

**Faculty of Science Course Syllabus  
Department of Biology**

**BIOL/MARI 3626: FIELD STUDIES OF MARINE MAMMALS**

**July/August 2019**

**Instructors:** Dr. Deborah Austin ([daustin@dal.ca](mailto:daustin@dal.ca))

Dr. Damian Lidgard ([damian.lidgard@dal.ca](mailto:damian.lidgard@dal.ca)), LSC Room 4087

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**Teaching Assistant:** TBD

**Field Teaching Assistant:** TBD

**Lectures:** Start Thursday July 25<sup>th</sup>, 9:00 AM – 5:00 PM. Please refer to schedule for specific details.

**Classroom:** LSC BIOL& EARTH B1200

**Field trip:** Fri August 2<sup>nd</sup> – Tues August 6<sup>th</sup>, Digby Neck, NS

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**COURSE DESCRIPTION**

Hands-on introduction to research on marine mammals. Lectures provide an overview of marine mammal adaptations, evolution, population biology, social organization, conservation, and management. Labs include a necropsy and techniques of photographic identification of individuals. On a several-day camping trip, students observe marine mammals from whale-watch boats and conduct research projects.

**COURSE PREREQUISITES**

Introductory Ecology [BIOL 2060.03](#) (or [BIOA 3001.03](#)) and Behavioural Ecology [BIOL 3062.03](#) (or other course in Animal Behaviour, such as [BIOL 3630.03](#) or [PSYO 2160.03](#)), and Introductory Statistics [MATH 1060.03](#)/[STAT 1060.03](#)

**OVERVIEW**

The course '*Field Studies of Marine Mammals*' provides the student with an introduction to both the theoretical ecology of marine mammals and the current techniques that are used to study them. Topics include life history, foraging, population and reproductive ecology, conservation and management, distribution, physiology and anatomy. Each lecture provides a theoretical background but the emphasis is on techniques with examples from recent or current work. The main focus of the course is to conduct your own research project on marine mammals in the Bay of Fundy, including such key steps as formulating your hypothesis, collecting data, analysis of data, writing a scientific paper and providing a scientific presentation. Students will also participate in a necropsy on a cetacean and/or pinniped. The course is intensive and demanding and students should prepare to devote themselves entirely to the course for its duration.

## **COURSE OBJECTIVES/LEARNING OUTCOMES**

- Recall the general biology of marine mammal taxa
- Describe the differences and similarities between marine and terrestrial mammals and their relative ecological importance
- Understand the origins, taxonomic diversity, structure and ecological importance of the marine mammal orders and families
- Understand the meaning of life history, the life history characteristics of cetaceans and pinniped, the factors that shape their evolution and the techniques used to study life history
- Understand how marine mammal abundance is measured and the significance of life history parameters in population dynamics
- Understand how reproductive strategies have evolved, the types of strategies in marine mammals and their methods for studying reproductive ecology
- Basic understanding of optimal foraging theory and the pros and cons of dietary techniques for estimating diet
- Understand the concepts and role genetics plays in conservation of marine mammals
- Understand the evolutionary physiological adaptations in marine mammals to adapt to diving, cold and swimming and the techniques for studying behaviour at sea
- Demonstrate awareness that science, law and politics play an important role in the conservation and management of marine mammals, threats they face and mitigation options
- Understand sound propagation in water, fundamental sound component analysis (e.g. amplitude, frequency), sound production and receiving mechanisms in various marine mammal taxa and the impacts harmful sound can have on populations
- Develop competency in designing and conducting a scientific experiment on marine mammals in the field and follow through with a scientific publication and presentation
- Learn the basic anatomy of a marine mammal and the techniques used for a necropsy
- Become competent in identifying marine mammals and seabirds in the field
- Develop skills in note taking in the field and identification of species
- Learn how to identify marine mammals using photo-identification

## **COURSE MATERIALS**

There is no textbook for the course but there are many books at the Killam Library. PDFs will be available for each lecture on Brightspace.

Gaskin, DE. The ecology of whales and dolphins. QL 737 C4 G24 1982

Reeves, RR et al. The Sierra Club Handbook of seals and sirenians. QL 737 P6 R44 1992

King, JE. Seals of the World. QL 737 P6 K5 1983

Ridgeway, SH and Harrison, R. Hand book of marine mammals (volumes 1 – 6). QL 713.2 H354 v. 1-6.

