

# **BIO1130 laboratories & Mer Bleue prelab**



**BIO1130 – Introduction to Organismal Biology – Fall 2012**

# BIO1130 Labs

**Lab coordinator: Fabien AVARON**

**email: [fabien.avaron@uottawa.ca](mailto:fabien.avaron@uottawa.ca)**

**Office: BSC106**

**Office hours: Tuesdays 10-12:00**

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

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



# BIO1130 Labs

## Online resource:

- 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



# 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)**



# BIO1130 Labs - schedule

4 labs in semester (Sept.17<sup>th</sup> – Nov. 23<sup>rd</sup>).

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: **1-3:50PM**

## First lab:

- **Section A: week of Sept. 17<sup>th</sup>**
- **Section B: week of Sept. 24<sup>th</sup>**
- **Section C: starts on Sept. 17<sup>th</sup> and spreads over 2 weeks**



# BIO1130: What is my lab section?

- Log in to **uoZone**
- Find the link to “**Rabaska**” then click on “**My Schedule**”.
- You will see something like this:
- “**BIO1130 B Lab (5)**”
- This means your lab section is **B5**
- Read the manual or visit the lab website to find out when your labs will take place.



# First lab: Field trip to Mer Bleue

## Meeting point:

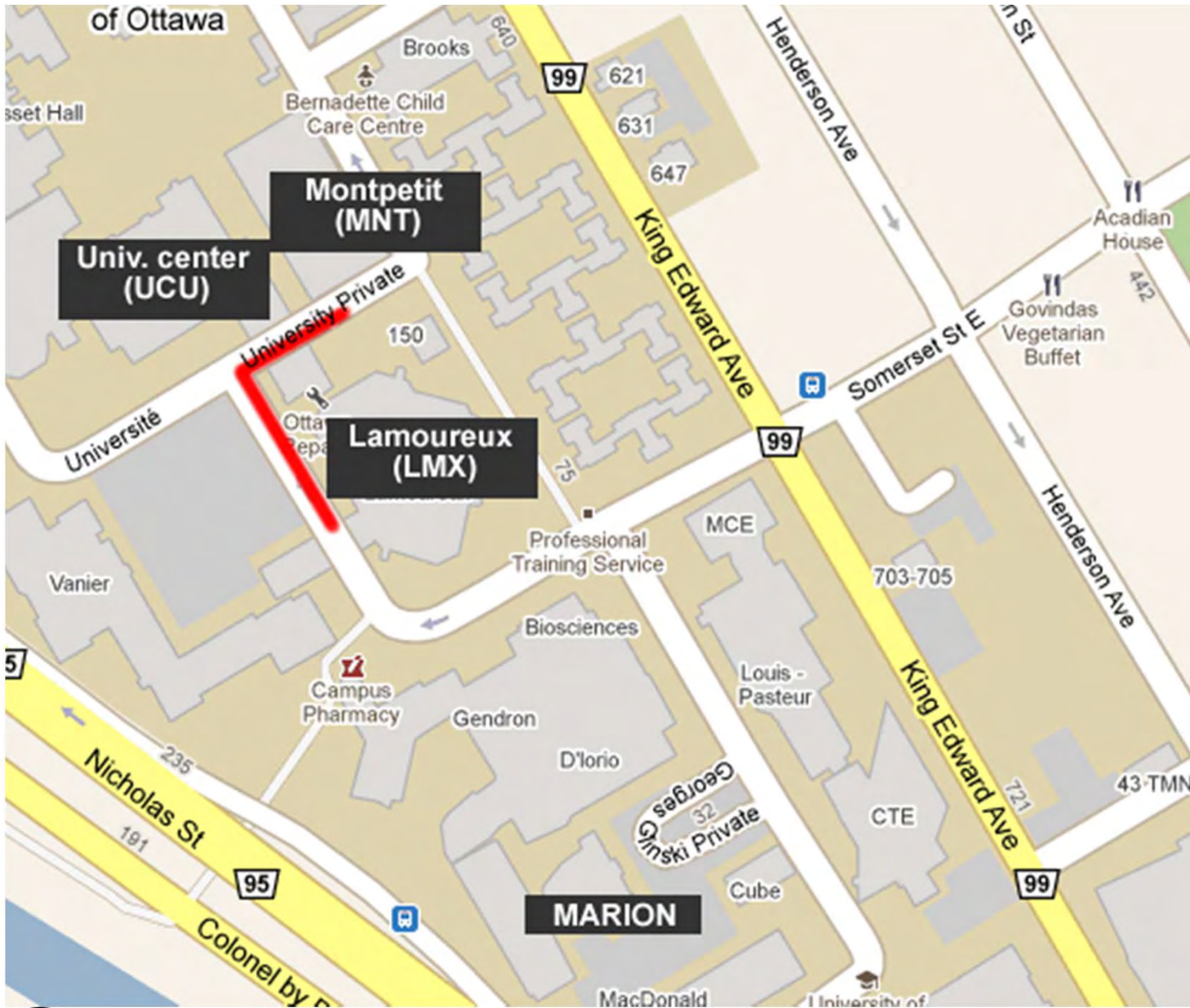
In front **on Lamoureux hall** to embark on buses

