



The Capelin Observers Network



Observer Kit
2009

Table Of Contents

Table Of Contents	ii
List of tables	iii
List of figures	iv
Introduction	1
The Capelin Observers Network (CON)	2
Highlights on the species: capelin	3
A little history	3
Ecological importance	4
Distribution	5
Identification	6
Breeding habitat	6
Beach spawning	6
Deepwater spawning	7
Description of the CON observation areas	7
Upper Estuary area	7
Lower Estuary area	7
Gulf / Moyenne-Côte-Nord (Middle North Shore) area	7
Gulf / Basse-Côte-Nord (Lower North Shore) area	7
Gulf / Gaspé Peninsula area	9
Gulf / Baie des Chaleurs (Chaleur Bay) area	9
Gulf / Îles-de-la-Madeleine (Magdalen Islands) area	9
2008 season highlights	9
Upper Estuary area	10
Lower Estuary area	12
Gulf / Moyenne-Côte-Nord area (Middle North Shore)	15
Gulf / Basse-Côte-Nord area (Lower North Shore)	18
Gulf / Gaspé Peninsula area	20
Gulf / Baie des Chaleurs (Chaleur Bay) area	23
Gulf / Îles-de-la-Madeleine (Magdalen Islands) area	23
Observer form	24

Front page photo credit (modified) : Alexandr Konstantinov.

Published by :
The Regional Oceans, Habitat and Species at Risk Branch
Fisheries and Oceans Canada
Mont-Joli, Québec, G5H 3Z4
www.dfo-mpo.gc.ca

©Her Majesty the Queen in Right of Canada, 2009

Cat. No. Fs124-6/2009E
ISBN 978-1-100-12668-5

List of tables

Table 1. Date of capelin spawning observations between 2003 and 2008 in the Upper Estuary area.....	10
Table 2. Date of capelin spawning observations between 2003 and 2008 in the Lower Estuary area.....	13
Table 3. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Moyenne-Côte-Nord area (Middle North Shore)	16
Table 4. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Basse-Côte-Nord area (Lower North Shore)	18
Table 5. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Gaspé Peninsula area	21
Table 6. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Baie des Chaleurs (Chaleur Bay) area	23

List of figures

Figure 1. Dried capelin in the Gulf / Moyenne-Côte-Nord area. Photo: Mireille Dumond, Comité ZIP Côte-Nord du Golfe.....	3
Figure 2. Recreational capelin fishery in the lower estuary. Photo: Louise Proulx.....	4
Figure 3. Capelin beached on the shore. Photo: Virginie Provost, Comité ZIP Côte-Nord du Golfe.	4
Figure 4. Global distribution of capelin (areas in black) (redrawn from Ross, 2005).....	5
Figure 5. Male and female capelin a) pectoral fin b) anal fin c) abdomen	6
Figure 6. Capelin carried by the waves.....	6
Figure 8. Date of capelin spawning observations between 2003 and 2008 in the Upper Estuary area.....	11
Figure 9. Date of capelin spawning observations between 2003 and 2008 in the Lower Estuary area.....	14
Figure 10. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Moyenne-Côte-Nord area (Middle North Shore)	17
Figure 11. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Basse-Côte-Nord area (Lower North Shore).	19
Figure 12. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Gaspé Peninsula, Gulf / Baie des Chaleurs (Chaleur Bay) and Gulf / Îles-de-la-Madeleine (Magdalen Islands) area.	22

Introduction

The capelin spawning period is fast approaching. Every year, the Capelin Observers Network (CON) counts on the active participation of individuals interested in this small fish. If you are receiving this 2009 observer kit, it is because you have agreed to be part of a group of individuals who have volunteered to report information to the Network. This kit includes some basic information about the Network and about capelin, as well as the highlights of the 2008 spawning observation season in the estuary and Gulf of St. Lawrence. Finally, in order to facilitate data collection on spawning activities in your area, we have included a form listing the important factors to consider during your observations. These data help us to learn more about the conditions during spawning. Maps are also provided so that you can accurately indicate your observation sites.

Observers who received this kit in the past will notice some major changes in how the kit is organized. However, the Network's objectives and the information requested are similar.

Please feel free to provide any suggestions you may have for improving our data collection system. We wish you a good 2009 observation season and thank you for your interest in the CON.

The Capelin Observers Network (CON)

The Capelin Observers Network was established to gather more information about the beaches and other spawning sites in the estuary and Gulf of St. Lawrence in order to promote reproduction of this species. How many spawning sites are there? Which ones are used every year or only occasionally? Have there been any changes in capelin spawning habits? What influences the use of one beach rather than another? The CON is helping to directly answer these questions by gathering multi-year data. Knowledge about spawning sites also helps prevent disturbance of these habitats by human activities (example: shore work) during the critical fish reproduction period. It is good to know that recreational and commercial fishing activities in Quebec are not currently considered a threat to capelin since the size of the catch is small relative to the specie's abundance.

In addition, the data gathered by the Network could eventually contribute to an understanding of the impact of climate change, shoreline erosion or beach modifications on the capelin's habits and life cycle. Indirectly, this will improve our knowledge of the general functioning of the St. Lawrence ecosystem.

Efforts to monitor capelin spawning began in 2002 on the North Shore. In 2003, Fisheries and Oceans Canada (DFO), Quebec Region, and various partners, such as the ZIP (areas of prime concern) committees and coastal committees, developed a network of contacts to collect accurate data on the reproductive activity of this species in the estuary and Gulf of St. Lawrence.

The number of observers (recreational and commercial fishers, vacationers, coastal residents, scientists) has been increasing annually in Quebec's marine areas. The larger the number of observers who will join and continue to participate over the years, the greater the CON's contribution to the understanding of the capelin's life cycle and habitat requirements will be. Maintaining fish populations is part of DFO's objectives for the future of the recreational and commercial fisheries and for the health of the oceans.

Highlights on the species: capelin

A little history

As far back as 1830, capelin was recognized for its abundance, the quality of its flesh and the ease with which it could be fished. A contributor to the *Revue des deux mondes* (1831) wrote: “With a single haul of the net, I was able to completely fill the captain’s launch, to the point that there was hardly any room, forcing us to dig our legs into the catch [...]” In 1861, Jean-Baptiste Ferland, a historian and professor at Laval University, wrote in *Journal d’un voyage*: “These small fish travel in such dense schools that they sometimes make it difficult to move the oars through the water, their moving columns pursued by cod that arrive around the same time in these waters. While the capelin remains close to shore [...], two good fishermen can catch 300 to 600 cod per trip.”

Traditionally, there was little commercial fishing of capelin. In days gone by, people used capelin more as fertilizer for their crops, as cod bait, as dog food, to make fish meal or simply as a source of food. Capelin is also excellent smoked or dried. In the 19th century, crying babies were given pieces of dried capelin in the same way as pacifiers are given to babies today (Figure 1). At the 1856 Paris World’s Fair, capelin oil produced by the firm of Charles-Hilaire Têtu in



Figure 1. Dried capelin in the Gulf / Moyenne-Côte-Nord area. Photo: Mireille Dumond, Comité ZIP Côte-Nord du Golfe.

Rivière-Ouelle was recognized as a high-quality oil. The role of capelin in providing basic subsistence diet to North Shore families is undeniable. When factories began to open in Sept-Îles, people came from various parts of the province to settle there. They had no homes or food. According to *Une histoire de pêche*, a collection published by the Comité ZIP Côte-Nord du Golfe in 2008, capelin helped many ward off the threat of starvation. One account in this collection from a resident of Sept-Îles states: “We caught enough capelin in Gallix for 3,000 people [...]; there were so many people we hardly had time to cook the fish [...]”