Riedman, M. The pinnipeds: Seals, sea lions and walruses. QL 737 P6 R54 1990

Evans, PGH. The natural history of whales and dolphins. QL 737 C4 E93 1987

Berta, Annalisa. Marine Mammals: evolutionary biology QL 713.2 B47 1999

- Evans, Peter G.H. and Raga, J.A. (eds) Marine Mammals Biology and Conservation. QL 713.2 M354 2001
- Boyd, I. (ed) Marine mammals: advances in behavioural and population biology QL 1Z8 1992
- Perrin, W.F., Wursig, B., Thewissen, J.G.M. (eds) Encyclopedia of Marine Mammals. QL 701.2 E3 2002
- Hoelzel, R. (ed). Marine Mammal Biology: an evolutionary approach, QL 713.2 M37 2002

**Key journals to use as references:**

Marine Mammal Science  
Canadian Journal of Zoology  
Canadian Field Naturalist (especially COSEWIC status reports)  
Reports of the International Whaling Commission  
Aquatic Mammals  
Marine Ecology Progress Series  
Ecology  
Oikos  
Oecologia  
Proceedings of the Royal Society of London  
Polar Biology  
Journal of Zoology  
Journal of Animal Ecology  
Polar Biology  
Behavioral Ecology  
Behavioural Ecology and Sociobiology

**Article Searches via Dalhousie Online Databases:**

Google or Google Scholar  
Aquatic Sciences and Fisheries Abstract  
Web of Science  
Biological Abstracts

**COURSE ASSESSMENT**

**Project** The main focus of the course is to conduct your own research project on marine mammals in the Bay of Fundy, including such key steps as formulating your hypothesis, collecting data, analysis of data, writing a scientific paper and providing a scientific presentation. There will be five groups, each with at least five people, and each group will take on one of the projects outlined below. Each project idea listed below can only be assigned to one group.

The project and data collection proposal is to be designed and written as a group. Data should also be collected jointly in the group. Please ensure that the work is shared equally amongst all group members.

Once you have decided upon the topic, decide on the data you should collect and how you should collect it (see above for more details).

### *Project ideas*

From one of the project ideas below, each of which addresses a particular question, formulate a hypothesis that you want to test.

- 1) Distribution of marine mammals in the Bay of Fundy: Marine mammals in the Bay tend to be observed in particular areas. What characterizes these locations, i.e. depth, tide, temperature and why are marine mammals likely to be observed in these areas?
- 2) Associations between seabirds and cetaceans: Seabirds are sometimes observed in association with cetaceans. Investigate which species associates with each other and why they might be associating, i.e., what common resource might they share?
- 3) Photo-identification of cetaceans and seals: Use photographic-id techniques to individually identify marine mammals in the Bay of Fundy. Are all species suitable for this technique? Can you match individuals with those from existing photo-id databases (e.g. humpbacks, right whales), and from those identified in previous years of the course? Is there evidence of a social structure among whales, i.e.
- 4) Marine mammals and ecotourism: Do whale watching boats influence the behaviour of marine mammals in the Bay of Fundy or have whales become habituated? Which factors might influence the behaviour of marine mammals while in the presence of a boat, e.g. species, age, regular vs. irregular visitor? What are the short-term consequences of this potential disturbance. Do whale watching boats induce stress on marine mammals?
- 5) Marine mammal diving behaviour: What are the surfacing intervals and dive patterns of marine mammals observed in the Bay of Fundy? Do they differ among species and/or individuals? What factors may drive these similarities or differences? What is the relationship between the duration of the surface interval and the duration of the preceding dive? Does behaviour influence the duration of the surface interval?

Your hypothesis and datasheets will be reviewed and marked before you go into the field so you can make any necessary changes before starting the project. After the field trip, you will be required to analyze the data (only simple statistics are expected), give a brief (15 minute) oral presentation on your project for the class and finally write up your project as a scientific paper following the format required by *Canadian Journal of Zoology*. Formulating the proposal/hypothesis, data collection and analysis and oral presentation will be done in groups. However, the write up must be done individually and each person will be marked individually.

