

Faculty of Science Course Syllabus
Department of Biology
BIOL 3628 / MARI 3628
Marine Ornithology
Summer 2017

Instructors:	Rob Ronconi	rronconi@dal.ca	Office TBD
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Lectures:	8:30-17:00	LSC-BIOL&EARTH B4012	
Laboratories:	2 (2-3 hours) plus extended field trip		
Tutorials:	None		

Course Description

Overview of the biology of birds in marine environments. Seabird ecology, evolution, adaptations, identification, and natural history. Tools and techniques for studying their behaviour, diet, and populations in the field. Lectures, exercises, and a week-long field trip to Maritime seabird breeding colonies. Student team and independent research projects and presentations.

Course Prerequisites

Intro. Biology (BIOL 1010 or 1021 plus BIOL 1011 or 1022, or SCIE 15XX), Diversity of Life I (BIOL 2003 or similar intro. to the diversity of animals), and Intro. Ecology (BIOL 2060), or instructor's permission. Knowledge of statistics, Geographic Information Systems (GIS), and familiarity with Excel spreadsheets are helpful, but not required, for research projects.

Course Objectives/Learning Outcomes

This class will give students an overview of marine ornithology, a sub-discipline of avian biology focused on birds that live in marine environments. The course combines lectures, lab exercises, student-led presentations, and an extensive field trip to seabird breeding colonies in the Maritimes. Students will learn the identification and natural history of seabirds breeding in Nova Scotia, as well as key aspects of the ecology, evolution and adaptations of birds living in marine ecosystems. Lab and field trips will focus on tools and techniques for field study of seabird behaviour, diet, population assessment, and distributions. Independent and group projects will provide experience in conducting field studies, including study design, data collection, data analysis and presentation of results.

Course Materials

There is no textbook for the course. There are many books and journals available at the Killam library for course projects. Lectures will be posted online. Students are encouraged to bring their own bird identification guide **or guides are available to borrow during the course**. Suggestions include:

- *A Field Guide to North Atlantic Wildlife* by Proctor and Lynch
- *The Sibley Guide to Birds, 2nd Ed.* by David Allen Sibley

Course Assessment

Component	Weight (% of final grade)	Date
Tests/quizzes		
Lecture exam	20%	Sat, 08 July, 14:00-16:00
Field quiz	5%	TBD, during field trip
Final exam	N/A	(Scheduled by Registrar)
Assignments (i = individual, g = group)		
Species profiles (i)	8%	Wed, 05 July, 8:30-11:30
Lab I – Necropsy (i)	5%	Wed, 05 July, end of lab
Lab II – Pellets (i)	5%	Fri, 07 July, end of lab
Research protocol (g)	7%	Fri, 07 July, 18:00
Oral presentation (g)	15%	Tue, 18 July, 14:00-17:00
Field notebooks (i)	15%	Tue, 18 July, 17:00
Final project report (g)	20%	Wed, 19 July, 21:00

Other course requirements

See section on Course Content for full descriptions of the assignments. Students are required to participate in the full field trip and assist with all projects during the field trip.

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

Students are expected to attend and participate in ALL classes, labs, field trips, and complete all assignments. During the field trip, students are expected to be prepared and assist with camping activities including tent setup, cooking, and dishes. A detailed handout on the field trip will provide further guidance on recommended clothing and expectations. During all visits to seabird colonies students MUST follow instructions by the instructors, TAs, and colony managers.

Instructions and rules when visiting bird colonies are necessary to minimize disturbance to birds.

Late assignments are docked 10% for each day late.

Weather-related cancellations - The field trip will proceed rain or shine, but activities within the week-long field trip will be scheduled according to weather constraints.

Course Content

Brief Description of Assignments

- 1) **Species Profiles (8%)** – On the first day, each student will be asked to choose a species of marine bird (gulls, terns, petrels, sea ducks, phalaropes and shorebirds) which breeds, migrates or overwinters in Nova Scotia. Students will have 1 day to prepare an 8 to 10 minute PowerPoint presentation about this species to the class. Presentation topics must include: species identification, natural history (breeding biology, foraging behavior, etc.), habitat types, and unique adaptations/physiology for living in marine environments. Students will also find one peer-reviewed scientific paper about an aspect of this species ecology and/or conservation. Research paper must include some aspect of a field study, not lab or mathematical model/simulation. A brief synopsis of the study will be presented as part of the PowerPoint presentation and include: research question/hypothesis, study methods/techniques, main findings, and relevance to conservation/ecology.