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**





buses



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# Lab1: Field trip to Mer Bleue



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

# Lab objectives

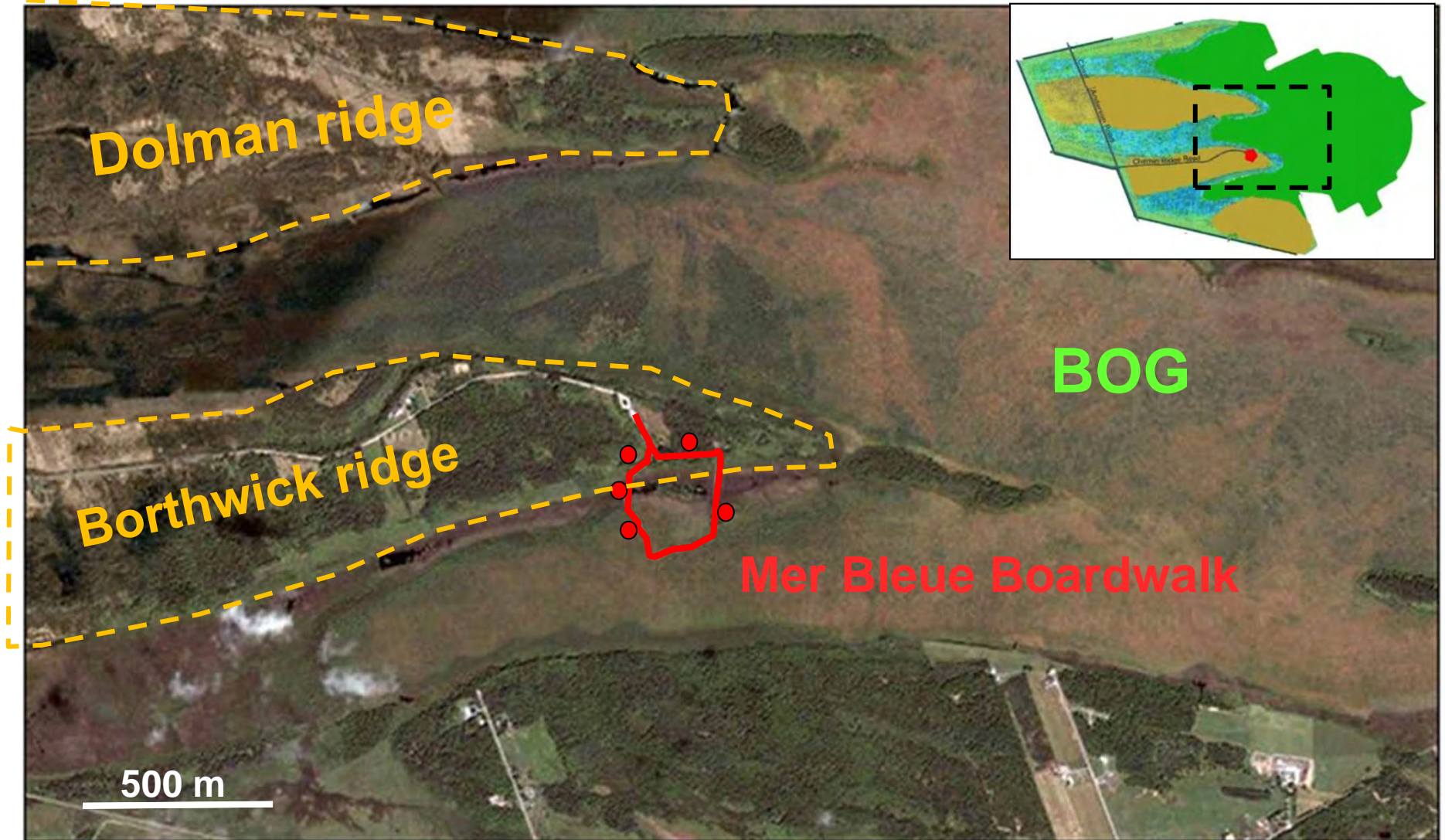
- ***Identify*** dominant plant species in Mer Bleue
- ***Summarize and report*** quantitative data efficiently and accurately in graphs and tables.
- ***Understand*** how sampling variability influences our ability to elaborate and test scientific hypotheses.
- ***Formulate*** an hypothesis concerning 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.



