Queen's University

OUPFB Module 1

Course Title:	Ecology of spring
Instructor(s):	Dr. Stephen C. Lougheed, Biology, Queen's University, Kingston, ON. Email: steve.lougheed@queensu.ca; Tel. 613-533-6128 Dr. Orianne Tournayre, Biology, Queen's University, Kingston, ON. Email: ot9@queensu.ca
Dates:	Sunday, April 30th – Saturday May 13th 2023
Location:	Queen's University Biological Station. Location details and contact information can be found at: https://qubs.ca/contact Transportation to and from QUBS from Kingston may be arranged with the instructors.
Cost:	Total cost $1300. Non-refundable deposit of $350 is to be paid to your home university. The balance of $950 is to be paid upon arrival at the field station in cash or cheque made out to 'Queen's University at Kingston'
Prerequisites:	Introductory university course in general biology. Additional course(s) in ecology, evolution, and statistics an asset.
Enrolment:	12(4)
Course Description (brief):	Spring is a pivotal season for temperate organisms, a time for return from wintering grounds or emergence from hibernacula, for mating and reproduction, and for germination and flowering for spring wildflowers. In week 1, on successive days we will introduce you to the ecology and wonderful local diversity of Eastern Ontario of key taxonomic groups (amphibians, reptiles, birds, wildflowers, pond invertebrates) through a mix of lectures, student presentations, hikes, and hands-on field exercises. As our own research focuses on amphibians, reptiles, and birds we may emphasize these of focal examples of strategies to cope with winter. Week 2 we will focus on research projects where groups of students formulate their own hypotheses based on observations in week 1 and consultation with instructors and peers, design experiments, and gather and analyze data.
Evaluation:	1) Species account – students will research and prepare a presentation on a key species of plant or animal assigned in advance (15%) 2) Quiz (10%) 3) Field book including habitat, species descriptions, insights from visits to field sites and habitats & all field data (25%) 4) Research paper based on data collected in the field to address hypotheses posed by students (40%) 5) Participation in class discussions & field activities (10%)

An Average Day – What to Expect

(a) Daily timeline	Schedules will vary depending on the activity and species we are focusing on (e.g. birds early morning, snakes and turtles during the day, frogs in the evening), but a typical day in the first week might look like this: 6:00 am early morning bird walk 7:00 am – breakfast 8:30 am - hike to explore local habitats 10:30-11:00 am break 11:00 lecture 12:00 pm - lunch break 1:00 pm – boat tour of Lake Opinicon 3:30-4:00 break 4:00-5:30 bird song identification practicum & introduction to iNaturalist 5:30 pm - dinner 7:30 pm - student presentations, field book updates The second week is dedicated to group projects, and daily timeline will depend on the nature of student-designed projects and group schedules. Note that our time will be mainly spent outdoors under variable conditions; fieldwork will be conducted, rain or sunshine. It won't be unusual for us to work together 10 to 12 hours most days and students should be prepared for physical exertion. Our goal is to explore many themes, see lots of habitats and varied local species and give you lots of practical experience, ensuring that have a suite of new skills and knowledge by the end of the course. The course will also give you some perspective on the demands, but also the rewards of field work. Despite these full days, we will make time for self-reflection, recreation (canoeing and swimming), and personal work.
(b) Work habitat & physical exertion	The field station does have some rough and steep terrain. We will do various hikes and field exercises. We will probably experience some rainy days, and this can make conditions rather muddy. Temperatures can vary tremendously and depend on the type of spring we are having. Daytime temperatures can reach 25-30 degrees making hiking a bit more arduous. We may also have quite cool weather with nights dipping close to zero. We will avoid the hottest parts of the day, use sunscreen, and carry lots of water, but we also should be prepared for rainy, hot and cool weather conditions (see below).
(c) Common activities	Common activities include short and long hikes to visit different habitats, wading in shallow water to sample invertebrates or frogs, canoeing across lakes to access local wetlands, and collecting census data in the field (identifying and recording species by sight or call). We will also access station labs, the natural history collection, and indoor teaching spaces for student presentations, lectures, and other activities (e.g. examining tadpoles or aquatic invertebrates). Appropriate dress for the weather conditions (e.g. hat, raincoat), footwear (e.g. hiking boots) and equipment (e.g. small backpack, sunscreen, insect repellent), regular hydration and rest breaks will help ensure that we are comfortable.