- 2) **Lab exercises (total 10%)** – There will be 2 labs and each will include a brief exercise to be handed in at the end of the lab. Labs will be conducted as group activities but each individual will be responsible for handing in their own exercise (except for Lab IV, which is all group-based).
 - a. **Necropsy (5%)** – Necropsy of seabird carcasses will be led by a veterinarian. Students will observe, assist when requested, and should ask lots of questions. Focus of the necropsy session is to learn about avian anatomy with emphasis on physiological adaptations for living in marine environments.
 - b. **Pellets (5%)** – Analysis of regurgitated pellets from gulls or other seabirds is a simple technique for estimating bird diets. Students will be provided with pellets collected from a gull colony. In groups of two or 3, pellets will be filtered through mesh sieves and students will learn to classify “food types” to assess diet. Data will be pooled among groups and used to complete the lab exercise.

- 3) **Lecture exam (20%)**: The exam will cover material presented in the lectures (including the guest lecture), as well as material presented by fellow classmates in their Species Profiles presentations. The exam will be composed of short and long answer questions.

- 4) **Field quiz (5%)**: During one of the field trip days, students will be given a brief quiz testing marine bird identification. Bird identification will be learned through Assignment #1, use of bird identification guides in the field, and records kept in field notebooks.

- 5) **Group Project (total = 42%):** Students will choose from 4 different projects which range in topics from distribution, abundance, diet and behaviour. The vision for the projects is to collect useful data which can be added to existing databases and used for future monitoring. Essentially, students will contribute to a larger understanding of the ecology and behaviour of seabirds in the Grand Manan Archipelago. To ensure data is being collected using a standardized method, each group will be given materials that explain the protocols for the respective project in detail. However, each group will come up with their own research questions and will be responsible for leading data collection (students will contribute to data collection of each project, therefore giving them the opportunity to learn all sampling skills), data analysis, presentation of results and the final report.

The Group Project contains the following three parts:

- a. **One page protocol summary and research questions (7%):** A summary of the protocol with a datasheet is to be prepared for the class to ensure everyone is collecting the data using the standardized method. Each group will be responsible for ensuring everyone understands the protocol and is collecting the data correctly. Research questions must also be clearly outlined and hypotheses made.
 - b. **Presentation (15%):** Students will present and discuss their project to the class in a 20 minute presentation, summarizing their research questions, methods, analysis and results and interpretations.
 - c. **Final report (20%):** Prepare a report in the form of a peer-reviewed manuscript. Follow guidelines for publication in the journal "Marine Ornithology" <http://www.marineornithology.org/submission.html> . The final report must include: title, author list, abstract, introduction, methods, results, discussion, acknowledgements, and references. Final report should include at least 10 citations from peer-reviewed literature.
- 6) **Field Notebook (15%)** – Each student will be given a field notebook to be used throughout the class, fieldtrips and data analysis. Field notebooks are a crucial part of all field research programs. These books are used to record data in the field and other observations that may become pertinent to the study. Field notebooks will be handed in at the end of the class for grading. Field notebooks will contain two parts:
- a. **Back of Book** – For each new species encountered, student should create a brief species profile which will serve as reference to learn species identification skills. Profile should include: description of species highlighting key identification

features/marks, simple sketch, and notes about behaviour and habitat.

- b. **Front of Book** – For each field trip day, students will create a new entry in their book. Each day students should record: date, weather conditions (updated as weather changes), time chronology of days activities, and list of all species seen on that day (including all non-bird species, i.e. marine mammals, fish). These sections should also be used to record data during group field projects in addition to any datasheets being used.

