

BIO1130 laboratories & Mer Bleue prelab



BIO1130 – Introduction to Organismal Biology – Fall 2010

BIO1130 Labs

Lab coordinator: Fabien AVARON

email: fabien.avaron@uottawa.ca

Office: BSC106

Office hours: To be announced on website.

Teaching assistants (TAs): 2 TAs per lab section (21 graduate students in total).

Give instructions, demonstrate and correct assignments (...)



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BIO1130 Labs

Online ressource:

- 1- “Laboratories” section on Course website: for docs and info.
- 2- Virtual campus BIO1130-Labs: to submit data and an questionnaires.

For me to contact all students:

Announcements on website and email.

→check regularly



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BIO1130 Labs

Material to purchase:

- **Lab manual:**

- Purchase in MacDonald Hall room **MCD 004**
- Can also be downloaded then printed from the website.

- **Lab coat and safety goggles:**

- Marion hall room MRN308 and University center library

You must wear your lab coat during all labs in the BSC complex (=not in Mer bleue)



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BIO1130 Labs - schedule

4 labs in semester (Sept.20th – Dec 1st).

You don't have to come when you don't have a lab.

See complete schedule on [web site](#)

Lab time: [In the afternoon:](#)

Monday to Thursday: [2:30-5:20PM](#)

Friday: [1-4:00PM](#)

First lab:

- Section A: week of Sept. 20th
- Section B: week of Sept. 27th
- Section C: starts on Sept. 21st and spreads over 2 weeks



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BIO1130: What is my lab section?

- Go to your personal schedule on infoweb:

uOttawa University of Ottawa • Canada's university

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This is your Personal Course Schedule

Student Number:

BIO1130 A - INTRODUCT. TO ORGANISM. BIOLO (Sep 8 - Dec 8)
Prof: Houseman, Jon

Monday	LEC	08:30-10:00	MRN	Room: AUD
Thursday	LEC	10:00-11:30	MRN	Room: AUD
Tuesday	LAB(2)	14:30-17:30	SSC	Room: 312

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First lab: Field trip to Mer Bleue

Meeting point:

In front on Lamoureux hall to embark on buses

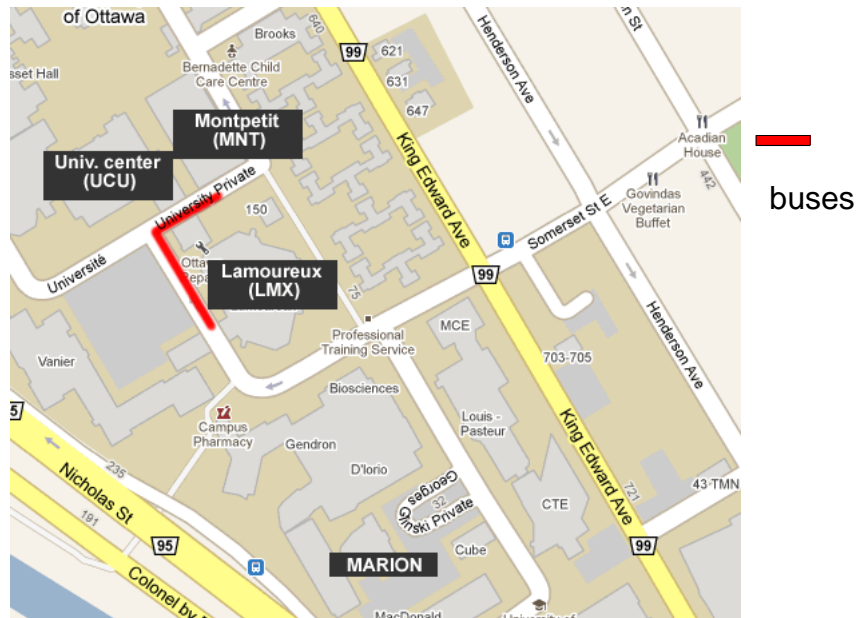
Visit web site to find out which bus to embark (see [bus assignment](#)).

Meet teaching assistants (TAs) in front of your bus.

