Lecture 7-12 (35%)
Oct 21 – 25	Mon	13	Avian Form & Function: Feathers
	Wed	14	Avian Form & Function: Flight
	Fri	15	Basic Anatomy & Physiology
Oct 28 – Nov 1	Mon	16	Food & Foraging
	Wed	17	Research lecture: Corticosterone, stress and foraging
	Fri	18	Social Behaviour & Communication
Nov 4 – 8	Mon	-	Recitation
	Wed	-	EXAM 3: Lecture 13-18 (20%)
	Fri	19	Reproduction
Nov 11 – 15	Mon	-	-
	Wed	-	READING WEEK
	Fri	-	-
Nov 18 – 22	Mon	20	Parental Care – strategies & hormonal control
	Wed	21	Bird song – with Dr. Andy Horn
	Fri	22	Migration and Navigation
Nov 25 – 29	Mon	23	Human Dimensions
	Wed	-	BIRD SONG ID & Quiz prep day (no class)
	Fri	-	BIRD SONG ID TEST & QUIZ (Lectures 19-23) (10%)
Dec 2,3,4	M,T,W	-	FISH ID RESULTS, Special Lectures – tbd.

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>

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>

Dalhousie COVID-19 information and updates: <https://www.dal.ca/covid-19-information-and-updates.html>