Today, the capelin spawning period has economic, social and cultural impacts. For example, on the North Shore, this is primarily a festive event, as residents gather to celebrate the return of summer (Figure 2).



Figure 2. Recreational capelin fishery in the lower estuary. Photo: Louise Proulx.

At present, the commercial capelin fishery mainly serves the zoo market, where capelin is used as animal feed, and the Japanese market, which uses capelin roe as caviar. Capelin is still used as bait and to produce fish meal and oil. The two fatty acids (omega 3 and oleic acid) present in capelin oil lend it stability, which therefore gives it a longer shelf life than other omega 3-rich oils.

Ecological importance

Capelin is a key species in the St. Lawrence ecosystem (Figure 3). It represents a very important link in the marine food chain since it is consumed by a number of species of fish, seabirds and marine mammals including the beluga whale, the minke whale, the harbour seal, cod, salmon, the northern gannet and the razorbill. Capelin is considered the main prey of cod, which sometimes even follows capelin to the shore when it rolls onto the beaches.



Figure 3. Capelin beached on the shore. Photo: Virginie Provost, Comité ZIP Côte-Nord du Golfe.

In the mid-1980s, annual consumption of capelin by its main natural predators was estimated at approximately 1 million tonnes (80% of total mortality), compared to 10,000 tonnes by fishing. In the early 2000s, despite the significant decline in cod and redfish stocks, it was estimated that nearly 400,000 t of capelin were consumed by these predators. This small fish is the main forage species (food source) in the ecosystem of the northern Gulf of St. Lawrence.

Consequently, although the commercial fishery is not believed to significantly affect the quantity of capelin, prudence is warranted since many other species, both commercial and non-commercial, feed on this fish. The fact that the species is heavily dependent on beaches to reproduce makes it more vulnerable, since any decline in the quality and

number of breeding habitats could have significant effects on the populations of capelin and its predators.

Distribution

Capelin is found in the Arctic and sub-Arctic regions (Figure 4). In the Arctic Circle, it is abundant in the Barents Sea. It is also present all along the Russian coast, in the Bering Strait and the Beaufort Sea. However, its abundance there is more difficult to estimate due to the ice cover. Its distribution in the waters off Greenland and Iceland overlaps the Arctic Circle and the Atlantic Ocean. Further south, it is found along the coast of Labrador and the coast of Newfoundland, in the Grand Banks area, and in the estuary and Gulf of St. Lawrence. On the European side of the Atlantic Ocean, it is occasionally found along the coasts of Norway. In the Pacific Ocean, it is found along the coasts of British Columbia and Alaska, in the Sea of Okhotsk (Russia) and as far south as the Sea of Japan.

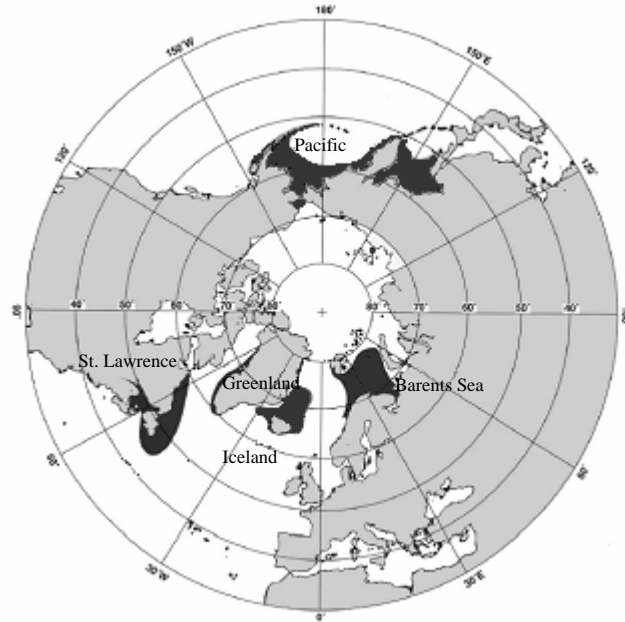


Figure 4. Global distribution of capelin (areas in black) (redrawn from Ross, 2005).

The distribution of capelin can vary depending on the year. For example, it was observed in Halifax and in the Gulf of Maine in the early 20th century, and in the Bay of Fundy during the 1960s. Since the mid-1980s, its range has been gradually expanding to include the eastern part of the Scotian Shelf.

Identification

Capelin is a small, olive-coloured, cold-water pelagic fish from the family Osmeridae (along with rainbow smelt). While all individuals are slender, males and females have different physical characteristics during the breeding season (Figure 5). The male has overdeveloped pectoral (a) and anal fins (b) which it uses to grasp the female and to dig a depression in the bottom to bury the eggs and milt. The female can be recognized by her abdomen swollen with eggs (c). In addition to these characteristics, capelin has a villous band on the lateral line, hence its Latin name, *Mallotus villosus*, meaning villous or hairy.

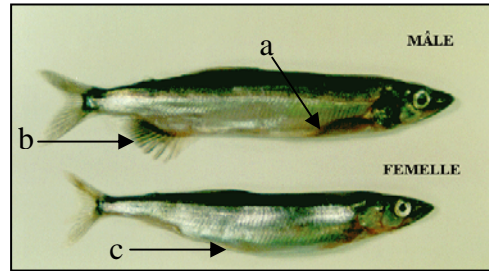


Figure 5. Male and female capelin a) pectoral fin b) anal fin c) abdomen.

Depending on the population and the year, capelin can vary significantly in size. In the waters of the St. Lawrence, individuals can reach up to 20 cm in length, with males being larger than females. The capelin found along the coast of Labrador can reach lengths of nearly 30 cm. Capelin lifespan is estimated at five or six years, and the species reaches sexual maturity around the age of three.

Breeding habitat

During the breeding season, capelin begin an intensive migration to the coast and spawn on beaches or in deep water (up to depths of 280 metres).

Beach spawning

When capelin reproduce on the shore, this is called “rolling” or “landing,” literally on sandy or fine gravel beaches. Spawning occurs mainly when the water temperature is between 6° and 10°C and is most commonly observed at night. In the estuary and Gulf of St. Lawrence, the capelin “roll” on the shores between mid-April and July. They rely on the tides to carry them to the beach (Figure 6). At the spawning sites, the capelin form banks of opposite sexes. The males reach the beaches first and await the females. When the females arrive, the males grasp onto them and, together, they dig a depression in the bottom using rapid tail movements to deposit the eggs and milt. A sticky substance on the reddish-coloured eggs enables them to remain attached to the sand or gravel substrate until the larvae hatch.



Figure 6. Capelin carried by the waves.

Following this intense activity, the capelin may remain inactive for a few seconds before heading back toward the sea. A large proportion (more than 90%) of capelin die after spawning, especially the males that are injured during repeated mating on the sand or gravel. After spawning, it is not unusual to see large quantities of dead capelin on the beach or in the water.

During spawning, capelin give off a very characteristic cucumber odour. For local residents, this odour is a tell-tale sign that the capelin are spawning.

Deepwater spawning

Deepwater spawning grounds also have substrates composed of gravel and sand and must be located in an area that provides good oxygenation of the eggs. Spawning grounds may be found at depths ranging from several metres to 280 metres.

Description of the CON observation areas

For this publication, the previous areas were reviewed and revised in order to standardize the names and geographic boundaries with the areas in DFO's Fish Habitat Management Information System (FHAMIS) (Figure 7). The following is a brief description of each of these areas.

Upper Estuary area

The Upper Estuary area extends from Saint-Joachim to Baie-Sainte-Catherine on the north shore of the St. Lawrence, and from Montmagny to Cacouna on the south shore.