Time: 2:20 Mon-Thu and 12:50 on Fridays



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Lab1: Field trip to Mer Bleue



Modified, with permission, from an original picture by Robert Williams
<http://www.robwilliams.ca/merbleu.htm>

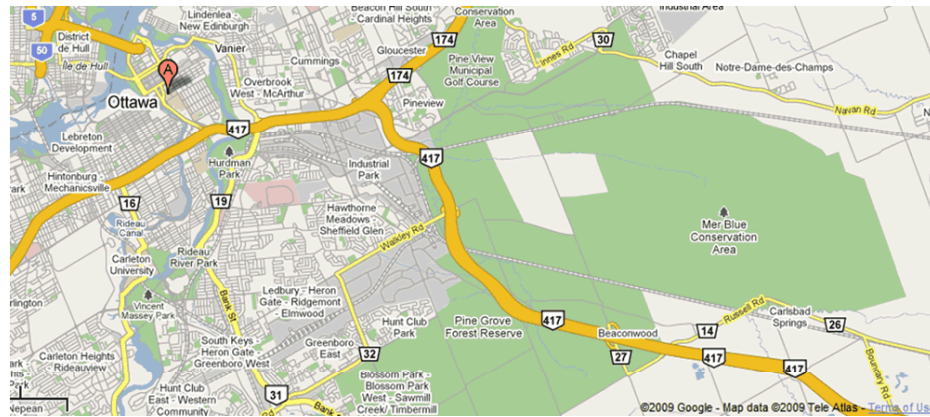
Lab objectives

- ***Identify*** dominant plant species in Mer Bleue
- ***Summarize and report*** quantitative data efficiently and accurately in graphs and tables.
- ***Understand*** how sampling variability influences our ability to elaborate and test scientific hypotheses.
- ***Formulate*** an hypothesis concerning the factors limiting the distribution of different plant species.
- ***Predict*** the effect of a change in water levels in Mer Bleue on the distribution of different plant species.



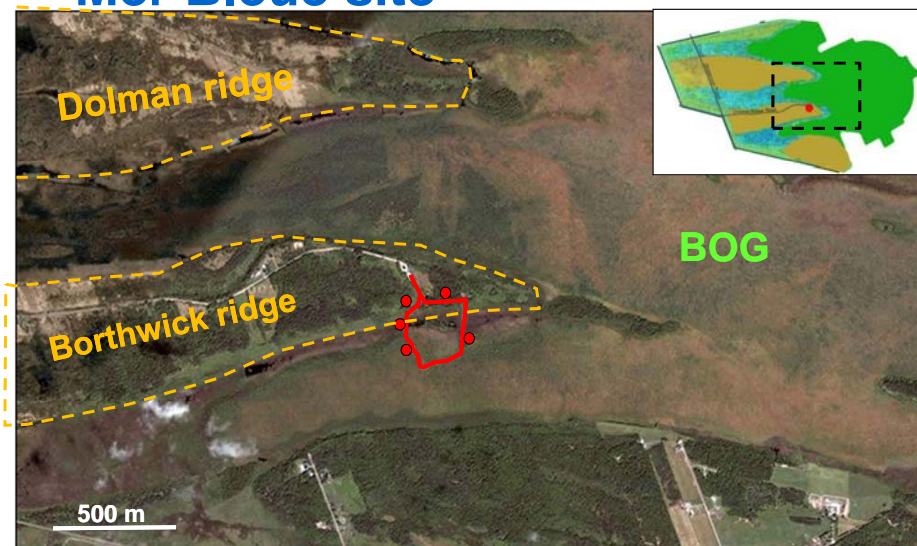
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Mer Bleue site