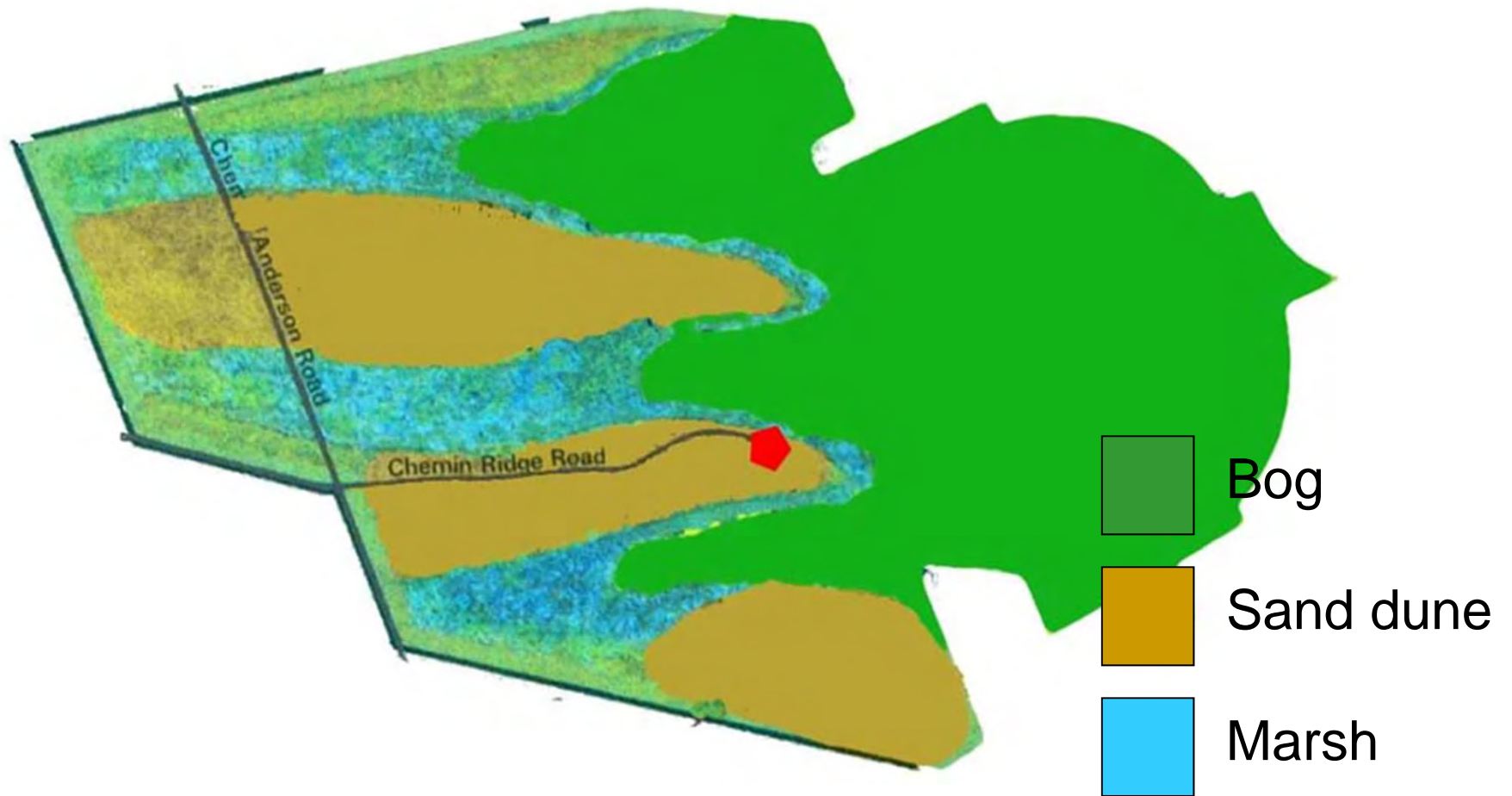
# Mer Bleue site



# Mer Bleue site

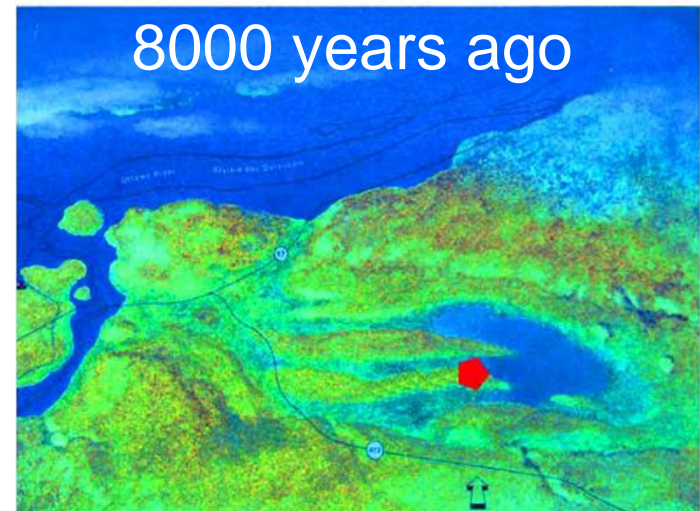
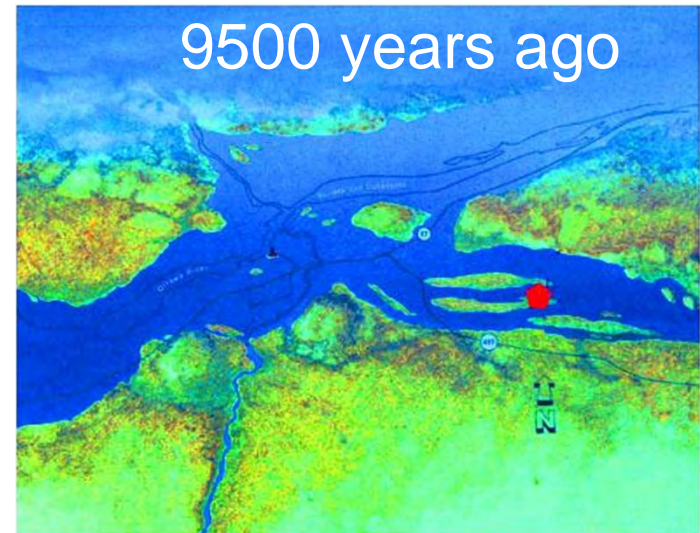