### *Equipment available*

Boat, with ship-board depth sounder, fish finder, thermometer and GPS

Limited number of GPS units

Limited number of timers

Tide time-tables

SLR cameras\*

## Binoculars

\* SLR cameras are not always available so if you have a digital SLR with a telephoto lens of > 200mm you will be encouraged to pursue the photo-id project.

**Project Proposal and Justification** You will be expected to provide a clearly formulated one or two sentence hypothesis, indicating the question you intend to examine. Give a brief synopsis of previous studies that have examined similar questions, and based on your research and a theoretical understanding of your subject, state WHY your question is important. Further, given the existing published information on your subject, tell me why you expect certain results. Your data collection protocol should outline what data you will collect, when it will be collected and how it will be collected. Include a full list of methods and materials required, sufficient such that anyone could follow your methods and collect the data. Datasheets should also be submitted to indicate how you will record the data in the field. AN IMPORTANT DETAIL: do not make the spaces for recording data on your datasheet too small—give yourself a row height of at least 25 points. Depending on overall class size, projects will be done in groups of four or five. Only one project outline per group is required (however, project reports will be done individually).

**Oral presentation** As a group, give a short (15-20 minute) presentation on your research project using Power Point. Outline your hypothesis or question, the background to the questions asked (rationale), how you conducted your research (methods), what you found and what your results indicate about marine mammals in the Bay of Fundy area. Done as a group project, and your group will receive a single mark. You will be marked on Presentation (5 marks) and Content (5 marks).

**Final report** Written report in journal style. Follow EXPLICITLY the Instructions to Authors for [Canadian Journal of Zoology](#). Prepare your report as if you were planning on submitting your manuscript to Canadian Journal of Zoology using *Canadian English* throughout. Look at past articles for ideas on what information should be included. Must have abstract, introduction, materials and methods, results and discussion sections as well as literature cited (see handout on Canadian Journal of Zoology format for more details). Report must be typed, double-spaced, written individually (each group member is responsible for producing their own report, emphasis on OWN) although there will be collaboration on data collection and results. Figures/Tables can be shared amongst the group, as long as all members have participated in their design.

**Field book** In addition to the field project, everyone will be required to complete a field log during the fieldtrip. For this, each person will receive a weatherproof field book. **There are two separate tasks that you are required to enter into your field book (see example at end of this doc):**

- 1) **BACK OF THE BOOK, GIVE SPECIES DESCRIPTIONS:** For each new species of marine mammal and seabird encountered, you must provide a detailed description of their physical appearance and behavioural observations. For example: note the body parts observed (head, fin, etc.), note the direction they are swimming, numbers in a group, etc. Well-labelled sketches should be used to

make note of physical appearances and are a useful tool and exercise. You can update this description with any other observations about this species throughout the rest of the field trip. The end result should be a detailed description of each species encountered in the field, one that you could read in the future to help you identify a marine mammal in the field. Remember, you can update your original entry with any other important observations you may have missed the first time—sometimes these animals give you only very small glimpses!

- 2) **FRONT OF THE BOOK, GIVE A DETAILED TIME LOG:** Each time you encounter a marine mammal or seabird, the time, species and number of individuals should be recorded. Based on these observations, you should update your description of the species. Any notes relating to your project (that don't fit on your data sheets) should also be recorded in your field book in this section.

The key here is that you must remain vigilant at all times while on the boat—always be scanning for sightings of marine mammals and seabirds, even if this is not relevant to your project area. Marks will be rewarded according to presentation, neatness and legible recordings. Always date each page and provide a synopsis of prevailing weather conditions and any other comments relevant to that study day. Be thorough!

