



THE UNDERWATER OBSERVER' NETWORK
or
The RÉSEAU DES OBSERVATEURS SOUS-MARIN
(ROSM)

Portfolio

Introduction

Canada is one of the largest countries in the world. As Canadians, we are the stewards of almost 20% of wilderness on the planet, nearly 24% of its wetlands, 20% of its freshwater, 14% of its oceans and we have about 244,000 km of coastline spread over 3 oceans and more than 31,000 lakes larger than 3 square kilometres.



However, across Canada our water bodies are influenced by climate change and human activities. Even more, some are suffering numerous assaults (pollution, invasive species, etc.) that may affect the fauna and flora they support. Although it is recognized that preserving biodiversity is important, we know little about the aquatic species they contain. Our oceans coastal zones, despite their importance for many species, still remain mostly unknown.

Some of these water bodies should be regarded as national treasures. It is not generally realized that many of our lakes were formed during the glacial retreat of the last glaciation, and they are as old as the Egyptian pyramids. These lakes represent 10,000 years of history, and many are now threatened as a result of less than 100 years of human presence on their shores.



Currently there are significant gaps in our knowledge, particularly for non-commercial species.

Often we do not know which species are present in a lake or the role and importance they may have. Ecosystems being generally in equilibrium, the disappearance of a species or a change in dominance of a species in a water body can affect the existing relationships and even the overall health of the ecosystem.

In recent years, the number of species that are affected by changes has been increasing almost exponentially. It is urgent to gather as quickly as possible as much information as possible about the species, their traffic patterns and use of the medium so to better understand the potential impacts of development projects or to better promote the preservation and / or restoration of certain environments.

Our governments often does not have the capacity to inventory, characterize, and especially monitor all species and water bodies. Therefore we believe that community involvement is the preferred means to achieve proper monitoring. It is only with citizens' commitment and participation that we will be able to know better about our aquatic species, their distribution and possibly identify preferred and essential areas for their survival and well being.



Did you know that ?

- So far, 2214 species of invertebrates have been found in the St. Lawrence?
- If we put side by side all Arctic seabed samples collected for biological inventories purposes, they would not even cover a tennis court?
- Our waters are home to a fish specie from the same family as seahorses, and that it is the male who carries the eggs in a pouch?
- We have not one, but seven species of crayfish in Quebec?
- We can find freshwater jellyfishes in some our lakes ?
- Our waters serve as feeding grounds for many marine mammal species that are threatened or endangered?
- Among the foreign invasive fish species that threaten our Great Lakes, one of them looks just like a piranha, but can measure up to 60 cm and weigh 25 kilos?

The Underwater Observer' Network (ROSM)

The ROSM is a nonprofit organization whose mission is to protect the the biodiversity of our aquatic environments, to raise public awareness and education about their role and importance.

To achieve its mission, the ROSM has prioritized the following areas :

- 1) To create and develop an aquatic community geo referenced database.
- 2) To contribute to public raising awareness and education about the importance of maintaining the health of our aquatic ecosystems.
- 3) To develop and facilitate access to tools helping species identification.
- 4) To facilitate access and dissemination of information collected.
- 5) Foster a closer meshing between the scientific communities and the population.



Since its inception, ROSM have been working to collect observations of aquatic species in our waters made by all Canadians within their activities, whether recreational or professional. This is similar to the bird watchers community, whose observations are valuable not only in Canada but around the world, ROSM believes in the importance of the collective contribution to obtain a solid and reliable database.

The cumulative information will provide a database that will give a better understanding of the biogeography¹ of our aquatic species. This knowledge is a basic tool needed for monitoring and determining the effects of the changes facing our ecosystems. Whether due to the influence of climate change, invasive alien species or human influence, ecosystems are changing rapidly. Without baseline data, it is impossible to measure the changes taking place and try to interpret the causes and effects.



Creating and developing a community geo referenced database of our aquatic communities

As ROSM' primary mandate, we intend to achieve it by facilitating and encouraging community involvement in collecting and sharing information on species found in our aquatic environments. This monitoring will be achieved through collective tools easy to use and based on a widespread technology (Google), promoting trade between observers and individuals with personal or professional background species identification and facilitating access to data to anyone interested in these.

¹ Biogeography: Science that studies the distributions of living beings on Earth's surface and changes of these distributions.

The Underwater Observer's Network was initially created to involve mainly those engaged in scuba diving but quickly expanded its horizons in response to the requests we received. As requested, we have extended our species' bank to include mammals, reptiles and amphibians (with an exception for birds) found in our aquatic environments and thus allowing sightseeing reporting of aquatic species by general public (hikers, boaters, fishermen, etc.).

