



BELLEISLE BAY FISH AND FISH HABITAT

Context

A property owner in Belleisle Bay (northshore, near the car ferry), New Brunswick (approx. 45° 36`N and 65° 55`W), has infilled a significant portion of shoreline of the Lower Saint John River. This portion of the Lower Saint John River is under tidal influence. The shoreline is rocky with extensive tree and brush vegetation, and it is routinely flooded with the spring freshet.

The Habitat Protection and Sustainable Development Division in the Maritimes Region has asked Maritimes Science 1) what fish species would be expected to use this area of the Lower Saint John; and 2) how may the various life-history stages of fish species present use these flooded brushline areas (spatially and temporally)?

Response

Areas of the Saint John River that were sampled with a beach seine during the summers of 2000 and 2001 as part of a striped bass research project are shown in Figure 1. Two of the Belleisle Bay sites, which were located immediately upstream of the ferry landings on the north and south shores, were sampled in both 2000 and 2001. Catch was counted and identified to species.

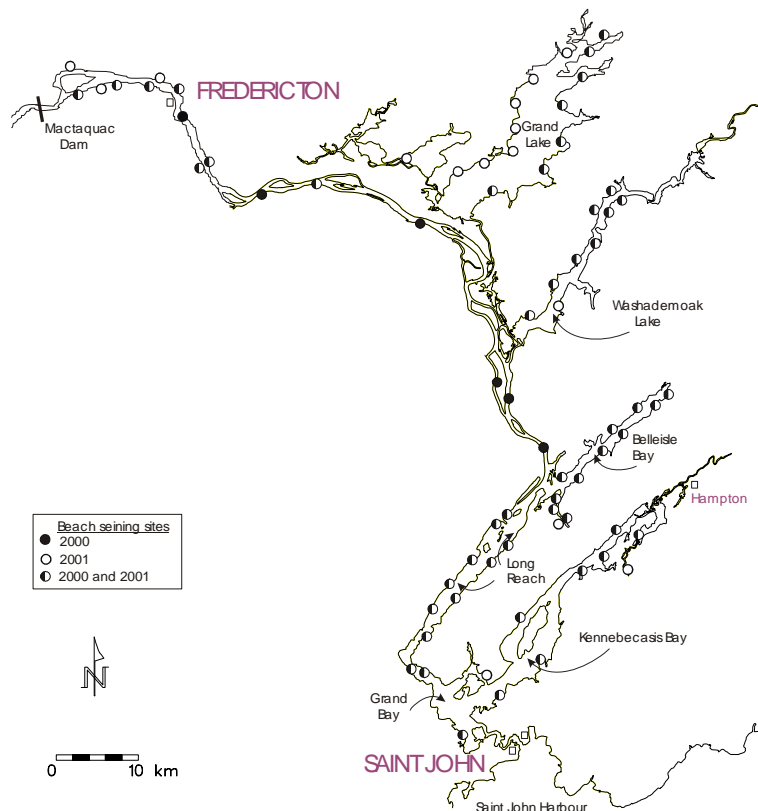


Figure 1. Location of beach seining sites on the Lower Saint John River from 2000-2001.

Species that were observed and/or recorded during beach seining and other DFO research activities include: alewife, blueback herring, American shad, rainbow smelt, chain pickerel, smallmouth bass, yellow perch, white perch, American eel, brown bullhead catfish, Atlantic salmon, white sucker, brook char, pumpkinseed, redbreast sunfish, burbot, and several species of minnows and stickleback.

Species that are considered likely to be present in the area during seasonal flooding events due to other information sources but that were not observed in beach seines include: striped bass, Atlantic sturgeon, shortnose sturgeon and brook char.

The life-history stages and likely activity of these species during the time of seasonal flooding is summarized in Table 1 to the extent possible.

Table 1. Information on the life-history stages and likely activity of species present in the area of interest during times of seasonal flooding.

