



# INFOCEANS

THE QUEBEC REGION BULLETIN — OCTOBER - NOVEMBER 2012/VOLUME 15/NUMBER 5

## MAURICE LAMONTAGNE INSTITUTE MARKS 25 YEARS A WEALTH OF DISCOVERIES THROUGH MARINE LIFE RESEARCH

This major Fisheries and Oceans Canada Francophone research centre has made many discoveries in its 25-year history. The following are just a few examples of some of the most remarkable research projects that have helped improve the fishing industry in Quebec.

### Northern shrimp

Significant research revealed that, over time, Northern shrimp have adapted to the oceanographic conditions in which they evolved to provide their larvae with optimal conditions for survival. The research also showed that water temperature and phytoplankton production affect the rate of survival and growth of the shrimp larvae.

### Lobster

Research on female lobster collected from various fishing sites in the Gulf of St. Lawrence revealed something astonishing! Larvae size does not necessarily correlate with the size of the female. In fact, larvae size increase according to the number of times the female has reproduced.

### Scallop

Surprising results were obtained by testing the efficiency of scallop dredging. Thirty years ago it was believed that dredging a scallop bed harvested only 10 to 20% of the resource, when in fact it harvests 40 to 70%. Based on this information, the fish management measures scale has changed completely!

### Mackerel

More recently, a major breakthrough made it possible to determine the impacts of climate change on the distribution of Atlantic mackerel in the Gulf of St. Lawrence. It seems that this fish has specific thermal preferences: between 7 and 15 degrees Celsius. The research also revealed that there is a close relationship between zooplankton production, such as *Calanus*, and mackerel recruitment, because mackerel larvae feed on young *Calanus*. More zooplankton therefore means considerably more mackerel, a significant commercial species.



Snow crab

DFO F. Servant

### Snow crab

In the early 1990s, our scientific teams showed that the abundance of snow crab varies according to an approximate eight-year cycle, which includes periods of abundance and scarcity. The discovery of these distinct reproduction qualities had a decisive impact on the management of this species' fishing.

### Blue Whale

Recent blue whale research has showed that whales have complex feeding habits. Not only can they access various marine habitats according to the tides, but they also use diving strategies that follow a very precise logic, combining the duration and depth of the dive with rest time on the surface. This allows them to get the most food for their efforts.

Most of the research found here has appeared in popularized articles available online ([www.dfo-mpo.gc.ca/science/publications/article/index-eng.asp](http://www.dfo-mpo.gc.ca/science/publications/article/index-eng.asp)). Click on the Quebec Region to see all the themes!

Dominique Gascon  
Science

## NORTHERN SHRIMP OF THE GULF OF ST. LAWRENCE

### THE CHALLENGES OF RESPONSIBLE FISHING

A conference for all stakeholders of the Gulf of St. Lawrence Northern Shrimp industry will take place on December 11 and 12 at the Château Bonne Entente in Québec.

The theme of this conference is "Gulf of St. Lawrence Northern Shrimp: the challenges of responsible fishing." This fishery is currently at a crossroads. In 2008, Northern Shrimp fishing activities in the Gulf of St. Lawrence received the Marine Stewardship Council (MSC) certification. This certification recognizes and promotes sustainable fishing practices, such as those adopted by shrimpers in the Gulf of St. Lawrence. This certification is to be renewed soon.



A shrimper operating in Quebec.

The renewal of the MSC certification is an opportunity to reflect on what sustainable Northern Shrimp fishing in the Gulf of St. Lawrence means to the various stakeholders. The speakers, many of whom are from other countries, will address the following issues:

- History of the fishery;
- Technological aspects of fishing;
- MSC certification and the sustainable fishing framework;
- Income and markets.

For more information about this conference, contact Bernard Morin at 418-648-5891 or at [bernard.morin@dfo-mpo.gc.ca](mailto:bernard.morin@dfo-mpo.gc.ca).

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## CANADIAN COAST GUARD — 50 YEARS OF CHANGING WITH THE TIMES

A lot has changed at the Canadian Coast Guard (CCG) in 50 years.

For crew members, for example, leaving on a mission meant returning to port only at the end of the ship's mission. For trips to the Arctic, this meant leaving in June to return in late October. For these same missions today, crew members are assigned to an icebreaker for six weeks and are then entitled to a rest period for six weeks. Also, crew changes can now be carried out without relying on the ship's return to port because the crew travels out to the ship, wherever it is, thanks to CCG coordination and modern transportation methods.

With such long distances to cover and such long months of absence, staying in contact with loved ones was not always easy. But today e-mail is accessible to all. Even if the system is not perfect, it still enables crew members to communicate with those on dry land. It wasn't that long ago that, when a CCG ship docked into port, there were seemingly endless lines of mariners waiting their turn to use the public telephones. Today, when Wi-Fi networks permit, mariners use their personal cell phones. They also

have access to satellite phones made available to them aboard ships.