To contribute raising public awareness and education of the importance maintaining health of species and ecosystems.

We expect to achieve this mandate through the writing of articles in various journals, scientific and popular, and also by giving lectures and presentations at public events.

The partnership with the Fédération québécoise des activités subaquatiques allows us to have a regular column in their magazine "En Profondeur" and several articles have already been published.



To develop and / or facilitate access to tools helping identifying species

The main tool to allow observers to validate their observations is the specie identification sheets based on in situ photographs and videos. This method was preferred as it avoids requiring the capturing and handling specimens and thus, minimize the impact of activities on the environment. In addition, each observation added by an observer and having a photo is available from the main form, will allow others to see the specimens in different conditions. Currently, more than 300 species sheets and 1500 images are available on our Web site.



An online forum, where one can easily upload photos of organisms to be identified, is available. The forum allows the exchange between participants and experts, and promotes the quality of information.

By hosting guides & posters and hyperlinks to specialized sites facilitating identification, we make available access to many resources. Plans are also being developed to develop training tools.

Facilitate access and distribution of information collected.

Various tools have been developed to fulfill this mandate. On every species sheet, a map showing all sightseeing reports observations and histograms showing a compilation drawn from the comments received. It should be noted that the entire database is dynamic and that the whole is updated once an observation has been submitted.



The main tool for extracting information is the general observation map from which we can apply different filters. These filters will make precise searches based on physical criteria (eg water level), temporal (date, day / night), environmental (environment, habitat, depth, etc.). Results of the research is displayed and data are available in Excel format.

Another tool that we developed is the ability to be immediately notified of the addition of an observation based on a specie of interest. This tool is most useful for those who participate in monitoring networks (eg invasive species), those working on species with a special status or to those who have a special interest to follow specific species.

Foster a closer meshing between the scientific communities and the population.

We intend to achieve this mandate by developing partnerships with various agencies and departments. We already have a good participation from several agencies and are working to consolidate them.

By using the discussion group forum and a network of contacts, we hope to attract interest and get scientists involved as resource persons. The tool for monitoring species allows the scientist interested to contact observers and thus obtain more information or to help validating the observation.



Key Achievements

Web Site

March 2011. The website, now bilingual, has more than 325 species id sheets of freshwater and saltwater, more than 1500 photos and over 11,300 geo-referenced observations have been reported. Over 370 observers were registered and the site attracts nearly 4,000 different visitors each month.

June 2008. Inauguration of our interactive website (www.rosm.ca).

Activities

2010

- Thetford Mines. Lectures (2).
- Jamboree Dive Percé. August 2010. Booth, lecture, workshop.
- Greenland shark monitoring. Greenland Shark and Elasmobranch Education and Research Group. Baie-Comeau. 2010 season. In charge of the biodiversity characterization.

2009

- Aquart. Thetford Mines. Booth with educational materials, lectures (2).
- Greenland shark monitoring. Greenland Shark and Elasmobranch Education and Research Group. Baie-Comeau. 2009 season. In charge of the biodiversity characterization.

2008

- Presentation at the annual meeting of the Fédération québécoise des activités subaquatiques.

Publications

- Le Fjord du Saguenay. En Profondeur, vol 10 no 4.
- Les espèces aquatiques envahissantes. En Profondeur, vol 10 no2.
- 2010: Année internationale de la biodiversité. En Profondeur, vol 10 no1.
- Connaissez-vous bien les crabes québécois ? En Profondeur, vol 9 no3.
- Le Réseau des observateurs sous-marins (ROSM). En Profondeur, vol 8 no4.
- Le Réseau des observateurs sous-marins (ROSM) est en ondes ! En Profondeur, vol 8 no3.

The screenshot displays the ROSM website interface. At the top, the logo for 'Le Réseau des observateurs sous-marins' is visible. The main content area is titled 'Fiche descriptive de "Étoile de mer commune"'. It features a grid of six photographs showing the starfish in various environments. Below the photos is a table with taxonomic information:

Règne:	Animalia
Empire:	Animalia
Super-classe:	Animalia
Classe:	Animalia
Ordre:	Cnidaria
Famille:	Aequorea
Genre:	Aequorea
Espèce:	Aequorea victoria

Below the table is a video player showing a close-up of the starfish. The 'DESCRIPTION' section contains text in French describing the species. A 'MAP' section shows a map of the Saguenay Fjord with observation points marked. At the bottom, there is a 'Météorologie de température pour Étoile de mer commune' chart showing seasonal temperature trends.

The Team



François Hazel - President
Marine biologist

As part of his work and during his 25 years of experience in various department of Fisheries and Oceans Canada (Science, Ocean Management, Fish Habitat Protection), François has dived all around Quebec marine coasts and has worked with diverse communities (fishermen, divers) and community organizations.