**Workshops** Conducted in-class. Focus will be on field methods and techniques.

**Final exam** Short answer and essay questions.

| <b>Component</b>                       | <b>Weight (% of final grade)</b> | <b>Date</b>                          |
|--|----------------------------------|--------------------------------------|
| <i>Tests</i>                           |                                  |                                      |
| Workshops                              | 10%                              | Due by 9AM the next day              |
| Final Exam                             | 30%                              | Thurs 1 <sup>st</sup> Aug 2019, 1PM  |
| <i>Assignments</i>                     |                                  |                                      |
| Project proposal & data protocol, team | 10%                              | Tues July 30 <sup>th</sup> 2019, 9AM |
| Field book, individual                 | 10%                              | Thurs 8 <sup>th</sup> Aug 2019, 9AM  |
| Oral Presentation, team                | 10%                              | Sat 10 <sup>th</sup> Aug 2019, 9 AM  |
| Final Report, individual               | 30%                              | Mon 12 <sup>th</sup> Aug 2019, 6PM   |

**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**

As instructors of this course and regardless of reasons/evidence for late submission of work, Drs. Austin and Lidgard have the final decision on whether work is to be penalized for late submission.

First, if you are not going to be able to submit an assignment on the day it's due, please email or call one of the professors **immediately** to make alternative arrangements, and you will have to fill out the necessary paperwork. If work is late, 10 % will be taken off for each day late until the assignment is discussed in class, after which a 0 will be given (except for legitimate medical reasons, but see note above).

If you are late and hand your assignment into one of our mailboxes, make sure the main Biology office stamps the assignment with the date.

**COURSE CONTENT (TENTATIVE – MAY CHANGE DUE TO WEATHER, ETC.)**

| When   | What  | Who  |            |
|--|---|--|------------|
| DA: Deborah Austin; DL: Damian Lidgard; TA: Teaching Assistant; GL: Guest Lecturer |   |  |            |
| Thurs July 25 <sup>th</sup>  | 9:00 - 10:00 AM                                       | Intro to course  | DA         |
|  | 10:15 - 11:00 AM                                      | Intro to Marine Mammals                                | DA         |
|  | 11:15 AM - 12:00 PM                                   | Project Proposals                                      | DA         |
|  | 1:00 - 2:00 PM  | Reproductive ecology of marine mammals                 | DL         |
|  | 2:15 – 3:15 PM  | Ecology of pilot whales                                | GL         |
|  | 3:30 - 4:30   | Ecology of sperm whales                                | GL         |
| Fri July 26 <sup>th</sup>  | 9:00-10:30 AM   | Methods in Marine Mammal Physiology                    | GL         |
|  | 10:45- 12:30  | Population Dynamics                                    | DA         |
|  | 1:30 PM – 3:00 PM                                     | Life History: long term Sable Island grey seal project | DL         |
|  | 3:15 – 5:00 PM  | Life History Workshop                                  | DA & DL    |
| Saturday July 27 <sup>th</sup>   | 9:00-10:30 AM   | WORK ON PROJECTS                                       |            |
|  | 10:45 AM – 12:00 PM                                   | Distribution and habitat use                           | DA         |
|  | 1:00 – 2:00 PM  | Telemetry  | DL         |
|  | 2:15 – 5:00 PM  | Telemetry Workshop                                     | DL+DA      |
| Sunday July 28 <sup>th</sup>   | 9:00- 10:45 AM  | Anatomy  | DL         |
|  | 11:00 AM – 12:30 PM                                   | Necropsy Part One                                      | DL, DA, TA |
|  | 1:30 – 3:30 PM  | Necropsy Part Two                                      | DL, DA, TA |
|  | 3:45 – 5:00 PM  | WORK ON PROJECTS                                       | DL, DA, TA |
| Monday July 29 <sup>th</sup>   | 9:00-10:15  | Methods in Genetic Ecology                             | GL         |
|  | 10:30-12:30   | WORK ON PROJECTS                                       |            |
|  | 1:30 – 2:30 PM  | Acoustics  | GL         |
|  | 2:45- 5:30 PM   | Acoustics Workshop                                     | DL + TA    |
| Tues July 30 <sup>th</sup>   | <b>9:00 AM PROJECT PROPOSALS &amp; DATASHEETS DUE</b> |  |            |