Common name	Status at time of seasonal flooding	
	Life-history stage	Likely Activity
alewife	adult	Migrating through area
American eel	1) elvers	1) Both recruiting to and migrating through area
	2) sub-adult, adult	2) Resident (feeding, etc.)
American shad	adult	Migrating through area
Atlantic salmon	smolt, adult	Migrating through area
Atlantic sturgeon	Uncertain	Probable presence
banded killifish	larvae, sub-adult, adult	Resident (feeding, etc.)
blueback herring	adult	Migrating through area
brook (trout) char	sub-adult, adult	Probable presence
brown bullhead catfish	uncertain	Resident (feeding, etc.)
burbot	uncertain	Resident (feeding, etc.)
chain pickerel	larvae, sub-adult, adult	Resident (feeding, etc.)
minnows (Cyprinid sp.)	uncertain	Resident (feeding, etc.)
pumpkinseed	larvae, sub-adult, adult	Resident (feeding, etc.)
rainbow smelt	larvae, sub-adult, adult	Migrating through area
redbreast sunfish	uncertain	Unknown
shortnose sturgeon	uncertain	Probable presence
smallmouth bass	larvae, sub-adult, adult	Resident (feeding, etc.)
stickleback (<i>Gasterosteus</i> sp.)	Uncertain	Resident (feeding, etc.)
striped bass	sub-adult, adult	Probable presence
white perch	Uncertain	Probable resident
white sucker	Uncertain	Resident (feeding, etc.)
yellow perch	larvae, sub-adult, adult	Resident (feeding, etc.)

It should be noted that several species that are known or suspected to be present within Belleisle Bay, and therefore potentially within the area of seasonal flooding, are being considered as potential species-at-risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or have been designated as species-at-risk under the Species-at-Risk Act (SARA).

The current status of these species is provided in Table 2.

Table 2. COSEWIC and SARA status of species present in Belleisle Bay as of August 2007.

Common name	COSEWIC status	SARA status
American eel	Assessed as "special concern" (2006)	Response pending
Atlantic salmon ¹	Included on the 2007 call for bids (high priority)	-
Atlantic sturgeon	Species assessment in draft stage (no date set)	-
redbreast sunfish	Assessed as "special concern" (1989)	Special Concern
shortnose sturgeon	Assessed as "special concern" (2005)	Special Concern
striped bass	Assessed as "threatened" (2004)	Response pending
white perch	Included on the 2007 call for bids (mid priority)	-

It should also be noted that the lower Saint John River is thought to possess the highest freshwater fish diversity east of the Province of Quebec. The lower Saint John River represents the sole Canadian location for the shortnose sturgeon, is one of only a few known locations for Atlantic sturgeon and possibly striped bass, and represents the bulk of the known Canadian range for the redbreast sunfish. While the relative dependence on littoral habitat of the 35+/- species that occur in the river probably varies both among species and seasonally within certain species, there is a strong case to be made for its overall importance as fish habitat at local, regional and national scales. In other locations, seasonally flooded areas are known to be important for such things as pike spawning.

Finally, activities that alter habitat at one location (such as infilling of seasonal flooding area) can impact the quality or quantity of habitat in other locations by influencing important chemical or physical processes, such as current patterns.

Conclusions

Species that are known to occur in the lower Saint John River include: alewife, blueback herring, American shad, rainbow smelt, chain pickerel, smallmouth bass, yellow perch, white perch, American eel, brown bullhead catfish, Atlantic salmon, white sucker, brook char, pumpkinseed, redbreast sunfish, burbot, and several species of minnows and stickleback. Species that are considered likely to be present in the lower Saint John River include: striped bass, Atlantic sturgeon, shortnose sturgeon and brook char.

Use of these areas during the time of seasonal flooding is described in detail in Table 1. In general, the relative dependence on littoral habitat of the 35+/- species that occur in the river varies both among species and seasonally within species, but there is a strong case to be made for its overall importance of this area as fish habitat.

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¹ Atlantic salmon populations on the Saint John River and tributaries are well below conservation levels and harvests and directed catches are prohibited.

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