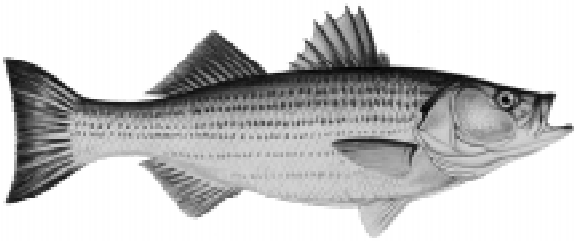


Striped Bass (*Morone saxatilis*) Southern Gulf of St. Lawrence

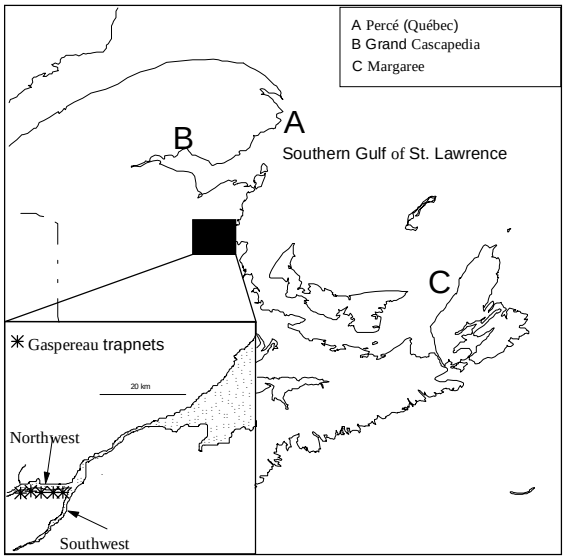
Background

The southern Gulf of St. Lawrence striped bass (Morone saxatilis) are genetically distinct from the Bay of Fundy fish but the stock structure within the Gulf is not known. The population in the southern Gulf represents the northern limit of spawning populations in the Atlantic Ocean. Spawning occurs in June in estuary waters, towards the head of tide. The young-of-the-year spend the first summer in the nearshore waters in the vicinity of the estuary where they were spawned. During summer and fall, juvenile and adult bass undertake wide-ranging feeding migrations along the coast. Bass ascend the rivers in late fall and overwinter in fresh water.

Historically, striped bass have been exploited principally as bycatch species in numerous commercial gear set primarily for gaspereau and smelt. Reported landings vary greatly among years suggesting that striped bass abundance is highly variable.

In 1990, the southern Gulf of St. Lawrence striped bass stock was categorized as either reduced or declining. Conservaton measures aimed at reducing fishing mortality were introduced to arrest the decline and increase the spawning escapement.

The principal study area is the Miramichi River estuary which is currently the only site where substantial bass spawning occurs in the Gulf of St. Lawrence.



The Fishery

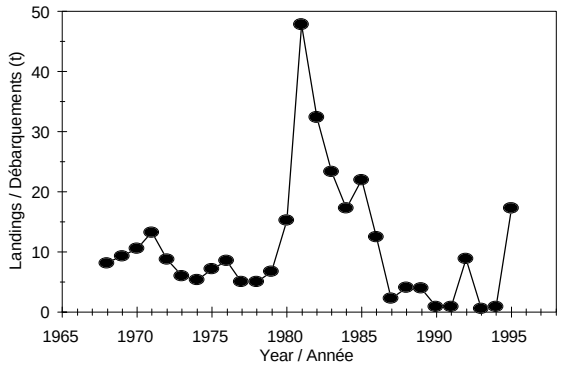
Commercial fisheries for striped bass were permanently closed in March 1996 through an amendment of the Canada Fisheries Act which prohibits the sale of wild striped bass in the Maritime Provinces. Bycatch tolerance limits by condition of license were established in recognition of the difficulties of sorting bass less than 35 cm total length from large quantities of similar-sized gaspereau.

First Nations harvested striped bass for food, social and ceremonial purposes and harvest levels were based on communal needs. Recreational fisheries were exclusively hook-and-release in 1996.

Landings

First Nations harvests are unknown but small relative to the commercial landings

historically. Recreational catch data are not collected on a regular basis.



Landings of striped bass by-catch in the commercial fisheries from the southern Gulf of St. Lawrence varied annually but were less than 10 t between 1987 and 1994.

Resource Status

Spawner abundance

Estimates of spawner abundance are limited to the Northwest Miramichi which has been identified to date as the major spawning area in the southern Gulf of St. Lawrence. The spawner abundance is estimated using mark and recapture experiments and catches of bass from the gaspereau fishery of the Miramichi River. A single pool of fish marked early in the spawning run is followed through to spawning. Indices of abundance were obtained from the catches of the gaspereau fishery in the Northwest Miramichi.

The spawner abundance in the Northwest Miramichi increased from a low of just over 5000 fish in 1993 to a peak of 50000 in 1995. The bulk of the spawners in 1994 to 1996 were from the 1991 year-class.