|                                    |                          |   |              |
|------------------------------------|--------------------------|---|--------------|
|                                    | 9:00 – 12:00 PM          | Conservation & Management                             | DA           |
|                                    | 1:00- 2:15 PM            | Marine Mammal Conservation: A Regulator's Perspective | GL           |
|                                    | 2:30- 4:00 PM            | Project proposal briefing                             | DA, DL & TAs |
| Wed July 31st                      | 9:00-10:45               | Marine Mammal/Seabird Id Workshop                     | DL+TA        |
|                                    | 11:00 AM – 12:30 PM      | Photo-Identification Workshop                         | DL+TA        |
|                                    | 12:30 onwards            | STUDY FOR EXAM  |              |
| Thursday<br>August 1 <sup>st</sup> | 9:00- 12:00              | STUDY FOR EXAM  |              |
|                                    | 1:00 – 4:00 PM           | FINAL EXAM  |              |
| Friday Aug 2 <sup>nd</sup>         | 9:00 AM                  | Meet in LSC parking lot                               |              |
|                                    | 1:00 PM                  | Arrive in Whale Cove campground, Digby Neck           |              |
|                                    |                          | Set up camp and lunch                                 |              |
|                                    | 5:00 – 8:00 PM           | On water with whale watch charter                     |              |
| Sat Aug 3 <sup>rd</sup>            | 7:45 AM - 12:45 PM       | On water with whale watch charter                     |              |
| Sun Aug 4 <sup>th</sup>            | 8 AM – 4 PM              | On water with whale watch charter                     |              |
| Mon Aug 5 <sup>th</sup>            | 7:45- 12:45              | On water with whale watch charter                     |              |
| Tues Aug 6 <sup>th</sup>           | 7:45 AM – 12:45 PM       | On water with whale watch charter                     |              |
|                                    | 1:00 to 4:00 PM          | Drive home and unload                                 |              |
| Wed Aug 7 <sup>th</sup>            | 9:00 AM – 12:00 PM       | Project Discussions                                   |              |
| Thurs Aug 8 <sup>th</sup>          | 9:00 AM                  | HAND IN FIELD BOOKS                                   |              |
|                                    | 9:00 AM - 12:00 PM       | Project Discussions                                   |              |
| Fri Aug 9 <sup>th</sup>            | WORK ON PROJECTS         |   |              |
| Sat Aug 10 <sup>th</sup>           | 9:00 - 12:00 PM          | Oral Presentations                                    |              |
| Sun Aug 11 <sup>th</sup>           | WORK ON PROJECTS         |   |              |
| Mon Aug 12 <sup>th</sup>           | WORK ON PROJECTS         |   |              |
|                                    | HAND IN FINAL REPORT 6PM |   |              |

## **DETAILED DESCRIPTION OF FIELD TRIP**

Field-work will be conducted off a chartered whale watching boat in the Bay of Fundy, leaving each day from Digby Neck or Brier Island. Right and humpback whales will be commonly observed and trips will be tailored to sight these two species, however we will watch for all marine mammals, including harbour and grey seals, minke and fin whales and harbour porpoises. Keep in mind, however, there are no guarantees marine mammals will be seen with every outing; such is the risk with any field work. You will also be expected to identify and log each seabird sighting. There will be a lecture on marine mammal and marine bird identification before you go into the field.

During the field trips we will be camping on Digby Neck at a local campground. You will be sharing tents and cooking facilities. We will be in “field conditions”, although there are showers at the campground. Please bring your own sleeping bag and sleeping pad, or borrow one if you do not own one, and warm clothing for camping. We will be getting up early every morning (6:00 AM), therefore it is imperative that everyone is able to get to sleep by a decent hour, so noise should be kept at a minimum.

Cooking: All meals will be cooked in the field with food provided. Please let us know about ANY DIETARY REQUIREMENTS (vegetarian etc.) well in advance. We will rotate through project groups to help with all meals and all dishes throughout the trip. After you have cooked a meal, the following day you will be responsible for washing the dishes. Meals are planned in advance, and the ingredients bought, so each group will simply have to prepare the meal with the help of instructions. Snacks on the boat between meals are your own responsibility.

NOTE: Alcoholic beverages will not be permitted during the field trip.

### **Field Trip Details**

Charter: Petit Passage Whale Watch (<http://www.ppww.ca>) and Brier Island Whale and Seabird Cruises (<http://www.brierislandwhalewatch.com/>)

Campsite: <http://www.whalecovecampground.com/>, (902) 834-2025

### **Required Field Gear**

We will not have much room in the vehicles so PLEASE DO NOT OVER PACK. However, you should ensure that you have sufficiently warm clothing and bedding. The weather in the Bay of Fundy can change rapidly, and can be very cool and damp even in the middle of summer. Fog is common in the evenings, so please, bring lots of warm clothing and good raingear. Even when it's not raining (and it WILL rain), the boat can get somewhat wet, so a pair of rain pants makes you a lot more comfortable when sitting out for hours at a time.