Lower Estuary area

The Lower Estuary area extends from Tadoussac to Baie-Trinité (Pointe-des-Monts sector) on the north shore of the St. Lawrence, and from Isle-Verte to Les Méchins on the south shore.

Gulf / Moyenne-Côte-Nord (Middle North Shore) area

The Moyenne-Côte-Nord area stretches from Baie-Trinité (Pointe-des-Monts sector) in the west to Natashquan (Pointe-Parent sector) in the east. Anticosti Island is also included in this area.

Gulf / Basse-Côte-Nord (Lower North Shore) area

The Basse-Côte-Nord area stretches from Natashquan (Pointe du Vieux Poste sector) in the west to the Labrador border in the east.



Figure 7. Map showing the various CON observation areas according to the FHAMIS classification.

Gulf / Gaspé Peninsula area

The Gaspé Peninsula area encompasses the entire north shore of the Gaspé Peninsula. It stretches from Cap-Chat (Capucins sector) in the east to Grande-Rivière in the west.

Gulf / Baie des Chaleurs (Chaleur Bay) area

The Baie des Chaleurs (Chaleur Bay) area encompasses the coastal zone south of the Gaspé Peninsula. It extends from Grande-Rivière in the east to the mouth of the Restigouche River in the west.

Gulf / Îles-de-la-Madeleine (Magdalen Islands) area

The Îles-de-la-Madeleine area takes in all the islands of the archipelago.

2008 season highlights

This section presents the locations where capelin spawned during the 2008 season according to the observation areas described above. Maps of each area are provided, with the locations of last season's and previous years' observations. The summary tables indicate the dates of these observations by municipality. The site names were standardized according to the *Commission de toponymie du Québec*, taking into account the effect of municipal mergers that resulted in the creation of sectors. For example, Gallix is now a sector of the Municipality of Sept-Îles.

In total, 198 observations spread over 41 municipalities and sectors were recorded in the seven observation areas in 2008. The Gulf / Moyenne-Côte-Nord (Middle North Shore) area has had the highest number of observations (61.6%), followed by the Gulf / Gaspé Peninsula area (13.6%) and the Lower Estuary area (12.%).

Although the CON has been in existence for seven years, 11 new sites (in total) were inventoried in 2008 in five of the seven areas. It is interesting to note that a first record was reported for the Îles-de-la-Madeleine (Magdalen Islands).

A large body of data on capelin spawning habits has been compiled since the CON was first established. These data generally confirm that capelin spawns on sandy or fine gravel beaches. Most spawning observations were made between sundown and sunrise with wave heights of less than five feet (1.5 metres). The spawning period begins earlier in the western part of the Upper Estuary (April to mid-June), later extending to the east, in the Gulf / Basse-Côte-Nord (Lower North Shore, from June to early July).

In 2008, several participants reported that the capelin had stopped rolling for a certain number of years in their area. Some pointed out that the beaches had been altered (e.g. riprap) or had been significantly eroded, resulting in the complete or partial disappearance of sand and/or fine gravel.

Upper Estuary area

As has been the case every year since the establishment of the CON, weir fishers from Saint-Irénée observed capelin spawning in their fishing area. In 2008, spawning in this location was reported from mid-May to mid-June (Table 1, Figure 8). Other spawning observations were reported for Batture-aux-loups-marins upstream of Île-aux-Coudres, at the southwestern tip of the island, as well as on the northwestern tip in the coastal area of Les Éboulements. For this part of the area, the capelin spawning period in 2008 ran from April to early June. The Atlantic sturgeon fishers who fish in the Batture-aux-loups-marins reported that they found large quantities of capelin in sturgeon stomachs.

Table 1. Date of capelin spawning observations between 2003 and 2008 in the Upper Estuary area.

Location	2003 to 2006	2007	2008
Saint-Irénée	April, May 2003		
	May, June 2004, 2006	May 21 to mid-June	May 13 to June 18
	May, June, July 2005		
La Malbaie (Port-au-Saumon)*	June 2005	---	---
Île-aux-Coudres	---	June 4 to 6	April to early June

Legend: *The names in parentheses represent sectors of municipalities.

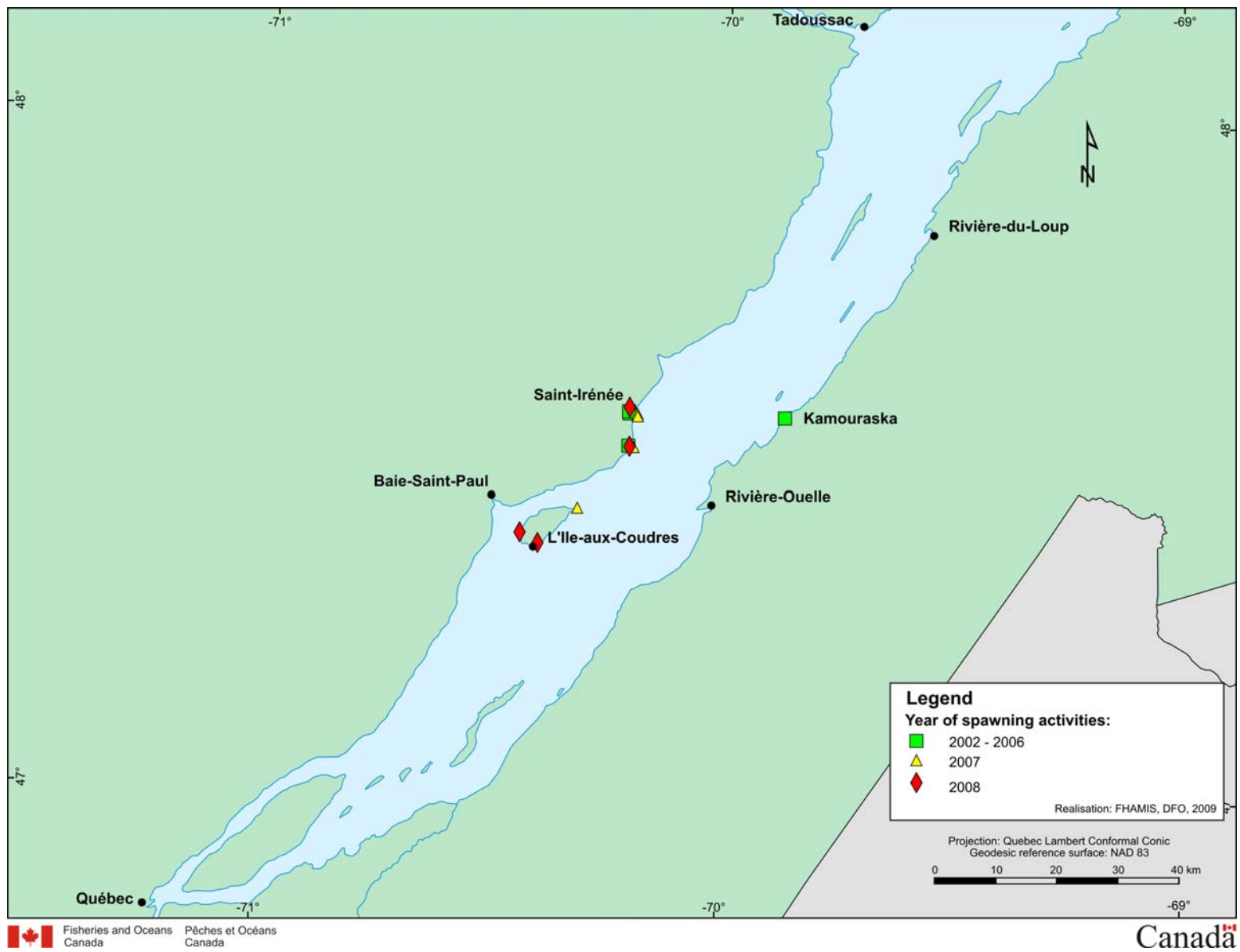


Figure 8. Date of capelin spawning observations between 2003 and 2008 in the Upper Estuary area.

