

Québec
Biodiversity
Monitoring
Network

An innovative project
to detect changes in
Québec's ecosystems



Québec

Agile



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THE KEY CHALLENGES FOR BIODIVERSITY

Biodiversity loss, climate change, and the degradation of natural habitats are leading to an unprecedented environmental crisis. According to a global study on the state of biodiversity¹ published in March 2018, between 38% and 46% of animal and plant species are expected to disappear worldwide by 2050. Our society depends on the services provided by ecosystems, such as pollination, water purification, the supply of food and the production of medical resources from nature. The consequences of biodiversity loss are, therefore, worrisome, both at the global and local levels.

Biodiversity refers to the variety of life forms on Earth. It is assessed by considering the diversity of ecosystems, species and genes in space and time, and the interactions within and between these levels of organization.

1. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019.



A PROPOSED BIODIVERSITY MONITORING NETWORK TO OBSERVE, PRESERVE, AND ADAPT

The Québec Biodiversity Monitoring Network is the first large-scale project to highlight certain environmental issues that the province is facing. Moreover, the International Panel on Climate Change (IPCC), an intergovernmental organization that reports to the United Nations Environment Program, recognizes the importance of establishing such networks throughout the world to better grasp the impact of climate change on nature.

The network seeks to assess the capacity of natural environments and communities to cope with climate change and adapt to it. Indeed, by broadening our knowledge of the factors that affect ecosystems, the habitats of certain species, as well as fauna and flora in general, it will be possible to engage in enlightened decision-making and manage and preserve Québec's biodiversity proactively.

This network stems from collaboration between the Ministère des Forêts, de la Faune et des Parcs (MFFP) and the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC), which ensure the conservation and protection of ecosystems and biodiversity in Québec.

Nature is a marvel to be bequeathed to future generations so that they can benefit as much as we have from it.

Objectives of the proposed Québec Biodiversity Monitoring Network

Allow Québec to deal proactively with the impacts of climate change by adopting new tools to monitor rapid changes in its biodiversity and the services it provides.

1. Better grasp changes in key ecosystems as well as plant and animal communities

Better grasp Québec's biodiversity to enable stakeholders in our society to make more enlightened land-use planning and development choices faced with future uncertainty stemming from climate change.

2. Foster collaboration between partners to better monitor climate change

Encourage collaboration to ensure effective, standardized, long-term monitoring of biodiversity in a context of adaptation to climate change.

3. Enhance the dissemination of information on biodiversity to heighten public awareness

Make available and accessible the findings from biodiversity monitoring to inform the public and broaden our common understanding of the impacts on biodiversity of human activity and climate change.



How can we assess changes in biodiversity?

By engaging in extensive monitoring of Québec ecosystems.

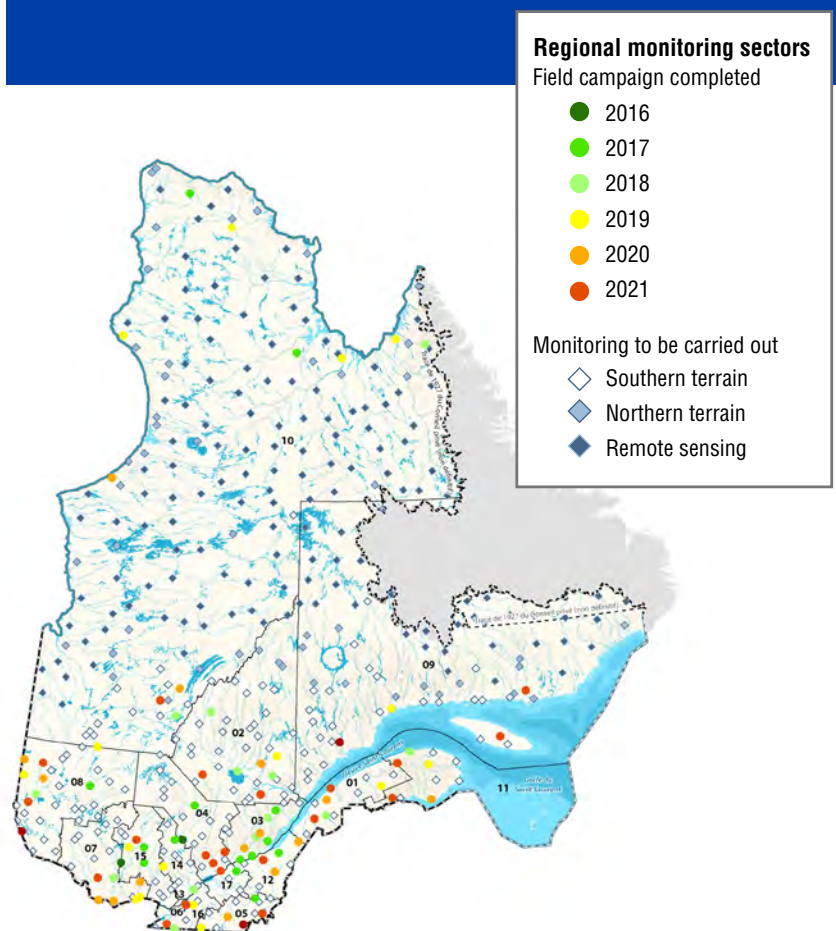
The Québec Biodiversity Monitoring Network expects to monitor more than 75 indicators that measure biodiversity. The indicators will be distributed in wetlands (peat bogs and marshes), terrestrial environments (forests and tundra), aquatic environments (rivers and lakes), and some, such as those related to protected areas and threats associated with human activities, will apply to Québec as a whole. The indicators relate to a species, a group of species, or an ecosystem attribute that provides information on certain ecological characteristics of the environment such as climate, species abundance or the impacts of human activities (e.g., forestry, urbanization, pollution).

