

**OUTLINES** OF THE  
QUEBEC GEOGRAPHIC INFORMATION SYSTEM  
FOR **VOLUNTARY MONITORING**  
OF INVASIVE ALIEN SPECIES

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*Ministry of Environment*

NEANS

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# WHO I AM ?

- Bachelor of Biology - Animal Ecology
- Master in Forest Sciences - Spatial Structure of Forest Ecosystems
- Doctorate in Geomatic Sciences - Spatial Data Analysis of Ecosystem Structure

***BioGeomatician***

**Ph D**

means

Permanent Head Damage

***Beyond all this:***

*I do not take life too seriously,  
anyway, I do not get out alive*



# WE THINK HARD ABOUT SOLUTIONS



- Until now, we mainly monitored the distributions of invasive alien species and the endangered species occurrences
- We have big gaps in available information on the spatial structure of biodiversity, so how to measure impact of invasive alien species on native biodiversity?

## **Invasion vs Biodiversity**

It pose a major **challenge** for regional  
**conservation planning**

# THE FINDING OF SOLUTIONS

- Providing informations will not lead to understanding of spread, establishment and impacts of non-indigenous species in our native ecosystems
- We need an efficient data gathering strategy which improves our biodiversity knowledge when we are monitoring the invasive alien species



WE SHOULD FIND SIMPLICITY  
BEYOND COMPLEXITY



# THE PURPOSE OF AN APPLICATION FOR INVASIVE ALIEN SPECIES MONITORING

- We need to change our attention and we now focus on **where, how** and **why the structure of ecosystems** is more or less resistant to invasions?
- Modeling **collective properties of biodiversity** rather than individual entities. We should find the eco-units, their mosaics and measure their susceptibility or resistance to invasions
- For regional conservation planning, we are talking about determining how **species richness varies with landscape structure and spatial patterns of biodiversity** and how the invasive species impact on it

# THE COLLABORATIVE BIOGEOGRAPHY FOR INVASIVE ALIEN SPECIES MONITORING

- Time is against us. We need **fast information collection**, faster than invasive rate, so we need to collaborate
- **Spatial distribution** of invasive species must be communicated to the observers and the team's progress against invasion must be monitored
- **Mapping data** is important for correlation and causal inference
- So we should have an open collaboration strategy based on **rich information mapping tools**

# MAP-BASED CITIZEN SCIENTISTS REPORTING PLATFORM

- We are developing a map-based citizen scientists reporting platform that enables public to report and track invasive alien species. The fact that people see their report is the biggest motivation to engage them
- We use **mobile** phone and **WEB** solutions
- We mash-up **scientific** and validated **citizen** based information
- We want to see everybody **pick up the technology** and be able to **embrace it**
- So we will use simple and democratic mapping technology