Lower Estuary area

On the north shore of the lower estuary, spawning was observed only at Portneuf-sur-Mer in May (Table 2, Figure 9).

However, on the south shore of this area, observers reported considerably more activity. In fact, there were numerous records of capelin spawning in 2008 and four new municipalities are on the list of breeding sites for this species (Rimouski, Sainte-Flavie, Métis-sur-Mer and Matane). The records of spawning activity on the south shore of this area in 2008 extended from mid-May to early July.

One unusual observation was made at the mouth of the Rimouski River, when schools containing thousands of fish (identified as capelin by the observer) were observed at low tide. It will be interesting to verify whether this type of observation is repeated in 2009 at this site and whether this actually involved spawning activity.

At Saint-Fabien-sur-Mer, one observer reported that such large numbers of capelin rolled one evening in June 2008 that 3-foot (1-metre) waves were full of capelin.

Table 2. Date of capelin spawning observations between 2003 and 2008 in the Lower Estuary area.

Location	2003 to 2006	2007	2008
<u>North Shore</u>			
Les Escoumins	April 2003	---	---
Portneuf-sur-Mer	May 2003 May, June 2004, 2005, 2006	May 23	week of May 5, May 22
Colombier	May, June 2005	May 25	---
<u>South Shore</u>			
Kamouraska	June 2003	---	---
St-Simon (St-Simon-sur-Mer)*	June 2003	---	---
St-Fabien (St-Fabien-sur-Mer)	May, 2006 June 2003, 2004, 2005	---	June 16 to 23
Le Bic	---	early June	---
Rimouski (Rimouski)	---	---	June 9**
Rimouski (Pointe-au-Père)	---	---	May 19 and 20 June 2***, 9 and 21
Ste-Luce	June 2003	---	June 8 and 9
Ste-Flavie	---	---	June 18
Métis-sur-Mer	---	---	June 18
Matane	---	---	July 2
Les Méchins	June 2004, 2006	---	---

Legend: *The names in parentheses represent sectors of municipalities.
 **Spawning activity to be validated.
 ***The days separated by commas represent individual observation days.

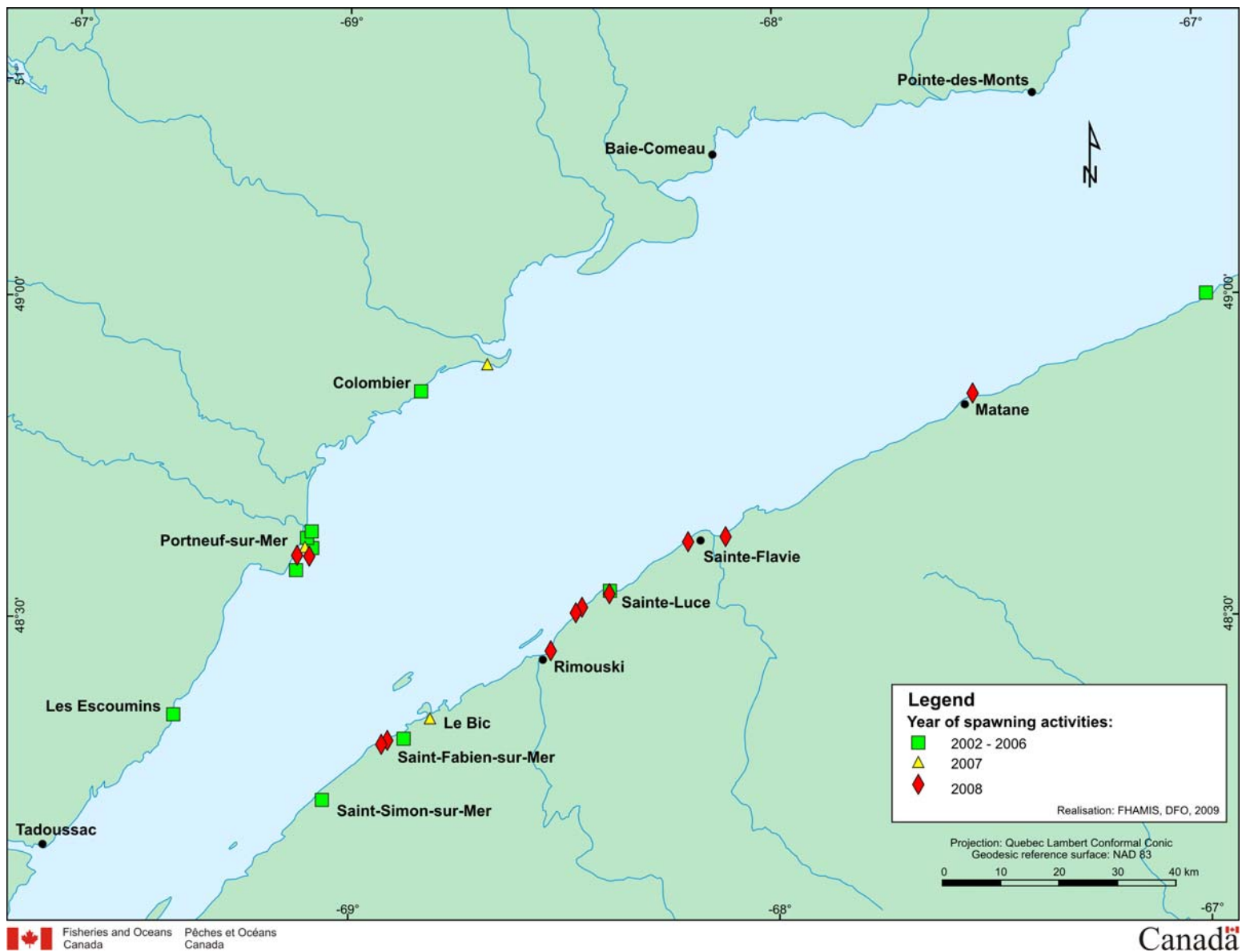


Figure 9. Date of capelin spawning observations between 2003 and 2008 in the Lower Estuary area.

Gulf / Moyenne-Côte-Nord area (Middle North Shore)

The Moyenne-Côte-Nord (Middle North Shore) appears to be the area most heavily used by capelin during the spawning period, based on the number of observations: 122 for 2008 alone (Table 3, Figure 9). Most of the observations were made in the vicinity of the beaches of Sept-Îles (Sept-Îles and Gallix sectors), Rivière-au-Tonnerre, Rivière-Saint-Jean (Rivière-Saint-Jean and Magpie sectors) and Aguanish. The Matamec (Municipality of Sept-Îles) and Rivière-Saint-Jean sectors (Municipality of Rivière-Saint-Jean) were reported as new locations where capelin spawning was observed in 2008.

The data collected indicate that large numbers of capelin rolled in the evening under clear skies with low wave heights. On the Moyenne-Côte-Nord (Middle North Shore), observers reported that spawning on sandy beaches could extend for kilometres. In 2008, the spawning observation period ran from May 10 to July 19.

Several interesting observations were reported. On June 25, 2008, in Aguanish, a cod was seen feeding in the midst of the mass of capelin. At Longue-Pointe-de-Mingan, observers reported grey seals, seagulls, cormorants and minke whale feeding on capelin. According to one observer from this municipality, the minke whale herded the capelin to the shore to trap them. This observer also observed a humpback whale feeding on capelin 300 metres from shore. In Aguanish, another observer reported seeing capelin being propelled out of the water by a fin whale as it fed on them.