A sound indicator can be measured easily and reacts quickly to changes in various parameters, in particular climate change. Below are examples of the biodiversity monitoring indicators selected:

- the diversity and distribution of dragonflies and butterflies in wetlands;
- sound recordings measuring the diversity and periods of activity of communities such as birds, frogs, bats and crickets;
- vegetation's growing and wilting periods;
- the connectivity index between natural habitats that foster some species' movements.

Accessible data

The data and analyses produced by the Québec Biodiversity Monitoring Network will be available to broaden understanding of changes in ecosystems. Consequently, this will enable land-use planning stakeholders to engage in enlightened, adapted planning. In the same way, individuals will have access to plain-language information on issues related to wildlife species and their natural habitats. Everyone can thus act to preserve biodiversity.



In partnership with local communities, the network will facilitate on-site monitoring of the indicators in 250 regional sectors in southern Québec and in nearly 50 northern sectors. In regions that are less readily accessible, remote sensing through satellite imagery will be used to monitor 150 sectors. All told, more than 1,000 sites will be monitored throughout Québec's diversity of habitats.



On site, from snowmelt to the fall

Rolling out the network in the field requires the installation of equipment every spring:

- sound recorders;
- cameras for animals and vegetation;
- water level sensors.

Some surveys also take place from May to September:

- vegetation surveys;
- collection of terrestrial insects, benthic (bottom-dwelling) invertebrates, and zooplankton;
- detection of fish species through the presence of DNA in lake water.



Photo: Patrice Bouchard



Why must we closely monitor biodiversity?

Appropriate ecosystem monitoring is akin to knowing what is in your refrigerator. By ascertaining what is in your refrigerator, you can better plan your meals, eat fresh food, avoid discarding yellow broccoli or opening three jars of salsa. Should the refrigerator thermostat fail, sound management of your refrigerator is all the more important to avoid frozen lettuce or curdled milk in your coffee. In short, sound monitoring of the refrigerator avoids waste and saves money.

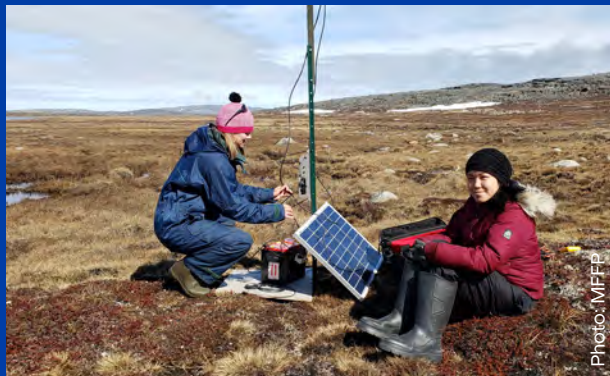
Similarly, the introduction of the Québec Biodiversity Monitoring Network will broaden knowledge of our ecosystems and the changes that are occurring in them to avoid unpleasant surprises and assess challenges and opportunities in a timely manner.

Biodiversity monitoring will enable us to cope with climate change. As Winston Churchill said, “If you don’t take change by the hand, it will take you by the throat.”



Rollout in several stages

Fields surveys began in 2016–2017 with a pilot project to test the methodology and field logistics. Rollout of the monitoring network began in 2018. To date, monitoring has been conducted in 40 sectors distributed in most regions of southern Québec and in 10 sectors in five communities in Nunavik. Roughly 200 sites were sampled between 2016 and 2020. On the strength of this success, the rollout of the network continues, and new partners will be added each year.



Financed by the 2030 Plan for a Green Economy

The 2030 PGE is Québec's first electrification and climate change policy framework, which will lay the foundation for a green, climate-resilient and more prosperous economy by 2030. It also puts Québec on track for reaching its 2030 target and carbon neutrality by 2050. The 2030 PGE builds on Québec's strengths, including its clean energy, to accelerate the climate transition with as many benefits as possible for Québec's population and businesses.

Plan pour une
**économie
verte** 





Photo: Ariane Roberge (MELCC)



Photo: Chantale Langevin (MELCC)



Photo: MIFFP



Photo: Chantale Langevin (MELCC)



Photo: MFFP



Photo: Chantale Langevin (MELCC)



Photo: MFFP



We extend our sincere thanks to our collaborating partners:

- Centre d'enseignement et de recherche en foresterie (CERFO)
- Centre d'études nordiques (CEN)
- Centre de la science de la biodiversité du Québec (CSBQ)
- Institut national de la recherche scientifique (INRS)
- Locals Nunavimmi umajulirijit katutjiqatigininga (LNUK)
- Makivik Corporation
- Nunavik Research Centre (NRC)
- Société des établissements de plein air du Québec (Sépaq)
- Nunavik Parks
- Université de Montréal
- Université de Sherbrooke
- Université du Québec à Montréal
- Université du Québec à Trois-Rivières
- Université Laval

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