### Other changes

In 1976, the CCG underwent a significant social transformation with the arrival of the first female aboard one of its ships. In 2012, women make up more than 10% of crews. They participate in every area of the profession, as Commanding Officers, Logistics Officers, Electricians or Marine Chief Engineers.

And what about the giant leap in occupational health and safety? In 1962, repainting a ship required only paint and a brush, and that's it. In 2012, based on the type of work, recommended paint and the chosen method, the same work may also require the use of overalls, gloves, safety goggles, and protective respiratory masks.

In addition, 50 years ago, working at heights required not having vertigo and having a good sense of balance. Today the same task requires training for working at heights, a harness connected to a fall prevention system, a safety helmet, and safety boots.



DFO C. Emery

A navigation officer at the helm of the CCGS *Pierre Radisson* around 1978.

In 50 years, the Canadian Coast Guard has navigated all kinds of seas and followed the tides of change, both socially and at sea!

Nathalie Letendre  
Communications

## CONSERVATION OF THE COPPER REDHORSE: WHEN EVERYONE LENDS A HAND

The *Recovery Strategy for the Copper Redhorse* under the *Species at Risk Act* is now online. It was developed by Fisheries and Oceans Canada, the Gouvernement du Québec and the recovery team, which consisted of several provincial and federal departments and organizations working in environmental protection.

The Copper Redhorse (*Moxostoma hubbsi*) is the only fish with a distribution range exclusive to Quebec. This very restricted area is limited to the St. Lawrence River and some of its tributaries. The Richelieu River is currently the only water-course where the Copper Redhorse reproduces. The abundance of the adult population is estimated to be a few hundred individuals at most. In December 2007, the Copper Redhorse was officially listed on the *Species at Risk Act* list as an endangered species.



COVABAR

### Threats

Several threats are hindering the Copper Redhorse's recovery: habitat degradation (sedimentation, shoreline development, organic pollution), construction of dams, contaminants, invasive aquatic species, recreational activities, fishing and low water levels.

Moreover, some of the Copper Redhorse's biological characteristics increase its vulnerability. First, its specialized diet restricts its distribution to areas where its prey is and, second, its late spawning period means that the young Copper Redhorse are still very small during their first winter. Lastly, the Copper Redhorse does not reproduce until at least 10 years of age.

### Priorities

The goal of the recovery strategy is a population of 4 000 mature individuals. The strategy's priorities are protecting known habitats, improving water quality, and stocking to support the population.

### Actions

A species characteristic of the Richelieu River ecosystem, the Copper Redhorse has been the focus of concerted conservation efforts for over 20 years. Here are two noteworthy initiatives:

- The implementation of two wildlife refuges in significant Copper Redhorse habitats;
- The restoration of agricultural effluents from the Richelieu River.

An important partnership network between various departments, municipalities, non-governmental organizations, and Quebec, Canadian and American universities, has been established to ensure actions are carried out.

The *Recovery Strategy for the Copper Redhorse* is now available online ([www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)) to anyone concerned about protecting this species.

Andréanne Demers  
Ecosystem Management

## Dispatches

### FORUM QUÉBÉCOIS EN SCIENCES DE LA MER: THE OPTIONS OF THE ECOSYSTEM APPROACH

On November 27 and 28, 2012, the *Table de concertation en sciences de la mer* will present the *Forum québécois en sciences de la mer*, whose theme is "The ecosystem approach applied to marine resources: exploring the options."

"It's been over 10 years since the ecosystem approach appeared on the landscape of marine sciences and technologies and, after a timid start, we are now committed to applying this concept to decision making," said Ariane Plourde, Science Regional Director at Fisheries and Oceans Canada and Forum co-chair.

For the 250 marine industry stakeholders who will gather at the Maurice Lamontagne Institute in Mont-Joli, the Forum offers a new fusion of scientific conferences and workshops to address the issue of the status of partnerships between communities, governments, industry and scientific institutes regarding the management of marine ecosystems and resource sustainability.

The *Forum québécois en sciences de la mer* will highlight the Maurice Lamontagne Institute's 25-year history and commemorate "November, Marine Sciences month," an initiative of the *Table de concertation*, which sought to present a series of events suitable for reflecting, collaborating and highlighting unparalleled advances in Quebec's maritime environment.

## CHANGES

### AT THE CANADIAN COAST GUARD



Marc Démonceaux

The Canadian Coast Guard's 50<sup>th</sup> anniversary is already drawing to a close. Throughout the year, *Infoceans* reminded readers of the organization's milestones, its mission and its many challenges. I hope you have enjoyed reading these stories.