# Mer Bleue site



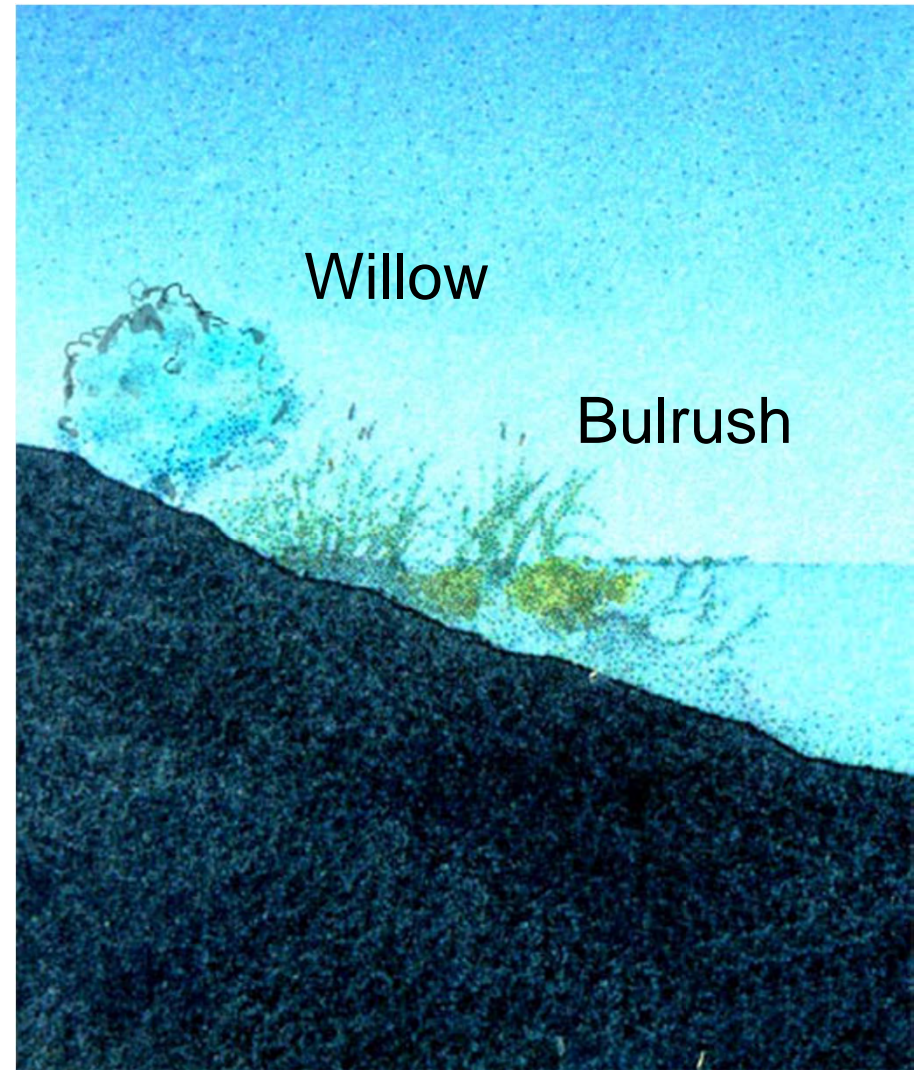
# Sand dune formation

- 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.