Blaise Barrette – Vice-président
Filmmaker, Webmaster, experienced diver

Blaise is the designer of all our Web applications and our "cameraman" who produced the video clips that are on the species sheets, provided many photos and written in many forms. He also has worked on various scientific missions to record onsite species.



Luc Gagnon - Administrator
Photographer, experienced diver.

Luc is our official photographer, who provided most of the images used on the identification sheet

Sandra Daoust – Secretary-Treasurer
Passionate diver

Sandra is the editor of most of the id sheets found on our Website, and also is Blaise' dive buddy.



Main contributors



Jeffrey Gallant – Greenland Shark and Elasmobranch Education and Research Group (GEERG)
Director – Atlantic Region

Jeffrey works closely with the ROSM, on expeditions, for species identification, adding photos, etc..



Laurent Fey – Données d'observations pour la reconnaissance et l'identification de la faune et de la flore subaquatique (DORIS).
Doris coordinator, North West Atlantic region (Quebec, Canada) and CMAS monitor.

Laurent takes care of the liaison between DORIS and ROSM



Claude Nozères
Marine taxonomist

Claude is one of the authors of the Guide to Identification of marine fish in the estuary and northern Gulf of St. Lawrence. He also designed numerous posters to aid in the identification of fish and invertebrates (available in our link page).



Pierre Lavigne
NAUI Diving monitor, Aquafutur

Writer for a great number of freshwater identification sheets, Pierre regularly teaches a freshwater diver specialist ecology and environment course.



Born in Gaspésie, she has grown up near the sea and dreams returning there. Former journalist, she is now working as a special education teacher. As she loves immersing herself in a text seeking french literal errors, no wonder she is soon to become a diver !

Partners



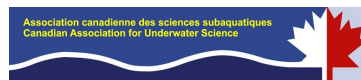
UQAR SMER



Organizations supporting ROSM



Association des moniteurs
CMAS du Québec



Pêches et Océans
Canada

Fisheries and Oceans
Canada

Développement durable,
Environnement
et Parcs

Québec

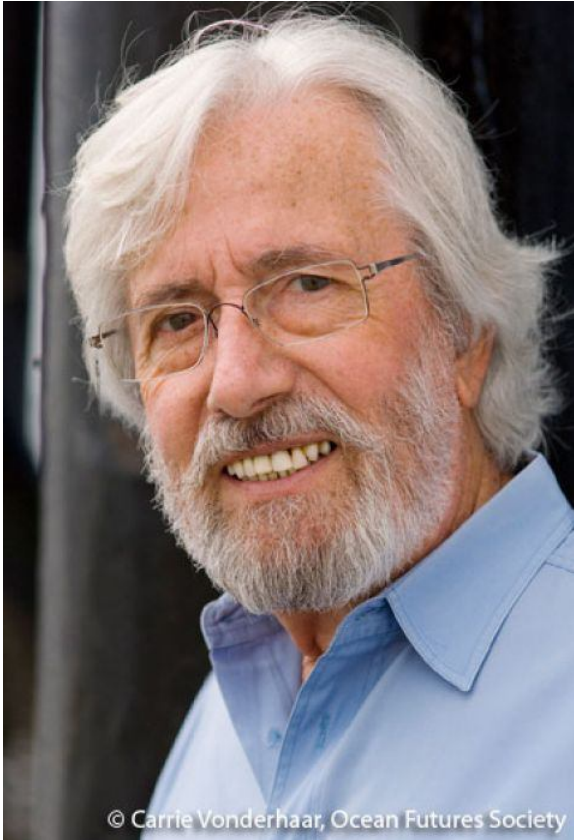


Canadian Museum of
Musée canadien de la
NATURE

Ressources naturelles
et Faune

Québec

When I was barely a teenager off the coast of Monaco, diving with one of the earliest SCUBA prototypes co-invented by my father, Jacques Cousteau and his friend Emile Gagnan, the Mediterranean was full of giant groupers and swirling schools of fish. I never questioned that it would always be that way. But these fish are now gone. There are plans and hopes to bring them back, but one message was clear--divers are at the threshold of change underwater and what we find can be invaluable as an early warning system. It is rare that an activity we love can also make a profound contribution and to engage divers in fish counts is one of those rare occurrences. The experience of diving is enhanced and these divers make a contribution to the undersea world we love as stewards for monitoring its health. I hope the Réseau des observateurs sous-marins and its members continue their work and realize the value of their contribution to us all.



Jean-Michel Cousteau

www.oceanfutures.org