As of January 2013, I will continue reading *Infoceans* as a retiree. After so many years with the Canadian Coast Guard, I can proudly attest to the professionalism and devotion of its personnel in saving lives and ensuring that our navigable waters are safe and accessible.

I would also like to welcome Mario Pelletier, who is, since October 1, the Assistant Commissioner for the Central and Arctic Region, which includes Quebec, Ontario and the Arctic. The changes to our organization's structure now reflect the important St. Lawrence and Great Lakes navigation corridor.



Mario Pelletier

Mr. Pelletier has a bachelor's degree in nautical sciences from the Canadian Coast Guard College and a Marine Engineer's certificate. In 27 years of service at the Canadian Coast Guard, he has held many positions; the most recent was Director General of the Fleet at headquarters in Ottawa.

I am therefore fully confident in passing the torch to the new Assistant Commissioner. His in-depth knowledge of the Canadian Coast Guard is a definite value for the organization and its partners.

Marc Démonceaux, Outgoing Assistant Commissioner  
Canadian Coast Guard, Quebec Region

## A NEW BREAKWATER IN GROSSE-ÎLE

Of all of the work carried out by the Department as part of the stimulation phase of Canada's Economic Action Plan (2009–2011), one structure in particular held the attention of numerous stakeholders, both users and engineers: that of the breakwater in Grosse-Île in the Magdalen Islands.

This breakwater forms an artificial islet not attached to shore, which is rather rare. In fact, there are very few similar structures in Quebec, particularly in an area that is constantly affected by strong winds.

Why build this type of structure?

"First, it was to offer protection to fishing boats when they return loaded and perform the final manoeuvres to enter the harbour," said Yves Gingras, Chief Project Engineer at the Regional Small Craft Harbours Branch. At this particular site, the sea is agitated by strong currents and prevailing west-north-west winds. The breakwater's exact position is not mere coincidence; agitation studies were conducted to determine the breakwater's geometry, orientation and position.

Six metres high at its deepest section, the breakwater is nearly 60 metres long. It has been designed to intercept certain waves and reduce their strength. It is therefore entirely normal that crossing, or the ability of waves to overtake the structure, would occur.

Since the Magdalen Islands area does not have stones that are resistant enough for this construction, other stones had to be brought in from New Brunswick. Approximately seven tonnes of 2-metre wide stones were required to build this breakwater.

This project, considered daring by some because of climate constraints, was completed over a long period: fall 2010 to September 2011. The work was mainly carried out during winter, at an average of only about 10 hours per week in order not to interfere with fishing activities.

To date, comments from users seem positive. Fishers working in this area often face strong marine currents that wreak havoc on this area. It's clear that the breakwater is doing the work it was designed for, but the real test will come in the fall, when the prevailing winds will be north-west.



DFO

Lyne Beaumont  
Small Craft Harbours

## ATLANTIC BLUEFIN TUNA AT RISK — THE CONSULTATION IS UNDERWAY

Fisheries and Oceans Canada is studying whether to list Atlantic bluefin tuna on the List of Wildlife Species at Risk and encourages people and organizations concerned about the survival of this species to share their opinions before December 14, 2012.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has determined that this species is at risk of disappearing. It reports that overfishing continues despite the fact that the number of adults able to spawn is the lowest it has ever been. In addition, a portion of these adults (and probably also eggs and larvae) were exposed to oil spilled by the Deepwater Horizon rig in the Gulf of Mexico in 2010.

If the Atlantic bluefin tuna is listed on the list of protected species in Canada under the *Species at Risk Act* (SARA), its recovery will have to be planned and conservation measures will come into effect immediately.



DFO C. MacDonald

### A surprising fish

The bluefin tuna, a mythical fish with a profile similar to a torpedo, is an extremely efficient swimmer. It travels long distances through the water, from Newfoundland to the Gulf of Mexico. It is warm-blooded, a special feature that enables it to dive 1 000 metres and survive cold waters. This is an important advantage enabling the fish to feed itself in the abundant waters of the Gulf of St. Lawrence. This majestic fish can reach more than 3 metres long and weigh up to 400 kg.

### A wanted fish

Bluefin tuna is fished in Canada and international waters. Its management is mainly the responsibility of the International Commission for the Conservation of Atlantic Tunas (ICCTA). In Canada, ICCTA's allocation of 489 tonnes in 2012 was the subject of an integrated fisheries management plan. The delicate flesh of the bluefin tuna, destined for sushi and other refined meals, fetches a high price on a very lucrative market.

### Share your thoughts and concerns

A consultation guide will enable you to share your opinion about protecting the bluefin tuna under SARA. It is accessible from the Species at Risk Public Registry website at [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca). For more information, contact Fisheries and Oceans Canada's Species at Risk Management Division at 1-877-775-0848.