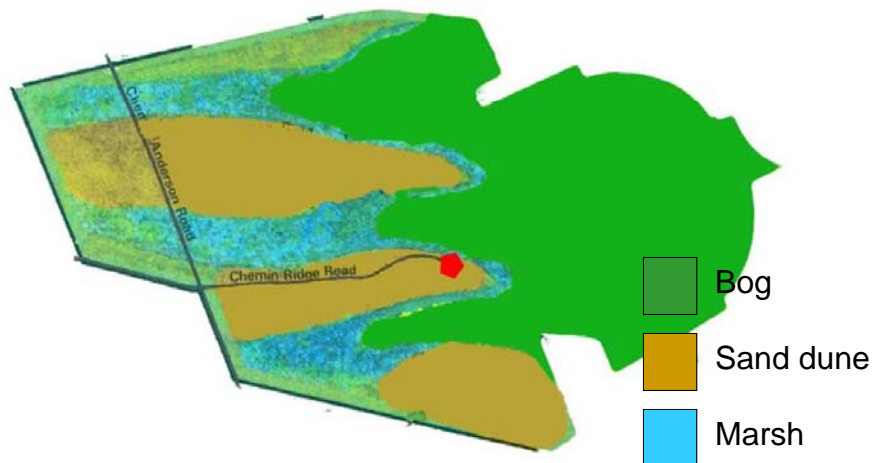
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Mer Bleue site



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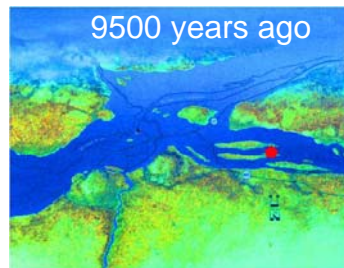
Mer Bleue site



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Sand dune formation

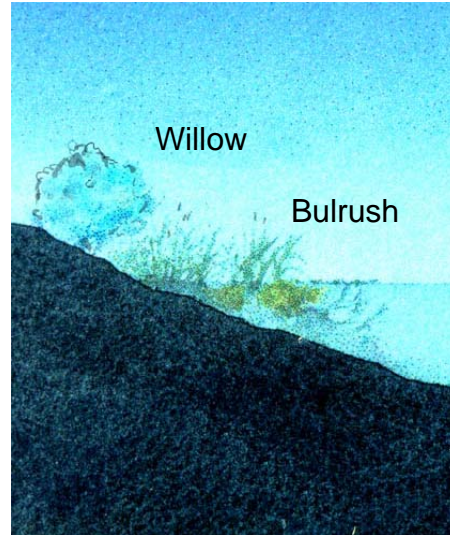
- Following glacier retreat, Ottawa River was much larger than today
- Sand dunes formed by south channel of river.
- Uplift of terrain caused south channel to dry out then forming a small, shallow lake colonized by bulrushes.



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Bog formation

- Bulrush roots and shoreline plants form a support for sphagnum mosses



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Bog formation (continued)

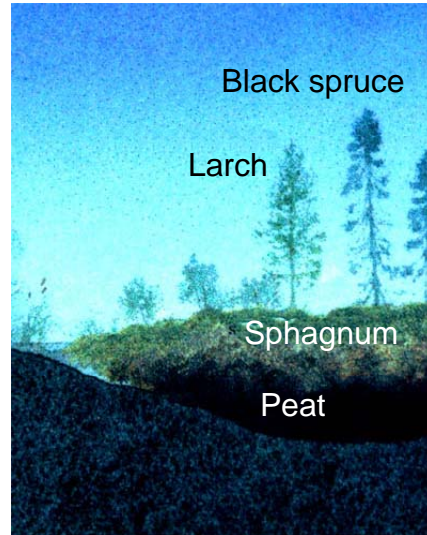
- A floating carpet of vegetation begins to grow toward the center of the bog.
- Deoxygenated water (no O_2 input) slows down decomposition, resulting in acidic conditions.
- Organic matter accumulates at bottom



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Bog evolution (cont'd)

- Water surface completely covered with sphagnum resulting in raised surface, colonization by trees
- Mineral salts derived from precipitation only.
- Age: about 5000 years



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The task

- Predict the impact of a water drainage from Mer Bleue on the abundance of a particular plant species in the zone where its current incidence is highest.