Field Project Descriptions

Student groups will be divided into teams of 3-4 students. Each team will conduct a field project on one of the following topics (below). The team will be considered the “principle investigators” of their own projects; responsibilities include coordinating data collection, ensuring data quality, conducting data processing/analysis, and final presentation (oral and written report). Therefore, ALL students will participate in data collection of each other’s projects. **NOTE – projects described below are subject to change depending on final schedule of field trip.**

1. **Marine distribution of seabirds** – At-sea surveys of birds will be conducted during all vessel transits including: ferry crossings and vessel charters. These data provide information on the distribution and abundance of birds at sea.
2. **Black Guillemot census** – On the expedition to Kent Island, the class will do a survey of nesting Black Guillemots. Census will include assessment of nesting substrates, nest density, and counts of loafing birds in adjacent shoreline areas and nearby waters. Time permitting, surveys will also be conducted on neighboring islands.
3. **Leach’s Storm-petrel census** – On the expedition to Kent Island, the class will do a survey of nesting petrels on Kent and neighbouring Hay Island. Objective will be to assess burrow density and occupancy rates across different habitat types and among the islands.
4. **Foraging behaviour of Black Guillemots and Common Eiders** – On the expedition to Kent Island, the class will do a survey of guillemot and eider foraging areas around Kent Island. Students will map the distribution and abundance of birds in nearshore waters around the island, conduct focal observations to document foraging behaviour (e.g. dive times, dive rates, and proportion of birds foraging).

Detailed schedule (subject to change)

Date	Day	Time	Activity planned (includes ~1-hr lunch break)
July 04	Tue	9:00-9:45 10:00-12:00 13:00-17:00	Intro to course Lectures - Introduction to Seabirds: evolution and biodiversity Introduce and begin work on Assignment 1 - Species profiles of NS
05	Wed	08:30-10:30 10:30-11:30 12:30 - 17:00	Assignment 1 [student presentations] Introduce Group Project Assignment (3-4 per group) Lab - Necropsy
06	Thu	9:00-9:50 10:00-11:20 11:30-13:00 13:00-13:30 >13:30	Lecture - Seabird form and function (adaptations for marine life) Lectures - Breeding and foraging ecology Lunch / study animal care exam Animal Care exam (for those that don't have the certificate) rest of day free to work on proposals
07	Fri	9:00-9:50 10:00-10:50 11:00-11:50 13:00-15:00 >15:00 18:00	Lectures - Field techniques for seabirds (census, monitoring, and diet) Guest Lecture – Canadian Wildlife Service Lecture - Seabird Conservation and Management Lab – Pellet Lab finish proposals. Research questions, 1-page protocol, and datasheet due.
08	Sat	8:30-14:00 14:00 - 16:00 >17:00	Study time for exam. Lecture exam. Feedback on protocols/datasheet returned at end of exam. Get ready for field trip. Modify protocols/datasheets if needed.
09	Sun	day off	Get ready for field trip. Modify protocols/datasheets if needed.
10	Mon	9:00 ->	Meet at Dal (9:00am): distribute each group's one page project protocol to go over during travel to Grand Manan. NOTE: bring lunch; drive to Black's Harbour, NB. Ferry to Grand Manan (survey for seabirds). Set up camp and evening bird walk.
11	Tue	7:00 ->	Trip to Kent Island. Student projects and evening storm-petrel walk. Camp on Kent.
12	Wed	7:00 ->	Kent Island day 2. Continue work from previous day. Lecture from Bowdoin Scientific Station. Assist Bowdoin projects. Camping on Kent.
13	Thu	7:00 ->	Return to Grand Manan. Set up Camp. Afternoon visits different coastal habitats for shorebirds, sea ducks, and seabirds. Coastal and beach bird survey techniques.
14	Fri	7:00 ->	Full day at-sea vessel charter to different offshore habitats (could include: Machias Seal Island, Murre Ledges, Grand Manan Basin) At-sea seabird surveys. Coastal and offshore survey techniques. Dates subject to change with weather.
15	Sat	7:00 ->	Surveys of different coastal habitats for shorebirds, sea ducks, and seabirds. Dates subject to change with weather.
16	Sun	7:00-17:00	Departure on 11:30 ferry. Seabird surveys from ferry. Return to Halifax ~19:00
17	Mon	[work day]	Group projects. Analyze data, prepare presentations, prepare final reports.
18	Tue	14:00-17:00	Presentations. Groups present and discuss projects. Field notebooks due.
19	Wed	20:00	Final reports due.