	Year			
	1993	**1994**	**1995**	**1996**
Population estimates (number of fish)				
Spawners	5500	29000	50000	8090
Females	330	2320	18500	5097
Catch rate index (fish per net per 24 h)				
	3.6	68.7	36.8	8.9
Fishery removals (Miramichi estuary May to June)				
Number of fish	65	5808	12324	24
Weight (t)	<0.1	2.3	11.3	<0.1

Fishery harvests in 1995 in the Miramichi River during May and June were estimated at over 11 t and were not registered in the DFO statistical database. Total removals of spawners between May 1995 and May 1996 in the southern Gulf of St. Lawrence were in the order of 30000 fish, more than half the spawning stock, of which about 40% occurred in the Miramichi River during May and June. A harvest of 17.3 t was registered in the statistics database in districts other than those of the Miramichi River.

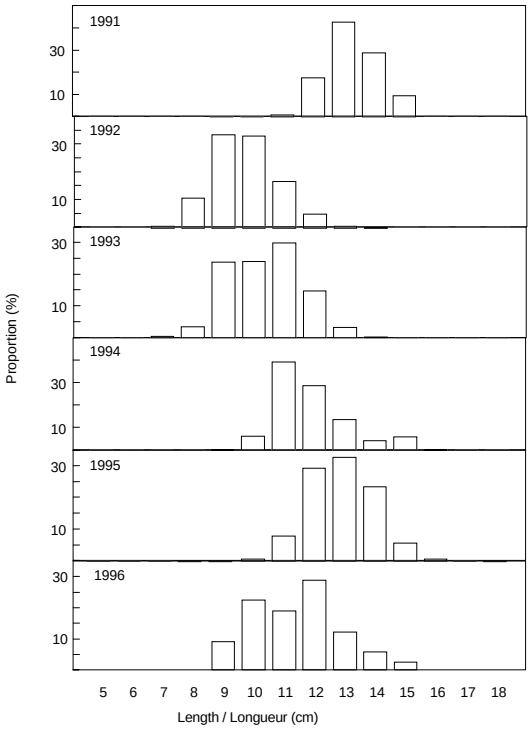
Abundance of young-of-the-year

The abundance of young-of-the-year striped bass was estimated from the fall open-water smelt fishery of the Miramichi. The median catch rate in 1996 of 452 fish per net per 24 h of fishing was the highest observed to date. Catch rates for 1995 and 1996 were in most cases more than ten times those observed for 1991 to 1994 corresponding with a higher female spawner abundance in 1995 and 1996 relative to previous years.

Catch rate index (fish per net per 24h) of young-of-the-year striped bass.

		Confidence interval	
Year	**Median**	**Lower**	**Upper**
1991	18	15	227
1992	50	0	191
1993	17	2	62
1994	7	2	21
1995	255	132	671
1996	452	159	2964

The success of the 1995 and 1996 year-classes to future spawner recruitment is contingent upon good survival over the first winter. Available evidence for a number of temperate fish species suggests that larger young-of-the-year fish experience better over-winter survival. Striped bass which enter their first winter at a fork length ≤10 cm are less likely to survive than those which are at a length >10 cm. There were large differences among years in the pre-winter lengths of young-of-the-year bass.



Pre-winter fork length (cm) of young-of-the-year striped bass for the 1991 to 1996 year-classes.

The 1991 year-class, currently the dominant cohort in the spawning population, had the largest observed pre-winter lengths. The abundant 1996 year-class was comprised of a large proportion of small-bodied fish.

Outlook

The 1990 categorization of the stock as reduced or declining remains appropriate. Egg production in 1997 will continue to depend on spawners of the 1991 year-class because the 1992 and 1993 year-classes are weak. There are estimated to be less than 10000 fish remaining from the 1991 year-class of which fewer than 6000 are females.

Female abundance is expected to decline further in 1997 as a consequence of natural factors, poaching, removals in First Nations fisheries and from hook-and-release incidental angling mortality.

Any future change in status of the southern Gulf of St. Lawrence striped bass stock depends on spawner abundance, spawner success and the potential recruitment related to overwinter survival.

The prospects for recovery of this resource before 1999 are poor. The 1995 year-class is expected to recruit to the spawning population in year 1999 (as males) and year 2000 (males and females).

Management Considerations

The abundance of female spawners is at risk of continued decline through to May 1998. Measures to deter poaching and to further reduce or eliminate fisheries induced mortality are to be encouraged.

Conscientious angling practices (hook-and-release techniques) must be promoted.

Data to date suggest that production of viable year-classes depends upon a level of spawner abundance above a minimum threshold. The precise threshold level has not been defined but early indications are that an excess of 5000 female spawners could be used as an interim value. The goal of the current management plan is to increase spawner abundance through reductions in fishing-induced mortality of adult and juvenile fish.

This report is available from the:

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Reference

Bradford, R.G. and G. Chaput. 1997. Status of striped bass (*Morone saxatilis*) in the Gulf of St. Lawrence in 1996 and revised estimates of spawner abundance for 1994 and 1995. DFO Atlantic Fisheries Res. Doc. 97/16.