# Bog formation

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



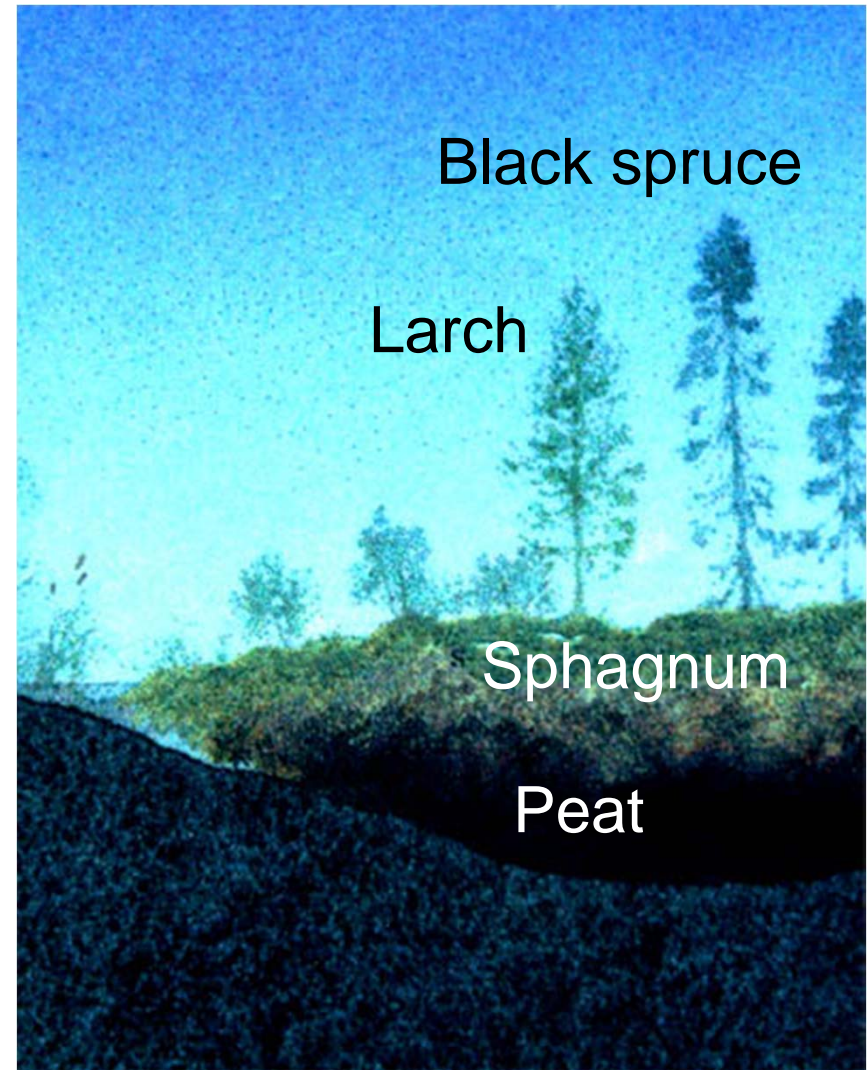
# Bog formation (continued)