On Anticosti Island, spawning activity was reported on the night of June 13 to 14 in the Rivière à la Chute sector (south slope of the island, west side). Dead but still fresh capelin were found on the morning of June 14.

Table 3. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Moyenne-Côte-Nord area (Middle North Shore).

Location	2002 to 2006	2007	2008
Îlets-Caribou	May 2005, 2006 June 2006	---	---
Port-Cartier (Pointe-aux-Anglais)*	May 2002, 2004, 2005, 2006 June 2006	May 17**, 24 June 1, 2	May 12
Port-Cartier (Rivière-Pentecôte)	May 2004, 2005	---	May 16 and 17, 28 et 29 June 6, 29
Sept-Îles (Gallix)	May, June 2003, 2005, 2006 June, July 2004	May 5 to 9, 12 to 15 June 9, 11	May 10 to 27 June 5, 13
Sept-Îles (Sept-Îles)	April, May, June 2002 May, June 2004, 2005 May 2006	April 9 May 14, 15, 24, 29 June 7	May 21 au 30 June 1, 4, 7
Sept-Îles (Moisie)	---	May 26	May 17
Sept-Îles (Matamec)	---	---	July 1
Rivière-au-Tonnerre (Sheldrake)	May 2005	---	July 10, 16
Rivière-au-Tonnerre (Rivière-au-Tonnerre)	June 2004 May 2005, 2006	June 8, 27, 30	May 18 to 27 July 6
Rivière-Saint-Jean (Magpie)	May 2006 June 2004, 2005, 2006 July 2006	May 24 to 29, 31 June 1, 3, 5, 6	23 to 30 May June 3 and 4, 11 et 12
Rivière-Saint-Jean (Rivière-Saint-Jean)	---	---	July 16
Longue-Pointe-de- Mingan (Longue-Pointe-de- Mingan)	May 2005, 2006 June 2002, 2004, 2005 July 2006	May 27	May 21 June 5 July 19
Longue-Pointe-de- Mingan (Mingan)	mid-May to mid-June 2006 June 2002	mid-May to mid-June	---
Havre-St-Pierre	June 2002, 2004 May, June 2005	May 31	mid-May to end of May
Aguanish	June 2002 May 2003 May, June 2004, 2005, 2006	May 29 to 31 1 to 5, 8, 12, 15 June	May 24 and 25 June 11 to 25 July 17
Natashquan	June and July 2006	June	---
Anticosti Island	June 2006 June, July 2004 July 2005	June 21 to 26, 30 July 1, 2, 4, 5, 9 and 10	June 14

Legend: *The names in parentheses represent sectors of municipalities.

**The days separated by commas represent individual observation days.

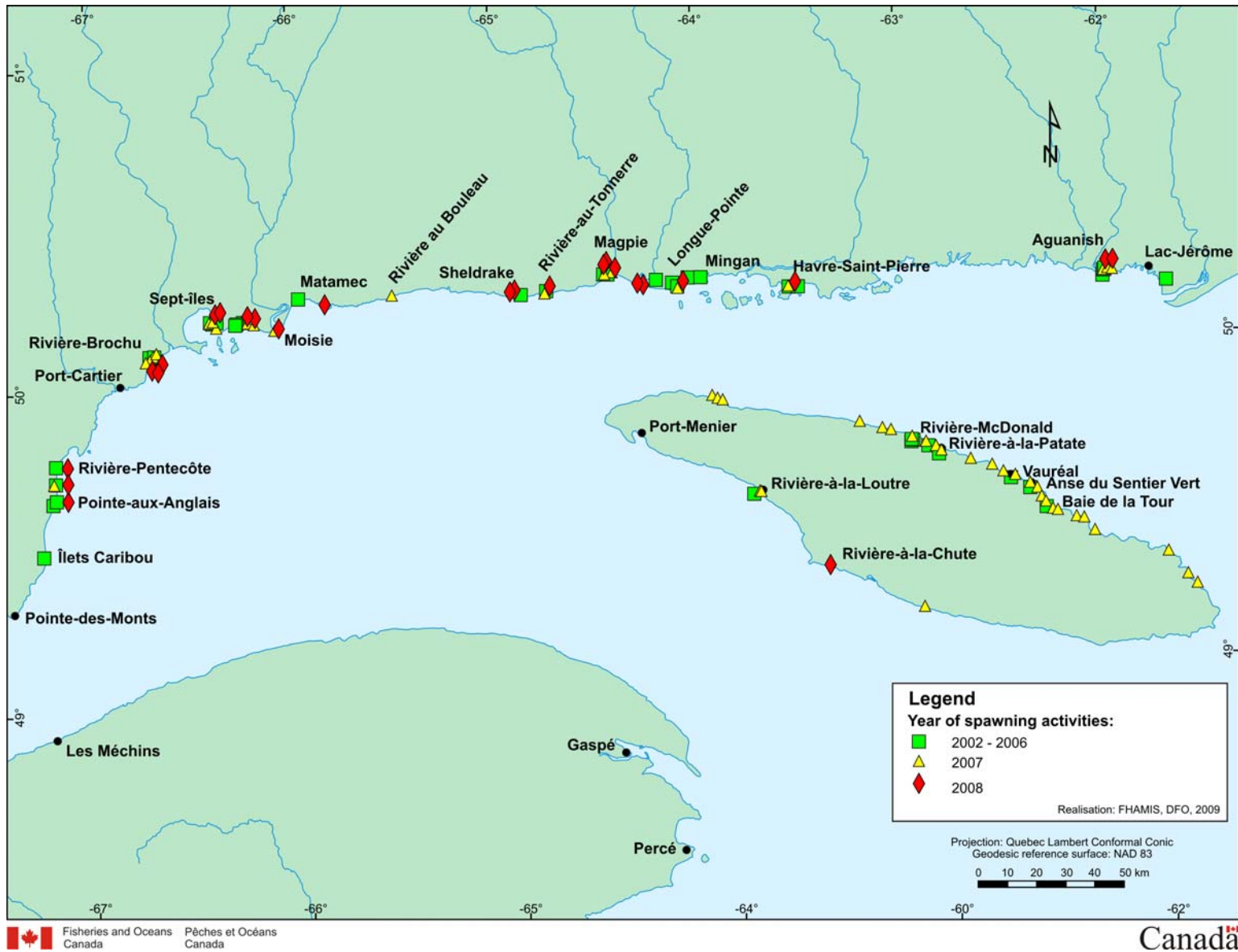


Figure 10. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Moyenne-Côte-Nord area (Middle North Shore).

Gulf / Basse-Côte-Nord area (Lower North Shore)

In 2008, two new sectors were added to the list of spawning sites where capelin were observed on the Basse-Côte-Nord (Lower North Shore), i.e. Kégaska (Municipality of Côte-Nord-du-Golfe-du-Saint Laurent) and Forteau in Labrador (Table 4, Figure 11). It was at these two new sites that the first observation (in May) and the last observation (in July) were made. The other observations were made in the last week of June in the Chevery sector (eastern beach of the Nétagamiou River) and the Lourdes-de-Blanc-Sablon sector (Anse-aux-Dunes) as well as in the Municipality of Blanc-Sablon.

According to one resident of the Blanc-Sablon sector, the quantity of capelin that spawn at this location is about 90% lower than it was 50 years ago.

Table 4. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Basse-Côte-Nord area (Lower North Shore).