Myriam Bourgeois  
Ecosystem Management

## A HELPING HAND TO RECREATE A WETLAND

Have you heard of the term “compensation project?” The purpose of the project is to compensate for the deterioration, destruction or disturbance of fish habitat caused by development projects, such as harbour infrastructure construction, modifications or dismantling.

To compensate for the loss of fish habitat caused by repairs to the dock in Grandes-Bergeronnes and the construction of a boat launch in Anse-aux-Basques at Les Escoumins, Fisheries and Oceans Canada sought a compensation project that could be carried out near the work site or elsewhere. The primary goal of the compensation is to maintain or increase the productivity of the species that contribute to fishing.



DFO M. Nicol

Dike enhancement at Ha! Ha! River

As a result, in July 2011, a project to recreate a major wetland located at the mouth of the Ha! Ha! River at the city of Saguenay was chosen. Fisheries and Oceans Canada, in cooperation with the Saguenay

Priority Intervention Zone (ZIP) Committee and many partners, developed the fish habitat. Before the Saguenay floods in 1996, this wetland supported a significant population of fish typical to this type of habitat; its restoration should make it possible to recreate that wetland.

### Enhancement of a lagoon for fish habitat

The western side of the Ha! Ha! River delta was home to a small 660 m<sup>2</sup> lagoon. It consisted of a stone dike in its upper portion, a structure erected during the 1996 floods to enable heavy machinery to perform various rehabilitation work, such as cleaning or stabilizing the shoreline. A small brackish marsh developed and today this habitat is used by, among other things, a species of zooplankton and the Banded Killifish (*Fundulus diaphanus*). The presence of the Banded Killifish has only been confirmed in four lakes in this area and two locations in the brackish waters of the Saguenay Fjord.

Enhancing the dike made it possible to increase the Banded Killifish's reproduction, rearing and feeding areas and sufficiently increase the water level to ensure the development of this species. Before this, this environment was virtually becoming dry during low tides and the aquatic wildlife was at risk. Corrective measures expanded the lagoon's usable area from 662.2 m<sup>2</sup> to 2 560 m<sup>2</sup>, for a habitat increase of 1 898 m<sup>2</sup>.

“The extraordinary thing about the project,” said Mario Nicol of the Regional Small Craft Harbours Branch, “is that we were able to witness the results almost immediately once the dike was complete by observing the tides coming in and going out. The fauna re-discovered its habitat!”



DFO M. Nicol

The new wetland made it possible to increase the Banded Killifish's reproduction area.

This environment will also become an interpretation site for young people visiting the Fjord Museum. These educational outings will make it possible for youth to discover the richness and importance of preserving lagoons and wetlands with considerable ecological significance.

### Did you know?

The Banded Killifish is mainly found in shallow areas and lays its eggs on the stems of aquatic plants. The presence of American bulrush, Seaside-Plantain, Sea-Milkwort and a small colony of sedges in the marsh plays a crucial role in this species' reproduction. The Banded Killifish is an example of a population that should represent a key element of the Fjord's ecological diversity.

Lyne Beaumont  
Small Craft Harbours

## New publications

### NEW SCIENCE ADVISORY REPORTS ONLINE

The following science advisory reports are now available on the Canadian Science Advisory Secretariat's Web site, [www.dfo-mpo.gc.ca/csas](http://www.dfo-mpo.gc.ca/csas), in the *Publications* section, *Science Advisory Reports (2005+)* for 2012:

- Reference points for redbfish (*Sebastes mentella* and *Sebastes fasciatus*) in the northwest Atlantic (2012/004)
- Assessment of the northern Gulf of St. Lawrence (3Pn,4RS) cod stock in 2011 (2012/005)
- Assessment of the Stimpson's surfclam stocks of Quebec coastal waters in 2011 (2012/009)
- Assessment of Lobster Stocks of the Magdalen Islands (LFA 22), Quebec in 2011 (2012/012)
- Assessment of Quebec Coastal Waters Whelk Stocks in 2011 (2012/013)
- Assessment of Lobster Stocks of the Gaspé (LFAs 19, 20 and 21), Quebec in 2011 (2012/015)
- Assessment of the Lobster Stocks of the North Shore (LFAs 15, 16 and 18) and Anticosti Island (LFA 17), Quebec, in 2011 (2012/020)
- Assessment of the West Coast of Newfoundland (Division 4R) Herring Stocks in 2011 (2012/024)
- Assessment of the Estuary and Northern Gulf of St. Lawrence (Areas 13 to 17, 12A, 12B, 12C and 16A) Snow Crab Stocks in 2011 (2012/030)
- Assessment of the Atlantic Mackerel Stock for the Northwest Atlantic (Subareas 3 and 4) in 2011 (2012/031)

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