- 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



# 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**



# 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.**

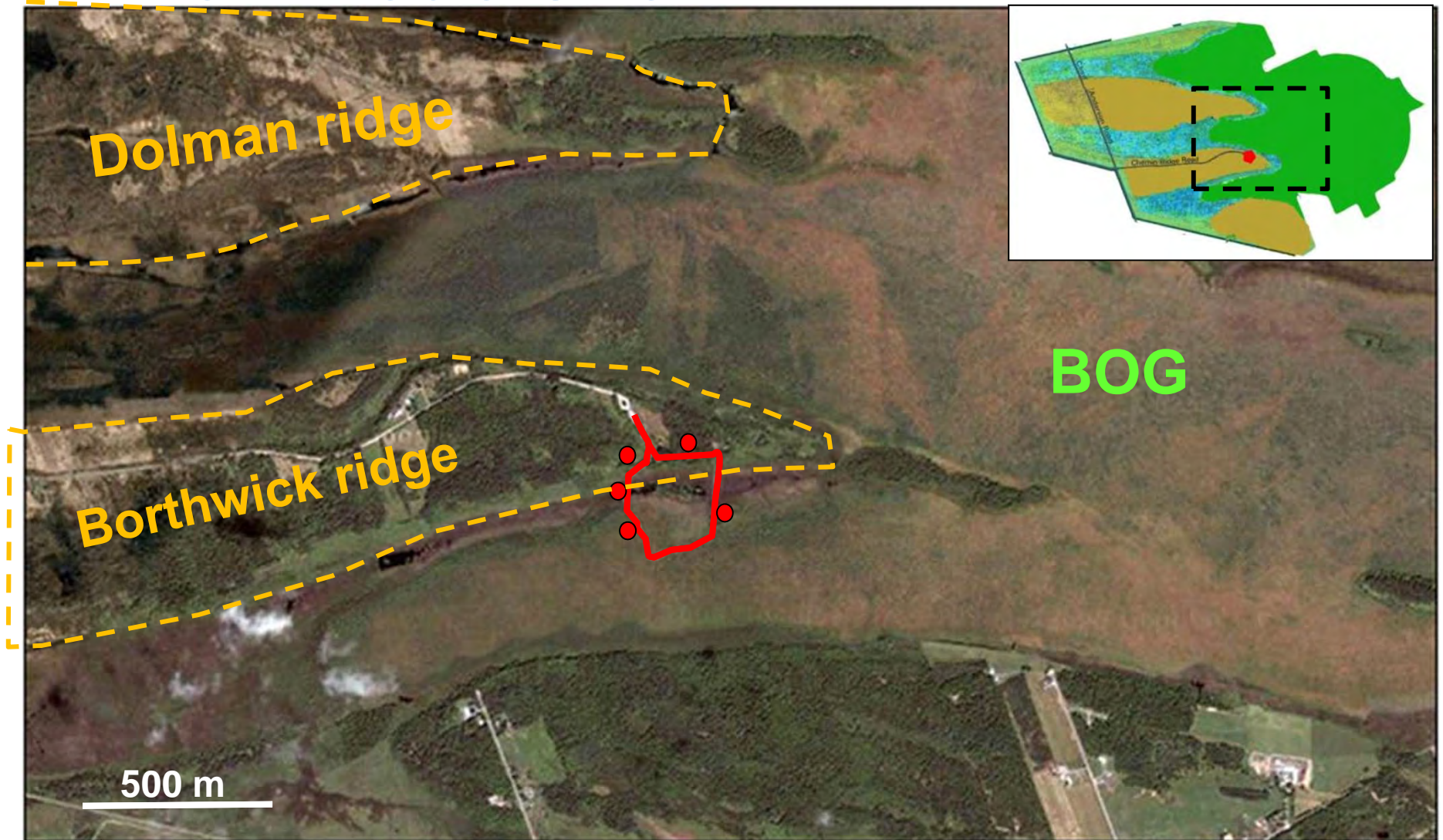


# What you will do

- 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**

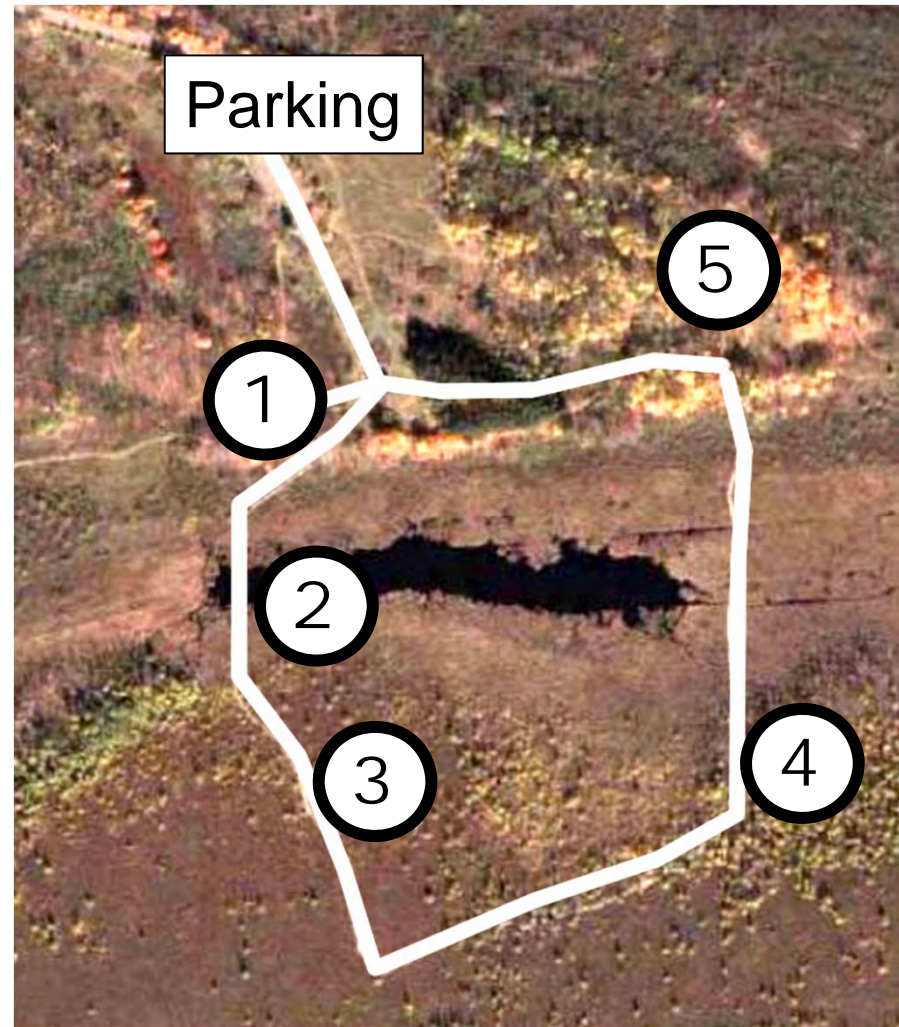


# Mer Bleue site



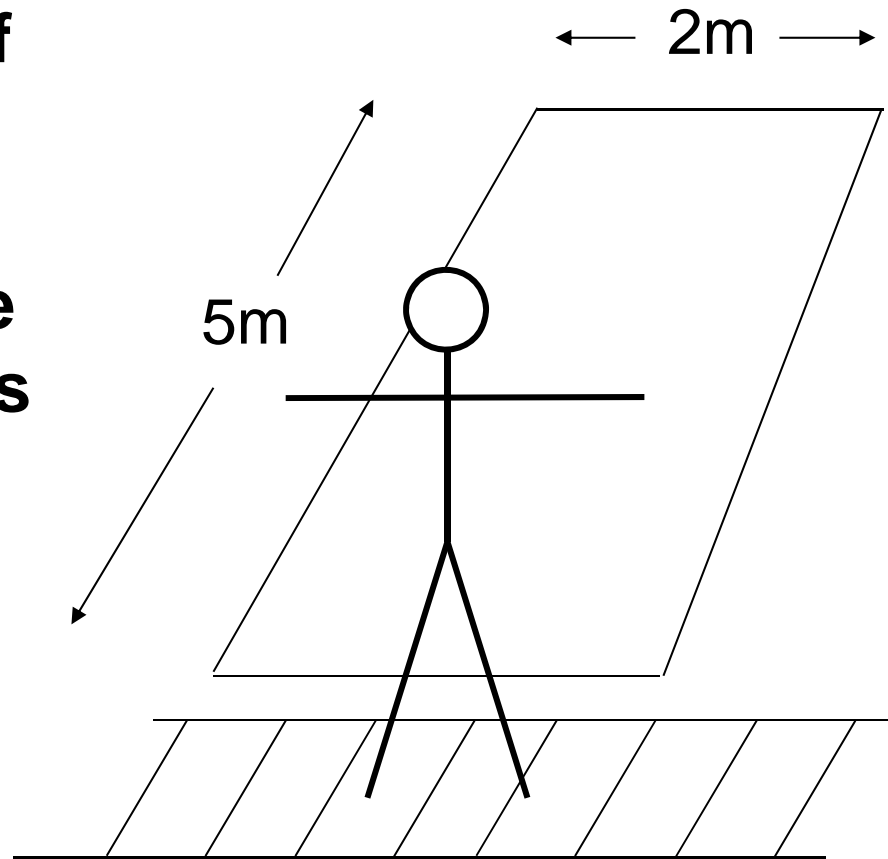