- water bottle to take on boat
- sleeping bag, sleeping pad and pillow
- appropriate clothing for the field: - warm clothes, i.e. fleece, wool, gore-tex, toques, gloves; good rain gear; appropriate footwear (not flip-flops): well-soled sandals/hiking boots/running shoes/rubber boots
- sunscreen/hat/sunglasses

- bug repellent
- pencils/pens/clipboard
- flashlight or headlamp
- Tents; if you do not own a tent or can share a tent with someone in the class, they can be borrowed from the Dal Outdoor Society. We have a couple limited tents available through SEASIDE.

**Recommended Field Gear**

binoculars (if you have your own)  
camera  
travel alarm or watch alarm

**Provided Field Gear**

We will provide food, stoves, propane, cooking pots and dishes. Field books will also be provided. People are welcome to bring laptops if they wish for data entry, but we cannot be responsible for any items lost or stolen. There is free wifi available at the campground.

| TIME | SIGHTING   |
|------|--|
| 5:50 | → 1 Humpback flipper slapping, ~10 times!  |
| 5:52 | → Second Humpback joined, traveled alongside boat, more directed and faster travel than last pod                     |
| 5:56 | → ~30 white-sided dolphins travelling in different directions, all around boat                                       |
| 6:06 | → passed Greater Shearwater floating   |
| 6:08 | → passed another Greater Shearwater floating   |
| 6:11 | → Greater Shearwater flew bow → stern  |
| 6:27 | → 2 Northern Gannets flew on starboard side, bow to stern ~100m away   |
| 6:31 | → 2 Humpback, tail lobbed >30 times, then flipping over, slapping fins, became too distant to see                    |
| 6:49 | → 1-3 harbour porpoises, maybe more? Surfacing briefly around a Herring Gull, ~10-20m from the boat                  |
| 6:52 | → Northern Gannet, circling a spot ~10 m from boat. Second gannet on other side of boat, flew over head, bow → stern |
| 6:53 | → 4 more Gannets flying starboard side   |
| 6:56 | → 1 Black-backed gull on rocks as we approached the dock.  |
| 7:00 | → arrived back at the harbour  |

DATE: Aug. '22  
 Left the Dock: 8:50 am  
 Weather: very thick fog, slight wind, rained overnight.

| TIME | SIGHTING   |
|------|--|
| 9:01 | → 1 Northern Gannet off Starboard flying, then plunged for prey                            |
| 9:03 | → 1 Northern Gannet off Starboard, flew toward boat but then over stern and away, portside |
| 9:10 | → Greater Shearwater flew around stern   |
| 9:16 | → Greater Shearwaters (3) flew by starboard side of boat, bow to stern                     |
| 9:17 | → Herring Gull flying stern to bow, ~20m from starboard side                               |
| 9:22 | → 1 Greater Shearwater flew across bow, port to starboard                                  |
| 9:23 | → 1 Herring gull juvenile flew from starboard to port across bow                           |
| 9:24 | → 1 Greater Shearwater floating off starboard side   |
| 9:29 | → 2 Northern Gannet floating off starboard   |
| 9:34 | → 1 Herring Gull flew past port side, bow to stern, fairly low (~10m)                      |
| 9:35 | → ~20 Phalaropes sitting on water in front of bow, flew away all together as we approached |
| 9:40 | → 1 Greater Shearwater flew starboard side, bow → stern                                    |
| 9:45 | → 1 Greater Shearwater floating port side <i>hit in the rain</i>                           |

Example 1. Front of Field Book: Log Entry

56 Northern Gannet (NG) → *Morus bassanus*

- commonly seen flying or floating on open water far from shore.
- usually seen in groups of 2-3. (unless diving (as pictured left); at which time many are seen (5+)).
- fly very high then pull wings back & fall in a bullet shape into the water.
- diving behaviour, only seen from far off.
- from far away it can be confused with a gull. Flying pattern is slightly different but black tips are most important.
  - ↳ see difference, gulls found on page 60-62.