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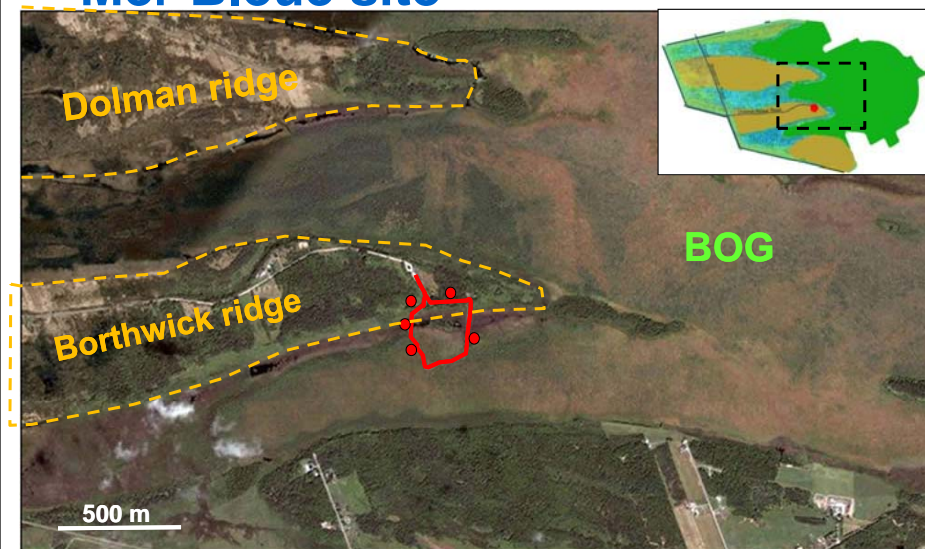
What you will do

1. Make observations of plants in 5 different stations in Mer Bleue: Field, marsh, bog, ecotone, forest
2. Combine your observations with other students
3. Produce a graph presenting the distribution of one particular plant
4. Formulate a hypothesis and predict the effect of a change in the water level in Mer Bleue on your plant



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Mer Bleue site



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Sampling stations

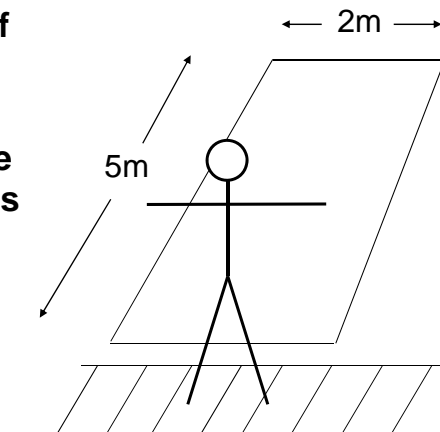
- 1 – Old field
- 2 – Marsh
- 3 – Bog
- 4 – Ecotone
- 5 – Forest



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Observations

- Observe plant species in an area of 10m^2 ($2\text{m} \times 5\text{m}$) at each station.
- Record the presence of each plant species listed on the data sheet provided



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Station 1 – Old field



2 juillet 2003, © Antoine Morin (amotin@uottawa.ca)

Station 2 - Marsh



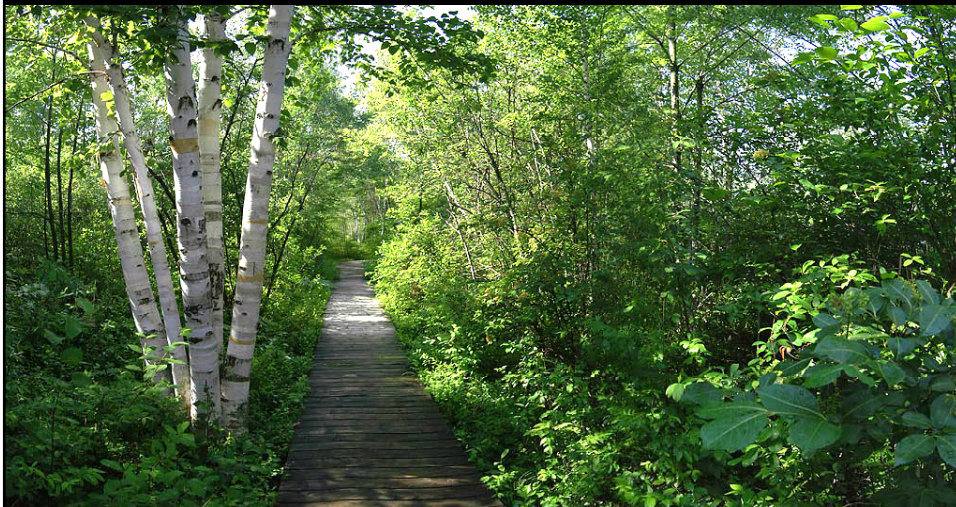
2 juillet 2003, © Antoine Morin (amotin@uottawa.ca)

Station 3 – Bog



2 juillet 2003, © Antoine Morin (amotin@uottawa.ca)

Station 4 – Ecotone



2 juillet 2003, © Antoine Morin (amotin@uottawa.ca)

Station 5 - Forest



2 juillet 2003, © Antoine Morin (amorin@uottawa.ca)

Back from Mer Bleue ...