# Sampling stations

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



# Observations

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



# Station 1 – Old field



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

# Station 2 - Marsh



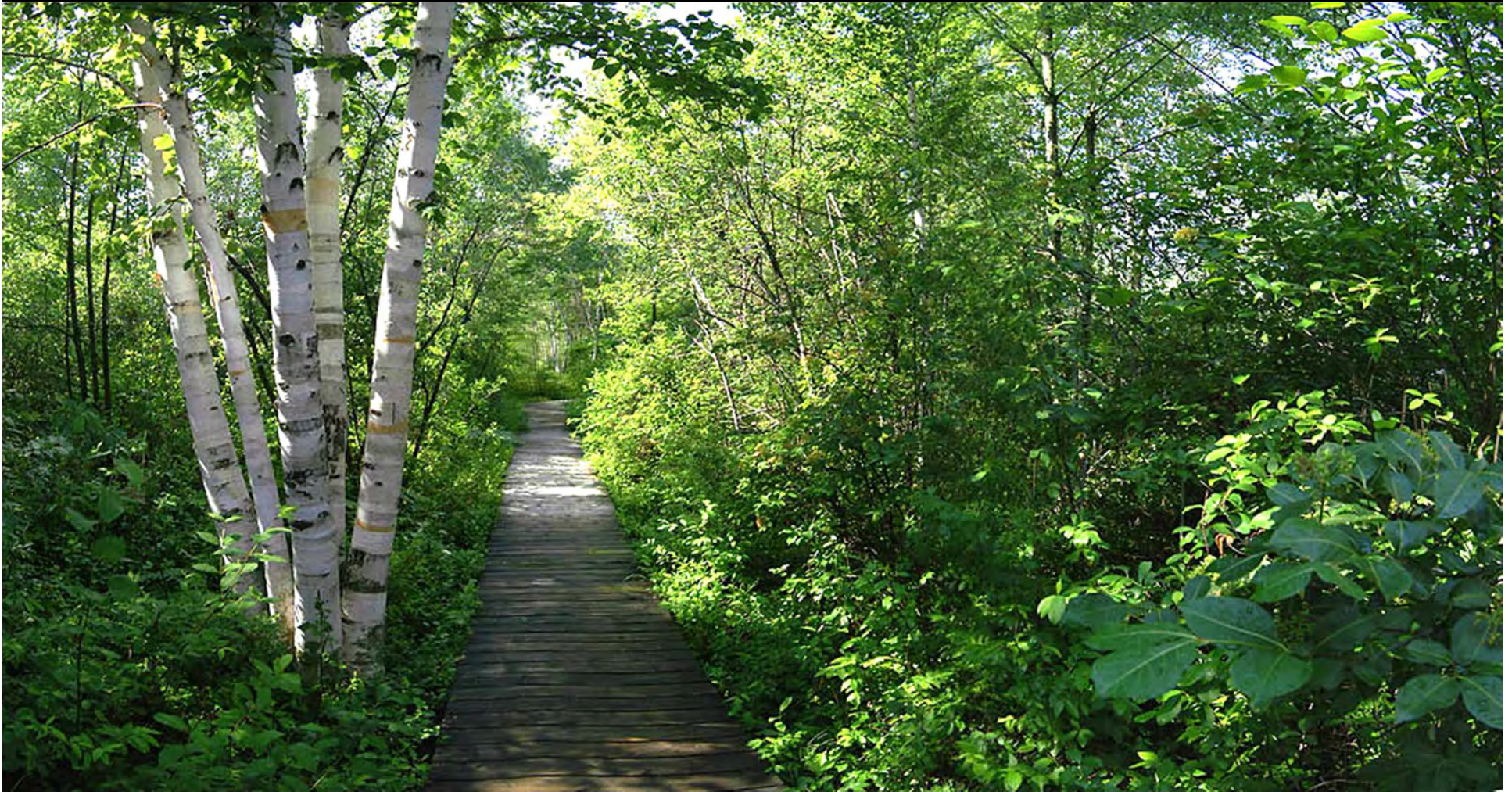
2 juillet 2003, © Antoine Morin (amotin@uottawa.ca)