57 Northern Gannet (NG) → *Morus bassanus*

- extremely stream line bird.
- very large, with very distinctive features.
  - ↳ i.e. yellow head, black tip wings, and over all shape.
- have lots of black lining around eyes.
- young are same sleek shape but with black wings and dark spots all over the body.

*Kit in the Rain*

Example 2. Back of Field book: Species Identification

## UNIVERSITY POLICIES, STATEMENTS, GUIDELINES

This course is governed by the academic rules and regulations set forth in the University Calendar and the Senate. <https://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog>

### Statements

- 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.

(read more: [http://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](http://www.dal.ca/dept/university_secretariat/academic-integrity.html))

- Accessibility

The Advising and Access Centre and the Student Success Centre (Agricultural Campus) serve as Dalhousie's centres for expertise on student accessibility and accommodation. Our work is governed by Dalhousie's Student Accommodation Policy to best support the needs of Dalhousie students. Our team work with students who request accommodation as a result of: disability, religious obligation, an experienced barrier related to any other characteristic protected under Canadian Human Rights legislation. (read more at: [https://www.dal.ca/campus\\_life/academic-support/accessibility.html](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. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

(read more: [https://www.dal.ca/campus\\_life/safety-respect/student-rights-and-responsibilities/student-life-policies/code-of-student-conduct.html](https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/student-life-policies/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.

(read more: <http://www.dal.ca/cultureofrespect.html>)

- Recognition of Mi'kmaq Territory

Dalhousie University acknowledges that the University is located on Traditional Mi'kmaq Territory.

*You may also wish to provide the following information:* The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit the office in the McCain Building (room 3037) or contact the programs at [elders@dal.ca](mailto:elders@dal.ca) or 902-494-6803 (leave a message).

### University Policies and Programs

- Important Dates in the Academic Year (including add/drop dates)  
[http://www.dal.ca/academics/important\\_dates.html](http://www.dal.ca/academics/important_dates.html)
- University Grading Practices: Statement of Principles and Procedures  
[https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html)
- Scent-Free Program <http://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>

### Safety (excerpts emphasized as appropriate to discipline/course)

- Biosafety (<http://www.dal.ca/dept/safety/programs-services/biosafety.html>)
- Research Laboratory Safety Policy Manual (<http://www.dal.ca/dept/safety/documents-policies-procedures.html>)
- Laboratory Chemical Safety Manual <http://www.dal.ca/dept/safety/programs-services/chemical-safety.html>
- Radiation Safety Manual <http://www.dal.ca/dept/safety/programs-services/radiation-safety.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.

- General Academic Support – Advising  
Halifax: [https://www.dal.ca/campus\\_life/academic-support/advising.html](https://www.dal.ca/campus_life/academic-support/advising.html)  
Truro: <https://www.dal.ca/about-dal/agricultural-campus/student-success-centre/academic-support.html>
- Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/guidelines/fair-dealing-guidelines.html>
- Black Students [https://www.dal.ca/campus\\_life/communities/black-student-advising.html](https://www.dal.ca/campus_life/communities/black-student-advising.html)
- International Students [https://www.dal.ca/campus\\_life/international-centre.html](https://www.dal.ca/campus_life/international-centre.html)



- Indigenous Students [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)
- Student Health Services [http://www.dal.ca/campus\\_life/health-and-wellness/health-services.html](http://www.dal.ca/campus_life/health-and-wellness/health-services.html)
- Counselling [https://www.dal.ca/campus\\_life/health-and-wellness/counselling.html](https://www.dal.ca/campus_life/health-and-wellness/counselling.html)
- Library <http://libraries.dal.ca>
- Copyright Office <https://libraries.dal.ca/services/copyright-office.html>
- E-Learning website <http://www.dal.ca/dept/elearning.html>
- Writing Centre [https://www.dal.ca/campus\\_life/academic-support/writing-and-study-skills.html](https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html)
- Faculty or Departmental Advising Support: Studying for Success Program  
[http://www.dal.ca/campus\\_life/academic-support/study-skills-and-tutoring.html](http://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html)
- Student Finance page: [https://www.dal.ca/admissions/money\\_matters.html](https://www.dal.ca/admissions/money_matters.html)