ACCOMMODATION POLICY FOR STUDENTS

Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic protected under Canadian Human Rights legislation. The full text of Dalhousie's Student Accommodation Policy can be accessed here:

http://www.dal.ca/dept/university_secretariat/policies/academic/student-accommodation-policy-wef-sep--1--2014.html

Students who require accommodation for classroom participation or the writing of tests and exams should make their request to the **Advising and Access Services Centre (AASC)** prior to or at the outset of the regular academic year. More information and the ***Request for Accommodation*** form are available at www.dal.ca/access.

ACADEMIC INTEGRITY

Academic integrity, with its embodied values, is seen as a foundation of Dalhousie University. It is the responsibility of all students to be familiar with behaviours and practices associated with academic integrity. Instructors are required to forward any suspected cases of plagiarism or other forms of academic cheating to the Academic Integrity Officer for their Faculty.

The Academic Integrity website (<http://academicintegrity.dal.ca>) provides students and faculty with information on plagiarism and other forms of academic dishonesty, and has resources to help students succeed honestly. The full text of Dalhousie's ***Policy on Intellectual Honesty*** and ***Faculty Discipline Procedures*** is available here:

http://www.dal.ca/dept/university_secretariat/academic-integrity/academic-policies.html

STUDENT CODE OF CONDUCT

Dalhousie University has a student code of conduct, and it is expected that students will adhere to the code during their participation in lectures and other activities associated with this course. In general:

"The University treats students as adults free to organize their own personal lives, behaviour and associations subject only to the law, and to University regulations that are necessary to protect

- the integrity and proper functioning of the academic and non – academic programs and activities of the University or its faculties, schools or departments;
- the peaceful and safe enjoyment of University facilities by other members of the University and the public;
- the freedom of members of the University to participate reasonably in the programs of the University and in activities on the University's premises;
- the property of the University or its members."

The full text of the code can be found here:

http://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

SERVICES AVAILABLE TO STUDENTS

The following campus services are available to help students develop skills in library research, scientific writing, and effective study habits. The services are available to all Dalhousie students and, unless noted otherwise, are free.

Service	Support Provided	Location	Contact
General Academic Advising	Help with <ul style="list-style-type: none"> - understanding degree requirements and academic regulations - choosing your major - achieving your educational or career goals - dealing with academic or other difficulties 	Killam Library Ground floor Rm G28 Bissett Centre for Academic Success	In person: Killam Library Rm G28 By appointment: <ul style="list-style-type: none"> - e-mail: advising@dal.ca - Phone: (902) 494-3077 - Book online through MyDal
Dalhousie Libraries	Help to find books and articles for assignments Help with citing sources in the text of your paper and preparation of bibliography	Killam Library Ground floor Librarian offices	In person: Service Point (Ground floor) By appointment: Identify your subject librarian (URL below) and contact by email or phone to arrange a time: http://dal.beta.libguides.com/sb.php?subject_id=34328
Studying for Success (SFS)	Help to develop essential study skills through small group workshops or one-on-one coaching sessions Match to a tutor for help in course-specific content (for a reasonable fee)	Killam Library 3rd floor Coordinator Rm 3104 Study Coaches Rm 3103	To make an appointment: <ul style="list-style-type: none"> - Visit main office (Killam Library main floor, Rm G28) - Call (902) 494-3077 - email Coordinator at: sfs@dal.ca or - Simply drop in to see us during posted office hours All information can be found on our website: www.dal.ca/sfs
Writing Centre	Meet with coach/tutor to discuss writing assignments (e.g., lab report, research paper, thesis, poster) <ul style="list-style-type: none"> - Learn to integrate source material into your own work appropriately - Learn about disciplinary writing from a peer or staff member in your field 	Killam Library Ground floor Learning Commons & Rm G25	To make an appointment: <ul style="list-style-type: none"> - Visit the Centre (Rm G25) and book an appointment - Call (902) 494-1963 - email writingcentre@dal.ca - Book online through MyDal We are open six days a week See our website: writingcentre.dal.ca