Location	2002 to 2006	2007	2008
Côte-Nord-du-Golfe-du-Saint-Laurent (Kégaska)*	---	---	May 27
Côte-Nord-du-Golfe-du-Saint-Laurent (Chevery)	June 2004, 2005 July 2006	---	June 20
Blanc-Sablon (Lourdes-de-Blanc-Sablon)	June 2002, 2006 June, July 2004	June 24**, 27	June 29
Blanc-Sablon (Blanc-Sablon)	June 2006	June 28	June 27
Forteau in Labrador	---	---	July 1

Legend: *The names in parentheses represent sectors of municipalities.
**The days separated by commas represent individual observation days.

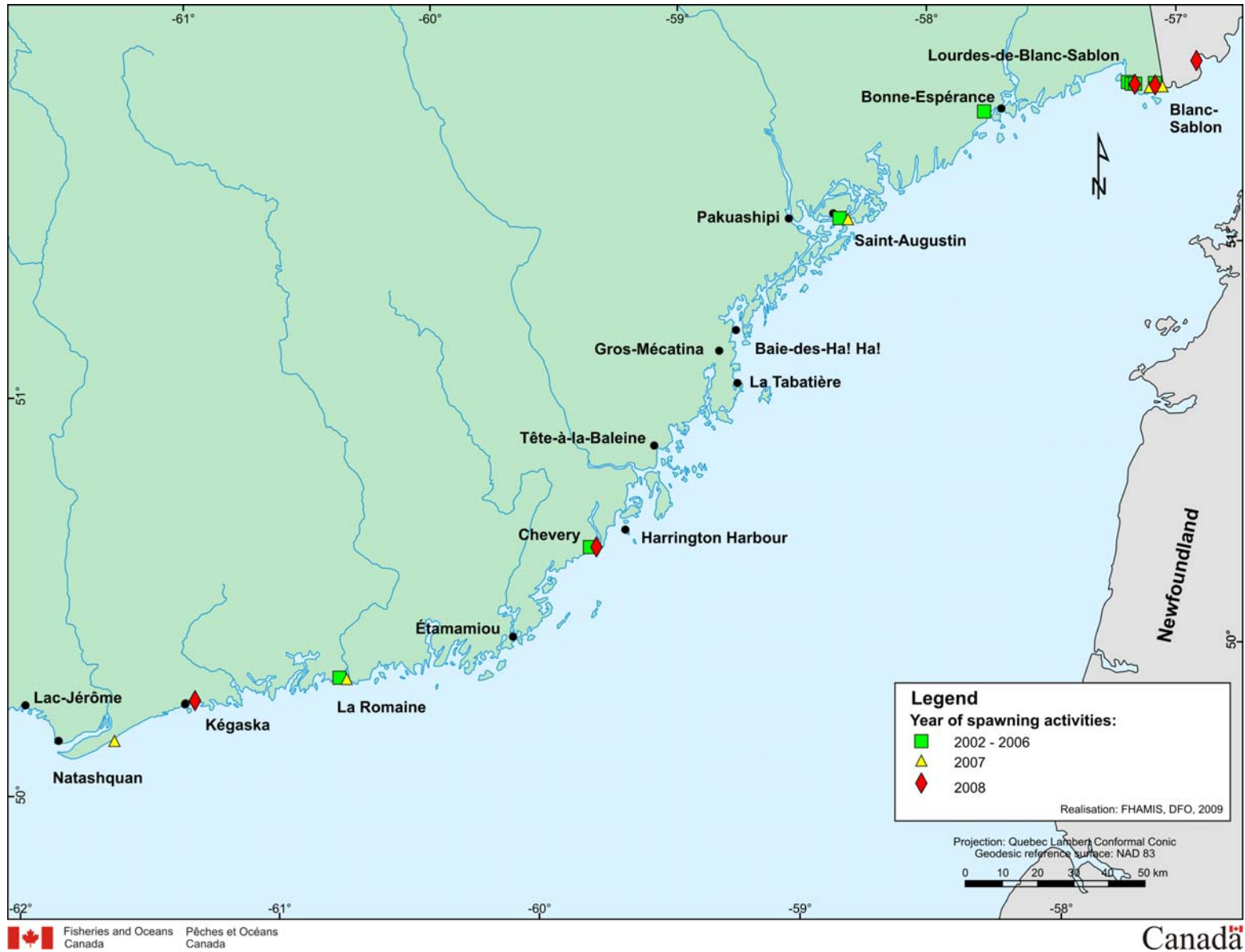


Figure 11. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Basse-Côte-Nord area (Lower North Shore).

Gulf / Gaspé Peninsula area

The Gaspé Peninsula area ranked second in terms of number of observations (27) reported in 2008 (Table 5, Figure 12). Two new spawning sites were inventoried in the Anse-à-Beaufils sector (June 18) and in the Municipality of Sainte-Thérèse-de-Gaspé (May 16).

In this area, observers reported that the capelin seemed to roll in the evening and in the middle of the night when the waves were small. The estimates of the numbers of spawning capelin ranged from low (e.g. Grande-Vallée, Gaspé (Cap-des-Rosiers)) to high (e.g. Cap-Chat, Sainte-Thérèse-de-Gaspé, Rivière-à-Claude).

At Cap-Chat, one observer indicated that 2008 was a record year in terms of the size and quantity of capelin.

A resident of Mont-Louis observed a shift in spawning capelin from Mont-Louis to Mont-Saint-Pierre over the past several years. According to this observer, erosion in the Mont-Louis sector has reduced the quantity of sandy beaches suitable for capelin spawning.

After several years spent observing capelin spawning, one observer at Rivière-à-Claude suggested that the capelin do not use the beach to roll when it is full of large debris, such as kelp carried by high winds. The presence of seagulls would indicate that the capelin spawn offshore.

Table 5. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Gaspé Peninsula area.

Location	2002 to 2006	2007	2008
Cap-Chat (Capucins)*	June 2004	---	---
Cap-Chat (Cap-Chat)	June 2004, 2006	May 27 to June 2	May 27 June 8
La Martre	June 2004, 2006	13 et 14 June	---
Sainte-Anne-des-Monts	---	---	May 26
Marsoui	June 2004	---	---
Rivière-à-Claude	June 2004, 2005, 2006 July 2004	one week early June	May 28 au 31 June 1 and 2, 4**, 7 to 9, 13
Mont-Saint-Pierre	July 2004	---	early June
Mont-Louis	June 2005	---	early June
Sainte-Madeleine-de-la-Rivière-Madeleine (Manche-d'Épée)	June 2004, 2005	---	---
Sainte-Madeleine-de-la-Rivière-Madeleine (Rivière-Madeleine)	June 2004	---	June
Grande-Vallée	June 2004, 2006 July 2006 August 2005	night and morning after June 24	June 14, 26 et 27
Gaspé (Saint-Maurice-de-l'Échourie)	2005, 2006	2007	---
Gaspé (Rivière-au-Renard)	mid-June 2006	mid-May to mid-June	---
Gaspé (Cap-des-Rosiers)	June 2005, 2006	June 25	June 4, 14, 16
Gaspé (Cap-aux-Os)	June 2004	mid-May to mid-June	---
Gaspé (Cap-Bon-Ami)	---	mid-May to mid-June	---
Gaspé (Gaspé)	June 2004, 2005, 2006 July 2004	mid-May to mid-June	---
Percé (Percé)	July 2005	June	---
Percé (Anse-à-Beaufils)	---	---	June 18
Percé (Petit cap Percé)	July, August 2005	---	---
Ste-Thérèse-de-Gaspé	---	---	May 16

Legend: *The names in parentheses represent sectors of municipalities.