	All students and staff using watercraft must wear life jackets and carry a boat kit (floating rope, flashlight, whistle, bailing bucket). Life jacket may also be worn when navigating through wetlands in waders to mitigate the risk of falling (especially in case of sudden change in depth and deep mud). Students will always work in groups so that should accidents occur, notification and evacuation is facilitated. The field station is large and embedded in an under-populated area. Students will always be in groups, follow recognized paths and will have access to GPS or map to avoid getting lost.
(d) Weather, dehydration, & biting insects	**Ticks** are becoming increasingly common at QUBS, including blacklegged ticks which carry the bacterium, Borrelia burgdorferi, which causes Lyme Disease. The first sign of infection is usually a circular rash. Other common symptoms include fatigue, chills and fever, headache, muscle and joint pain, and swollen lymph nodes. If untreated Lyme disease can cause nervous system disorders, additional skin rashes, arthritis, heart palpitations, and fatigue and general weakness. It is seldom fatal. Note that, as of 2012, about 2/3rd of the ticks in the QUBS area were Eastern Dog Ticks which do not carry Lyme Disease. **Response:** Personnel should wear long pants with the legs tucked, long-sleeved shirts that fit tightly at the wrist, and closed shoes and avoid sandals. Light-coloured clothing makes ticks more visible. Insect repellents containing DEET may help repel ticks. After being in the field it is wise to do a careful self-inspection for attached ticks. Prompt removal of attached ticks reduces the transmission of the Lyme disease causing bacterium. Carefully remove attached ticks using tweezers. Be sure to remove the entire tick including the mouth parts. This is best done using special tick-removal forceps not standard tweezers (several pairs of these are available in the First Aid Kits at QUBS). Be sure to save the tick in 95% or absolute alcohol for identification. After removing ticks, wash the bite site with soap and water or disinfect the area with alcohol or antiseptic. Should symptoms arise personnel should contact a doctor as soon as possible. During spring and summer field personnel there is a possibility of **insect bites** (mosquitoes, black flies, and tabanid flies are common), or bee or wasp stings. Even personnel without history of allergic reaction may react because they have never before been exposed. **Response:** Course participants should wear long pants in the field and may wish to have light-weight long-sleeved shorts as well. Against ticks it may be well to tuck pant cuffs into socks. At any sign of anaphylaxis one should contact medical facility for immediate evacuation via cell phone if there is signal or land-line from the lodge. Always carry benadryl as this may lessen the reaction. For researchers working far from roads or our facility it may be well to carry an epipen or two, although these require prescriptions. **Weather:** In early May, night-time temperatures can sometimes approach 5 degrees or cooler, and with cold rains such weather can cause chills and even hypothermia is a possibility. During the day we may see temperatures of 25 degrees or more. **Response:** We recommend coming prepared for rain (rain jacket and cap), cold weather (layers with fleece or sweater), but also light-wight clothing should daytime temperatures soar.
(e) Toxic/poisonous, wildlife/ plants	Biting insects are not the only wildlife associated risks at QUBS. Poisonous plants, such as poison ivy, wild parsnip and giant hogweed commonly occur in the area. **Poison ivy** can be found in forest, fields, fence rows and roadsides. All parts of poison ivy (leaves,

	stems, roots) contain a poisonous substance (urushiol) which typically causes inflammation, frequently with blisters and extreme itchiness. **Response**: long pants and long-sleeved shirts can help minimize exposure, although cloths should be washed with detergent to remove. Walk through along cleared pathways should be preferred. If in contact with poison ivy one should gently wash the area with cool water and soap as soon as possible. Calamine lotion may help reduce itchiness. Contact with **Giant hogweed or Wild parsnip** sap and subsequent exposure to light can result in painful blistering and rashes/dermatitis. Contact with eyes has been reported to cause temporary and even permanent blindness although this as to be substantiated. **Response:** Similar precautions and mitigations listed above for the poison ivy are necessary. If students end up with photodermatitis or eyes went into contact with these plants, medical attention should be sought. **Black bears** have been sighted at QUBS albeit very rarely (see the Ontario Ministry of Natural Resources Fact Sheet). Black bears can cause injury or death but in the main are timid. **Response**: to reduce the probability of contact with bears one can make noise when walking through wooded areas. This will alert bears to your presence. Be aware of your surroundings and do not wear music headphones in the field. Watch for signs of bear activity, like tracks, claw marks on trees, flipped-over rocks, or fresh bear scat. Students should not leave gear unattended (especially if there is food in it). If food is to be left behind, it should be hung it in a tree. If a bear is seen, back away slowly back away and change direction to avoid contact with the bear. Do not run. Do not linger around the bear or try to approach it.
(f) Sleeping, washroom & laundry facilities	Students typically will stay in dorms or cabins with beds. Because of the prospect of new covid-19 outbreaks we will try to house our participants separately from others at QUBS. Students should bring sleeping bags and pillows. We will have access to washing machines (bring change) and students should bring a small amount of clothes detergent. We will have access to flush toilets and showers.
(g) Meal plans & food allergies	Food will be prepared by a cook in a commercial grade kitchen. We will ensure adequate physical distancing options in the dining hall, and spaces will be provided outdoors as well. Most food needs and allergies can be accommodated by our cooks. In cases of severe allergies food will be stored in a separate fridge to avoid contamination.
(h) Non-academic responsibilities	Students are responsible for keeping their sleeping and common areas clean, caring for field equipment and books, bussing their dishes at the end of each meal, and helping to clean the shared van at the end of the course
(i) Degree of isolation	We will always have vehicles available should there be need to evacuate. The station has first aid kits and there is an Automated external defibrillator (AEDs). The instructors will carry a field first aid kit. Cell signal is generally quite good but may be spotty at some more remote sites. WiFi is available at QUBS, as are outlets for charging phones, head lamps, and laptops.
(j) Alcohol & drugs	Alcohol consumption is discouraged at QUBS. Marijuana is not allowed on premises.
(k) Vaccinations/ Insurances	All students must be vaccinated for COVID-19. Students should also have up-to-date routine vaccinations, including tetanus.
(l) Social Situations	We will be together for two weeks, living in reasonably close quarters most of the time (recognizing that some protocols associated with Covid-19 may still be in place), and working together on group projects and field exercises. We will also work closely

	with station staff. We will work together to create a safe and respectful environment for all despite differences in personality, background, and culture.
(m) Final comments	One of us (the old one, Lougheed) been teaching of field courses since the 1990s, and has taught over 50 – at QUBS, in Africa, Asia, and Latin America. Our field station compares favourably to anywhere in the world and offers amazing opportunities to experience nature firsthand and see some amazing species. Students who have taken courses at QUBS almost universally consider them to be among the best experiences of their undergraduate careers, and in many instances, life changing.