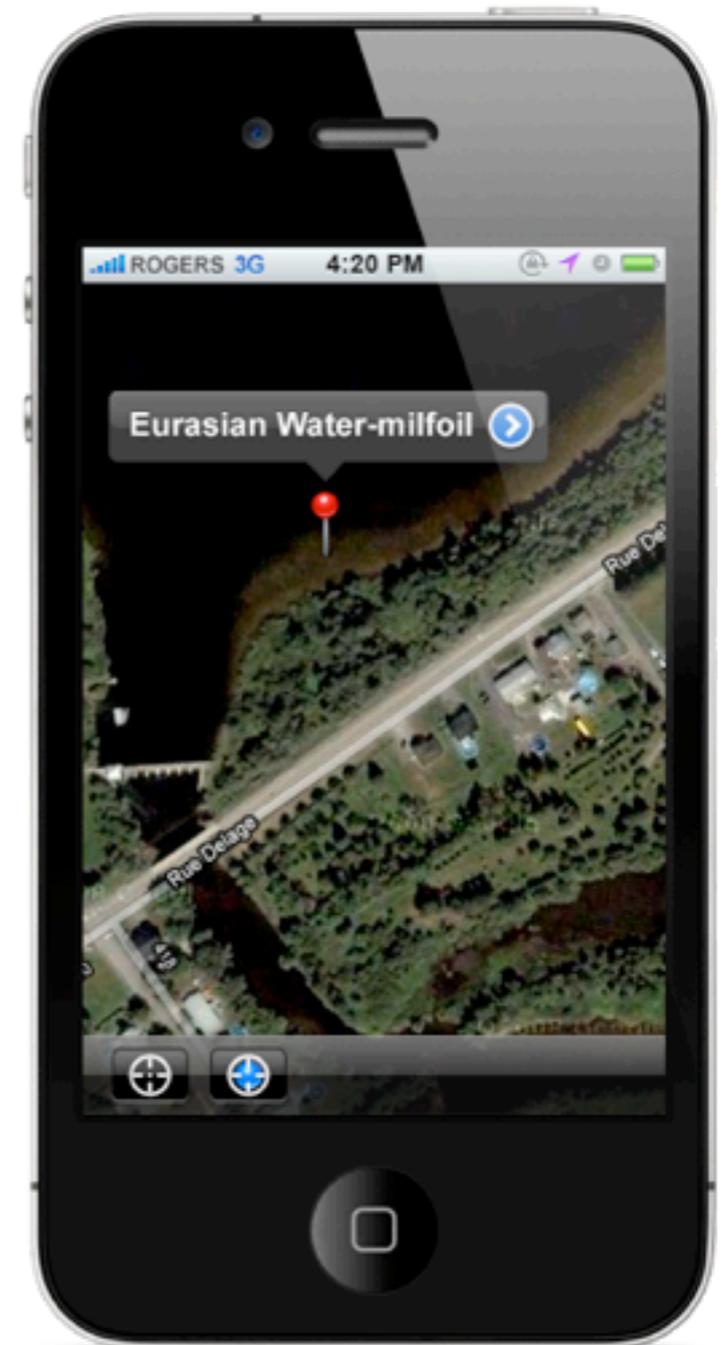
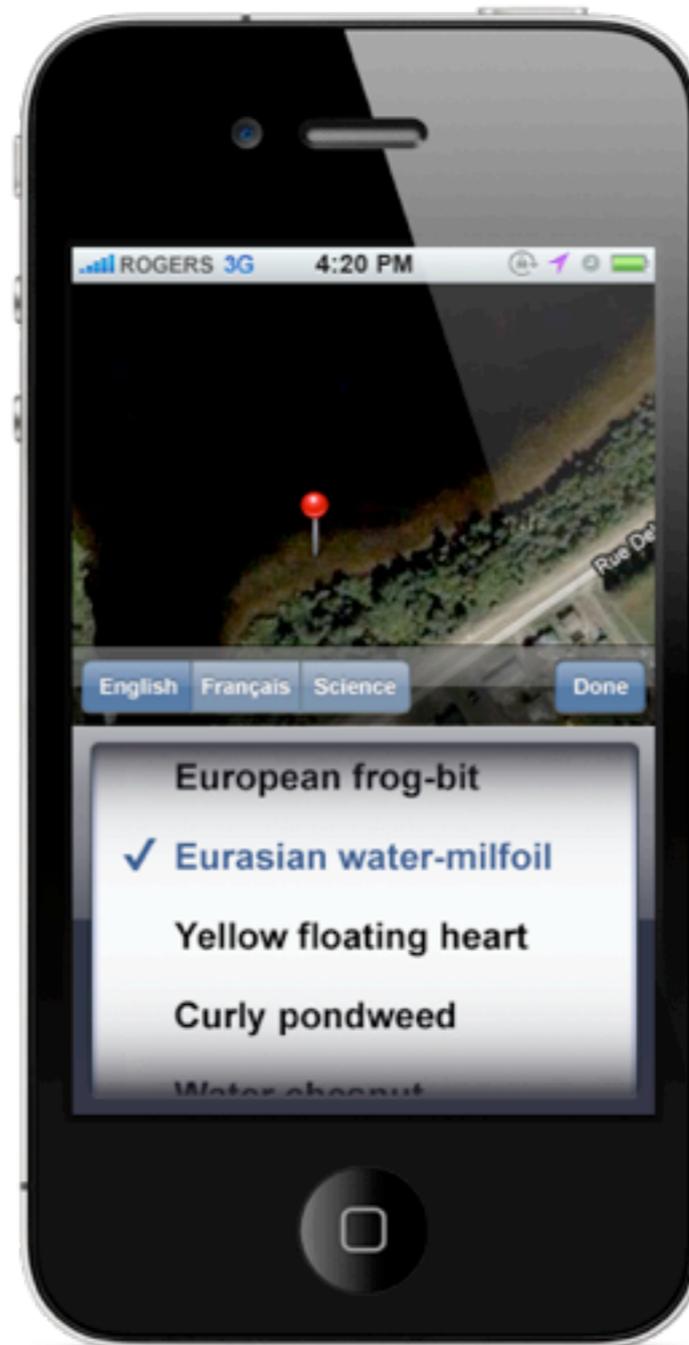
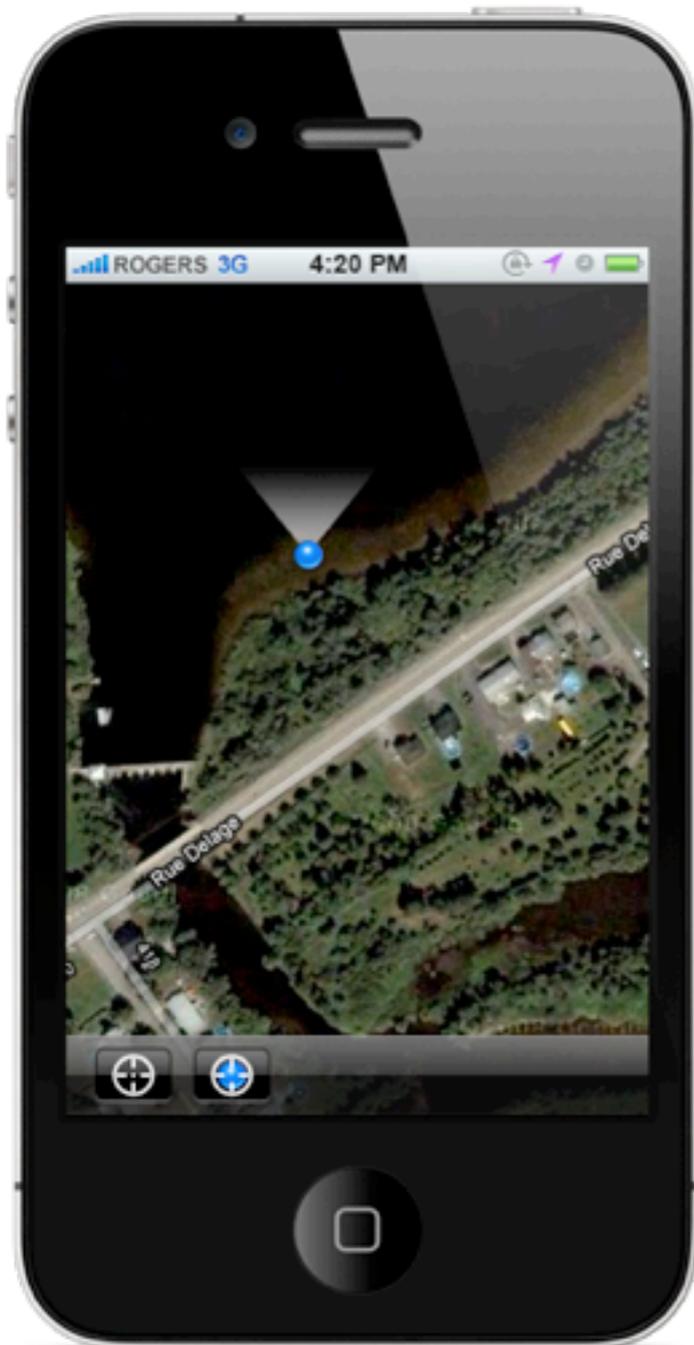
# WEB 2.0 ARCHITECTURE AND AGILE SOFTWARE REQUIREMENTS

