

## DEVELOPMENT OF A METHODOLOGY AND SAMPLING PROTOCOL FOR MONITORING BIODIVERSITY IN RELATION TO CLIMATE CHANGE



photo : Alain Paquette (UQAM)

Program  
ECOBIOCC

PROJECT STARTING DATE  
AND LENGTH  
September 2010 • 2 ½ years

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### CONTEXT

Climate change is likely to have significant impacts – although variable for different regions of Quebec – on communities of plant and animal species. What will be the response of these communities in terms of adaptation, changes in geographical distribution, or risk of extinction? The International Convention on Biological Diversity, which has been ratified by the Quebec government, requires that signing parties identify and monitor the components of biodiversity that are important for its conservation and sustainable use.

### OBJECTIVES

The Ministère des Ressources naturelles et de la Faune (MRNF) and the Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP) aim at establishing, in collaboration with university researchers, a monitoring system to detect biodiversity changes related to climate change at multiple spatial scales. To this end, it will be also important to identify robust biodiversity indicators that are able to detect deviations caused by climate change as opposed to those expected from natural temporal variability.

### APPROACH

A systematic monitoring approach will permit identification of the boundaries between natural variations in biodiversity and those due to climate change. This approach will be based on combining climatic and biodiversity models for working at large and small scales, and meta-analyses to merge information from different data sources. This methodology represents an integrative approach, involving the scientific community and government agencies, to design and help implement a plan for monitoring biodiversity in relation to climate change in Quebec. The next step is to assess the minimum requirements in terms of data, and to choose and develop the biodiversity indicators that will answer the questions identified by the program. Different monitoring plans will be proposed, and modelling will be an important tool for assessing the relevance and robustness of these plans under various climate change scenarios. The selected plan will be validated using a pre-sampling protocol.

### EXPECTED RESULTS

The expected results include:

- A methodological manual for monitoring biodiversity and for ensuring the implementation of a monitoring plan adapted to climate change;
- Various options of sampling schemes covering the entirety of Quebec;
- Instructions for carrying out a validation phase of the selected methodology in the field.

The research results will be disseminated through reports, publications, and conference participation.

### LEAD SCIENTIST

- Pedro R. Peres-Neto  
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### OTHER PARTICIPANTS

- McGill University
- Ministère des Ressources naturelles et de la Faune (MRNF)
- Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP)
- Université du Québec à Rimouski (UQAR)
- Université Laval

### IMPACT

The project's goal is to develop a methodology for monitoring biodiversity in relation to expected climate change. This will enable the MRNF and the MDDEP to set up a dynamic network of sampling sites to be monitored at a frequency to be determined by the methodology. Development plans aimed at reducing the pressures from climate change on species and communities could then be considered based on the data obtained through this sampling framework, by, for example, establishing or re-evaluating protected areas.

### FUNDING