- Enter your observations on **virtual campus** in order to combine class data.
- Find out which plant you've been assigned for your report (you can do that anytime) using the **plant assignment** tool on the website
- Download the **combined data file** from website to plot your graph
- One week after the lab: hand in your report (your TAs will give you instructions about the report during the field trip)



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Combined data file

- Available 48 hours after field trip
- Expressed as a ratio:

$$\frac{\text{number of students who observed a plant}}{\text{number of students in the group}}$$

Data of
group 1 -5
at station 1

Data of
group 1 -5
at station 2

Station 1	<i>Acer rubrum</i>	<i>Acer saccharum</i>
Group(e)1	3/20	1/20
Group(e)2	1/22	3/22
Group(e)3	2/25	0/25
Group(e)4	0/17	0/17
Group(e)5	3/17	0/17
Station 2		
Group(e)1	0/20	0/20
Group(e)2	0/22	0/22
Group(e)3	0/25	1/25
Group(e)4	0/17	0/17
Group(e)5	0/17	0/17

Data for one plant
(e.g. *Acer rubrum*)



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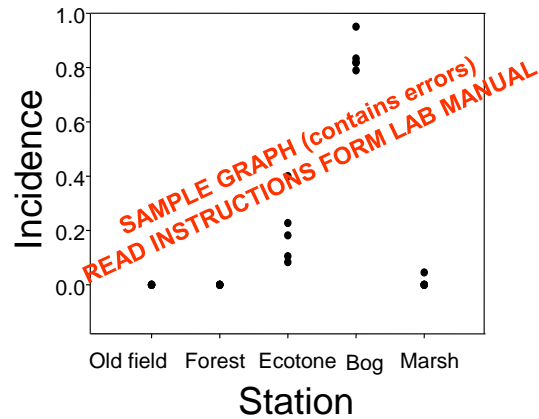
Proper production of graphs

- Read carefully instructions in the appendix of lab manual.
- Plot incidence (=frequency of observation) of your plant in relation to site.
- Stations on the X axis must be ordinated along a moisture gradient (e.g. dry → moist)



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Example: *Kalmia angustifolia*



Caption of the graph



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Mer Bleue Report: content

- Title page
- Graph showing the distribution of your plant
- Hypothesis regarding relation between water availability and the distribution of your plant (based on the graph)
- Prediction regarding the effect that drainage of water from the Mer bleue site would have on your plant abundance at the site where it is predominantly found now (based on your hypothesis)



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Mer Bleue Report: timeline

- 1 day after field trip: enter data on WebCT
- 1 week after field trip: due date for version 1 of report
- 2 weeks: corrected version1 handed back (during lab2)
- 3 weeks: due date for version 2 (optional)
Corrected v2 handed back during lab3
- Mer Bleue final mark = $V1 + V2$ or $2 \times V1$
- See all dates on CourseWeb / Labs



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Field trip instructions

- **Dress appropriately for field conditions!**
- **Be on time for both departures and returns!**
- **Everyone must take the bus to and from the site.**
- **No food at the site, nor on the bus.**
- **Stay on the paths, trails and boardwalks.**
- **Do not pick any flowers or remove vegetation.**
- **Do not leave anything behind, including garbage.**
- **Use the same bus going to and returning from the site.**



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To do before field trip

- Learn to identify major plants of Mer Bleue (lab manual and web site)
- Read documents posted on the “Lab1” page of web site.

Departure: In front of Lamoureux hall (on university private).

Arrive at 2:20 Mon-Thu, 12:50 on Friday and go to your assigned bus



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