The screenshot displays a web browser window with the address <http://www.mddep.gouv.qc.ca/biodiversite/eae/map.htm>. The page header includes the text "Développement durable, Environnement et Parcs Québec" and navigation links: Home, Site Map, Contact us, Québec Portal, About the site, Search, and Français. The main content area features a satellite map of a residential area with a river. On the left, a "Plants Species" panel lists:

- Hydrocharis Morsus-ranea** (European frog-bit)
- Myriophyllum spicatum** (Eurasian water-milfoil)
- Nymphoides peltata** (Yellow floating heart)
- Potamogeton crispus** (Curly pondweed)
- Trapa natans** (Water chestnut)

A "How to add coordinates" tooltip is visible, stating: "This is the default dialog which is useful for displaying information about good coordinates notation. The dialog window can be moved, resized and closed with the 'x' icon." The dialog window, titled "Eurasian water-milfoil Observation", has tabs for "Coordinates", "Picture", and "Description". It includes a "select your format" dropdown, input fields for "Longitude", "Latitude", and "Datum", and "Save" and "Delete" buttons. A scale bar at the bottom left indicates 200 meters and 100 meters.

# WEB 2.0 ARCHITECTURE AND AGILE SOFTWARE REQUIREMENTS



WE ARE STRONGLY OPTIMISTS



This glass is really half full...