# Station 3 – Bog



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

# Station 4 – Ecotone



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

# Station 5 - Forest



2 juillet 2003, © Antoine Morin (amotin@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**)



# Combined data file

- Available 36 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

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 of  
group 1 -5  
at station 2

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

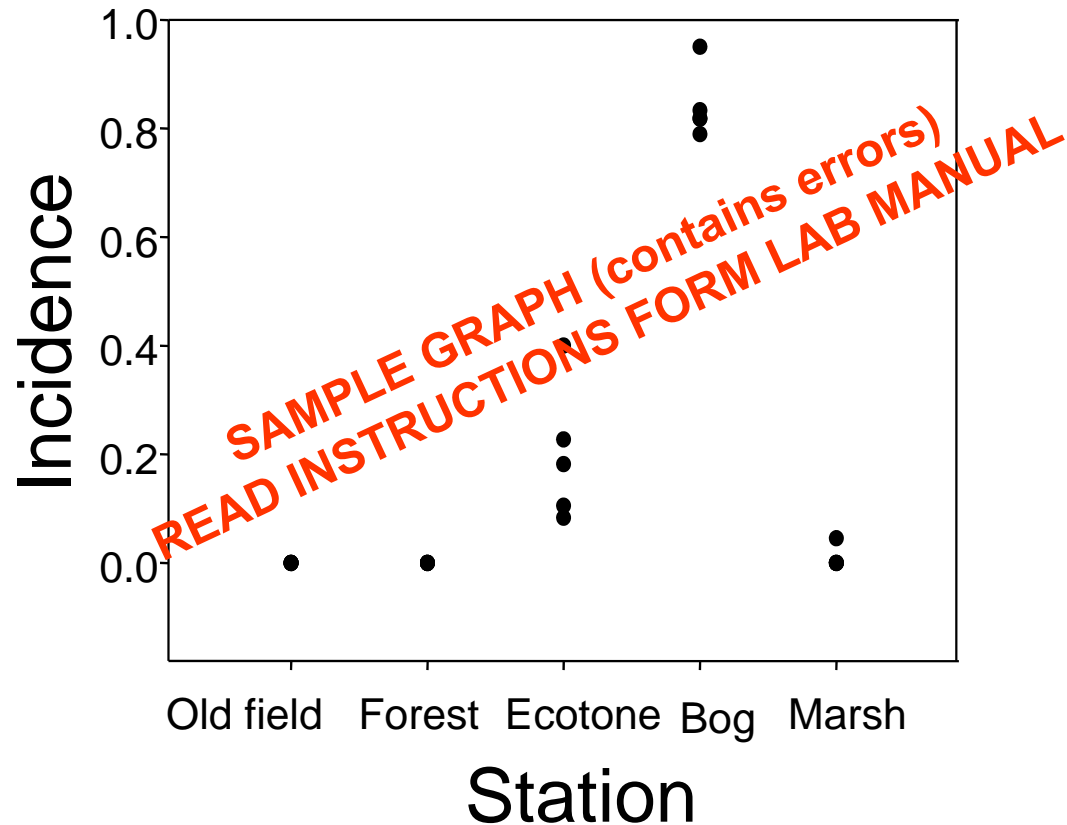


# Proper production of graphs

- 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)



# Example: *Kalmia angustifolia*



Caption of the graph



# Mer Bleue Report: content

- **Title page**
- **Graph showing the distribution of your plant**
- **Answer the questions printed in the instruction file (on website) : Hypothesis and prediction**



# Mer Bleue Report: timeline

- 1 day after field trip: enter data on virtual campus (better if done right after trip)
- Combined data will be available 36h after field trip.
- 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  $2xV1$
- See all dates on lab website



# 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.**



# 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**