**The days separated by commas represent individual observation days.

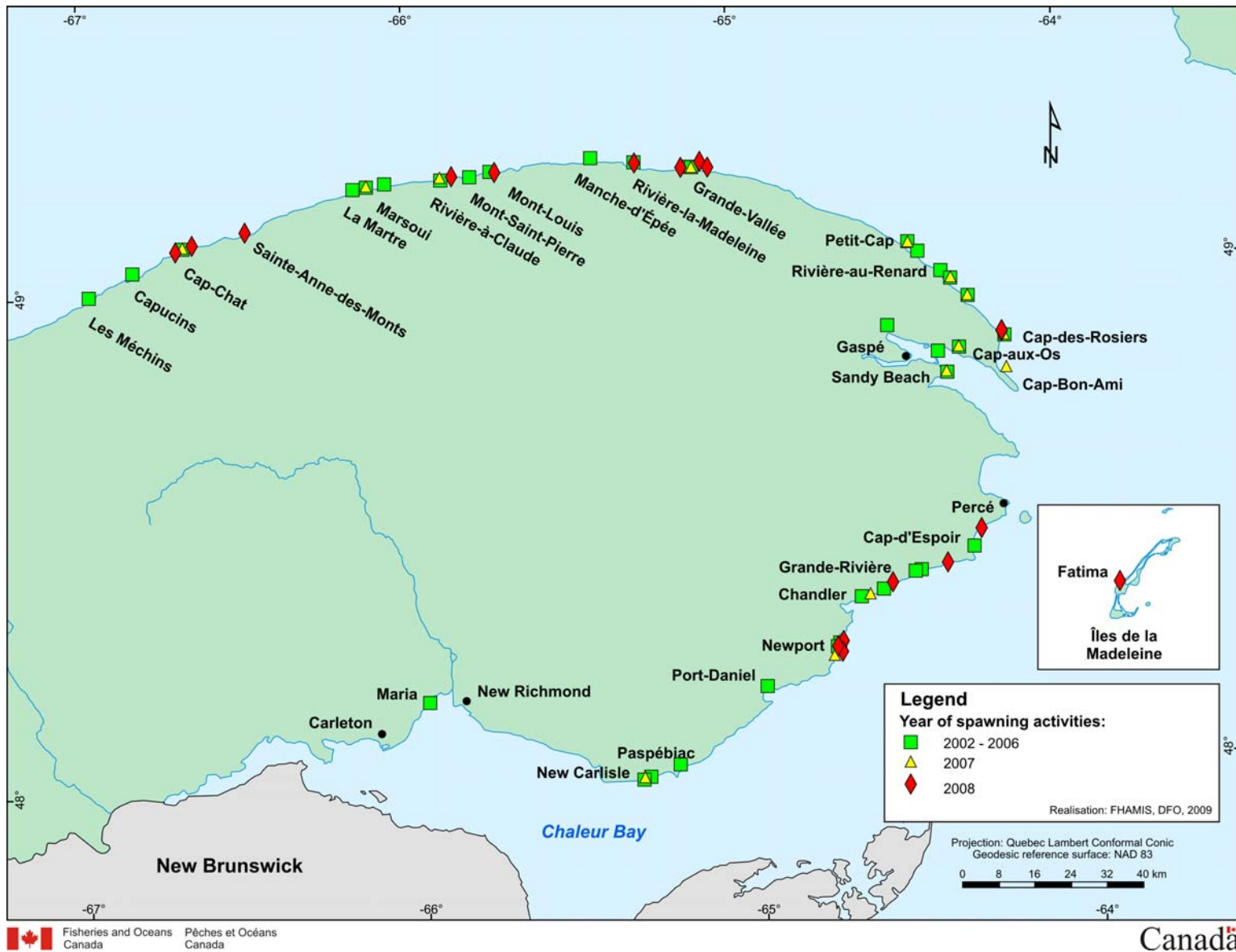


Figure 12. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Gaspé Peninsula, Gulf / Baie des Chaleurs (Chaleur Bay) and Gulf / Îles-de-la-Madeleine (Magdalen Islands) area.

Gulf / Baie des Chaleurs (Chaleur Bay) area

In 2008, the capelin rolled around mid-May in Newport and in June in Pabos, Chandler and Newport (Table 6, Figure 12), all sectors of the Municipality of Chandler. According to the observers, the quantities of capelin that rolled were high, but equal to previous years. However, according to available data, the breeding season was longer, extending until June.

Table 6. Date of capelin spawning observations between 2003 and 2008 in the Gulf / Baie des Chaleurs (Chaleur Bay) area.

Location	2002 to 2006	2007	2008
Grande-Rivière	2006	---	---
Chandler (Pabos)*	May 2006	---	June 18
Chandler (Chandler)	June 2006	2007	June
Newport (Chandler)	May 2005, 2006 June 2006	May	May 16**, 20 June 9
Port-Daniel-Gascon (Port-Daniel)	May, June 2003	---	---
Paspébiac	May 2003, 2004, 2005	---	---
New Carlisle	May 2005, 2006	May 19 and 20	---
Maria	May 2005	---	---

Legend: *The names in parentheses represent sectors of municipalities.

**The days separated by commas represent individual observation days.

Gulf / Îles-de-la-Madeleine (Magdalen Islands) area

According to local island knowledge, capelin were present in the Îles-de-la-Madeleine (Magdalen Islands) about 30 years ago. However, for the first time since the CON's establishment (2003), capelin spawning was observed on the shores of the archipelago by lobster and flounder fishers during the weeks of June 8 and 15, 2008 (Figure 12). They observed capelin rolling at only a single location, Cap de l'hôpital in Fatima (Municipality of the Îles-de-la-Madeleine). This is an interesting observation, but one that can only be interpreted in light of future observations.

Observer form

This form is designed to enable you to collect all the required information which, after it is submitted to Fisheries and Oceans Canada, will be used to prepare an overview of the situation in 2009 following the end of the season. Capelin spawning can be influenced by various factors; for instance, the type of beach, weather conditions, wave action and lunar phases appear to play an important role in capelin activity. The attached form, which is simple and easy to complete, will facilitate your task in documenting these factors and other aspects of interest.

The form includes:

A cover sheet with:

- *CON observation area* - This information is used during entry of the observation data to quickly assign the municipality to one of the areas in the Fish Habitat Management Information System (FHAMIS) where the spawning took place.
- *Your contact information.* This information will allow us to send you the proper documentation to support effective Network operations, and to get in touch with you if we have any questions about your data. Your contact information will remain confidential and will be used only for the purposes of the Capelin Observers Network.
- *A few questions about* - How do you know that this is the capelin spawning period and have you observed any changes in capelin spawning or the physical characteristics of the beach.
- *Return address.* Although a return envelope is included in the kit, the return address is given on the cover sheet for your information. You can keep any unused data sheets just in case you observe a late spawning. You can also call 1-877-227-6853 to submit your observations during the spawning period.

Data sheets on spawning activity (one sheet per observation).

- *Name* - We ask that you write your name at the top of each data sheet to facilitate processing.
- *Date and time of spawning activity* – Providing the exact dates and times enables us to assess the relation between spawning activity and any factors associated with those dates and times.
- *Type of observation* - It is important to differentiate between capelin rolling onto beaches (“landing”) to spawn and capelin present without depositing their eggs directly on the beach. “Spawning” represents the moment when the capelin roll onto beaches (land) and “presence” indicates any other sign of the capelin’s presence.
- *Location* – This section contains all the information that allows us to precisely determine the location of your observations, so that we can characterize the beaches where capelin spawn and determine whether capelin are “flexible” in selecting spawning sites. Note that a GPS location is very useful for digitizing

- *Weather and tide conditions* - You can indicate the approximate wind strength in km/h as well as the wind direction. It is also useful to indicate the temperature, whether the tide is rising or falling, as well as the approximate wave height.
- *Spawning evaluation criteria* - This information enables us to characterize the use of a spawning site by capelin from year to year.
- *Comments* - You can include other pertinent information. This includes the presence of marine mammals or birds, how long you have observed capelin offshore, or any other observation or comment you would like to share.

Maps:

- A map of the sector where you are likely to see capelin spawning on beaches is included on the back of the form.
- A map has been prepared for each zone considered a likely site for capelin beach spawning. If the map does not encompass the entire area of the usual spawning ground, please let us know; we will amend the map accordingly. Furthermore, should you see capelin spawning on other beaches or near other municipalities, we can send you additional maps.
- The map features the most visible landmarks (e.g. houses, streets, wharves, marinas).
- To indicate where you have observed capelin rolling onto beaches, circle the zone on the map, noting where the spawning activity was most intense.
- If you use other terms to name bays, coves or other spawning areas, you can enter them on the maps and we will make the changes for future years.

Thank you for your participation! With your help, we will be able to learn more about capelin. Feel free to contact the CON by telephone at 1-877-227-6853 if you have any questions regarding the data sheets.

Note: The pages included in the document are provided as examples only; you will find removable sheets in the envelope.

Capelin spawning data sheet

CON observation area:

Name:

Address:

Telephone number:

E-mail:

Where did you hear about the Network?

How do you know that this is the capelin spawning period?

Have you noticed any changes in capelin spawning in recent years (spawning data, spawning areas, etc.)?

Have you noticed any changes in the physical characteristics of the beach (erosion, alteration)?

Would you like to receive a copy of the 2009 report?

Yes

No

Would you like to receive a 2010 kit?

Yes

No

Capelin spawning data sheet

NAME _____

Date of observation (YY/MM/DD) _____ Time _____

Type of observation Spawning Presence Specify _____

Location

Municipality _____

Position (Latitude/Longitude) _____

Name of spawning site _____
(e.g.: name of the beach, of the cove)

Describe as precisely as possible the location of the spawning site (e.g.: 1 km east of Brochu River opposite a red house, intersection of Arnaud and Smith streets...)

Type of beach silt sandy gravel pebbles bedrock

Weather and tide conditions

Wind Strength (km/h): _____ Direction (wind coming from): _____

Temperature: _____ °C Clear skies Cloudy Light rain Heavy rain
(of the air) or

_____ °F Tide: Falling Low Rising High

Waves: Calm Low Moderate High
(nil) (- 2 feet (2 to 5 feet (+ 5 feet
 - 0.6 m) 0.6 to 1.5 m) + 1.5 m)

Evaluation criteria:

Quantity rolling at time of observation Low Moderate High

Length of time (how many days have the capelin been rolling **this season**) _____

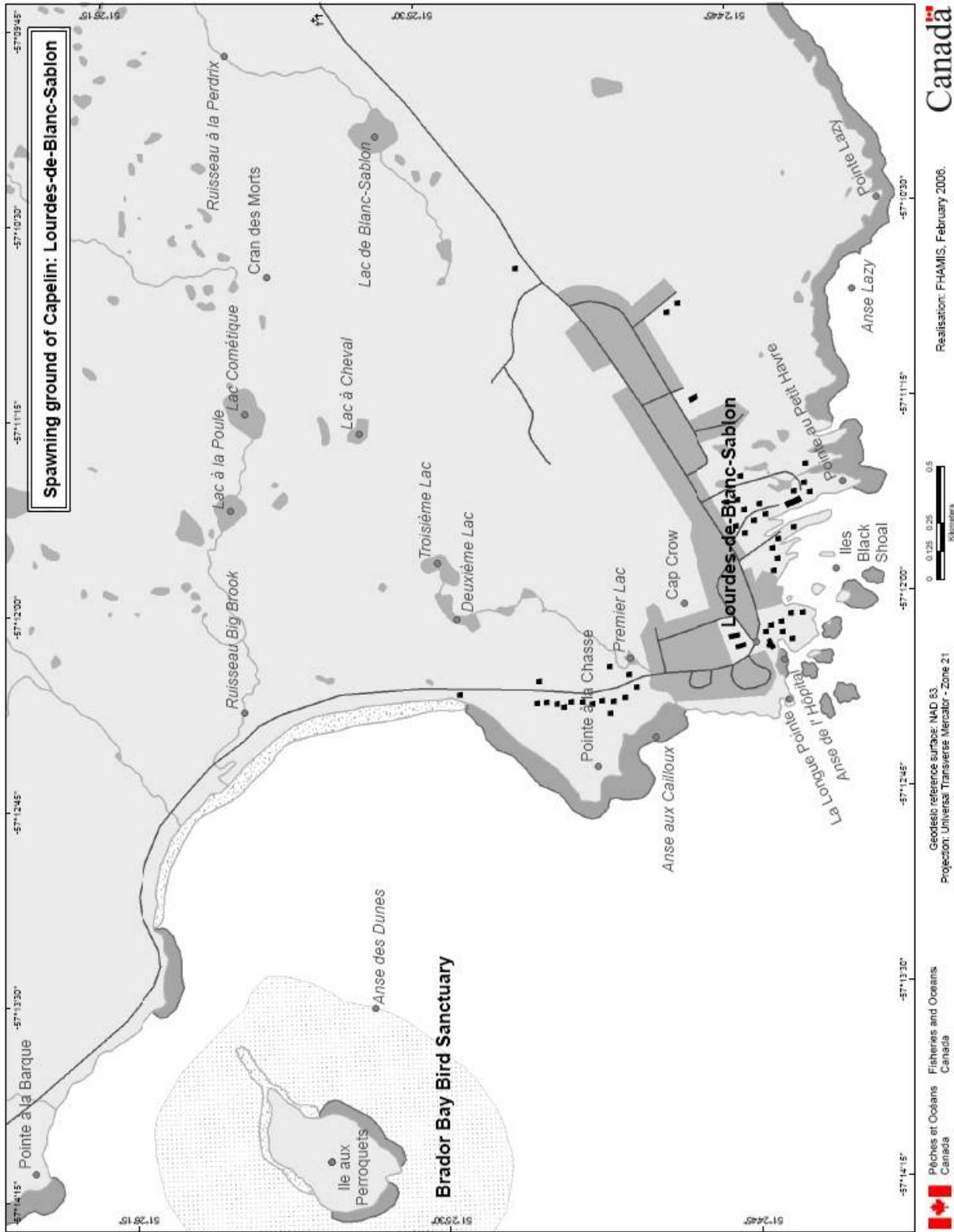
Comparison with previous years **for the entire season** Lower Same Higher

Length of the beach used for spawning (metres or feet) _____

Time required to fish (e.g.: 15 min / 5 gallons or 20 litres) _____

Comments: (discussions with other fishers, unusual behaviour, presence of predators...)

Map example



To submit your observations during the season, or if you have any questions, you can contact:

The Capelin Observers Network (CON)

Telephone: 1-877-227-6853

Fisheries and Oceans Canada would like to thank the collaborators listed below for their support in promoting and publicizing the Network and its work of collecting observation data. Thanks to these organizations, more people are learning about the Capelin Observers Network, which is essential to its objectives.

Comité ZIP Baie des Chaleurs
From Matapédia to Forillon



Comité ZIP du Sud-de-l'Estuaire
From Berthier-sur-Mer to Les Méchins



Comité ZIP de la rive nord de l'estuaire
From Tadoussac to Baie-trinité



Comité ZIP Côte-Nord du Golfe
From Baie-Trinité to Blanc-Sablon



Réseau d'observation de mammifères marins (ROMM)



Conseil régional de l'environnement Gaspésie-îles-de-la-Madeleine (CREGIM)

