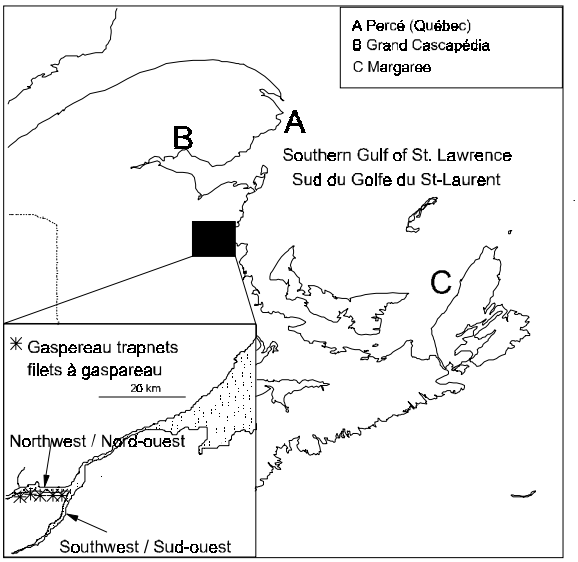
Striped Bass (Morone saxatilis) Southern Gulf of St. Lawrence



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.

Summary

- Stock categorized as reduced or declining.
- Spawner abundance in 1997 was 8000 fish, similar to 1996.
- Prospects for stock increase before the year 2000 are poor.

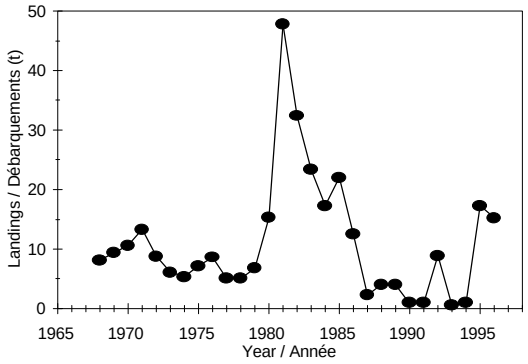
The Fishery

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 were established to recognize 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. Fishery agreement levels were based on communal needs. Recreational fisheries have been exclusively catch-and-release since 1996.

Landings

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. Striped bass were harvested into the fall of 1996.



First Nations harvests are unknown but assumed to be small relative to the commercial landings. Recreational catch data are not collected on a regular basis.

Resource Status

Spawner abundance

Estimates of spawner abundance were limited to the Northwest Miramichi which has been identified as the major spawning area in the southern Gulf of St. Lawrence. The spawner abundance was estimated by mark and recapture experiments using catches of bass from the gaspereau fishery of the Miramichi River. Indices of abundance were obtained from the catches of the gaspereau fishery in the Northwest Miramichi.

Spawner abundance in the Northwest Miramichi increased from 5,000 fish in 1993 to 50,000 fish in 1995. Most spawners from 1994 to 1996 were from the 1991 year-class. Spawner abundance declined to 8000 fish in 1996 and 1997.

	Year				
	1993	**1994**	**1995**	**1996**	**1997**
Population estimates (number of fish)					
Spawners	5500	29000	50000	8090	8000
Females	330	2320	18500	5097	3000
Catch rate index (fish per net per 24 h)					
	3.6	68.7	36.8	8.9	4.9
Fishery removals (southern Gulf)					
Number of fish	65	5808	22000	16400	0
Weight (t)	<0.1	2.3	20.1	15.3	0

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 about 40000 fish, close to 80% of the estimated spawning stock of 1995.

Abundance of young-of-the-year

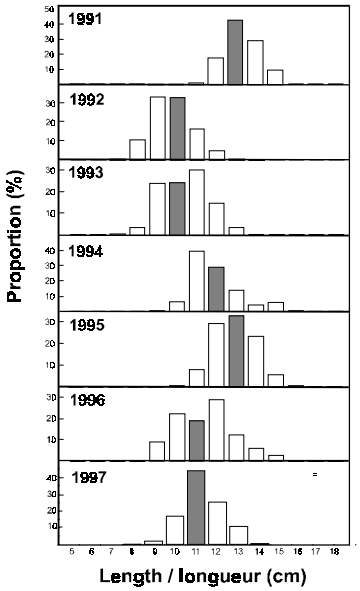
The abundance of young-of-the-year striped bass was estimated from the fall open-water smelt fishery of the Miramichi. The median catch rate in 1997 of 10 fish per net per 24 h of fishing was the second lowest estimated. Catch rates for 1995 and 1996, when female spawner abundances were higher, were in most cases more than ten times those observed in other years.

Catch rate index (fish per net per 24 h) 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
1997	10	1	59

The contribution of the 1995 and 1996 year-classes to future spawner recruitment is contingent upon good overwinter survival. For a number of temperate fish species, 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 of length >10 cm. There were large differences among years in the pre-winter lengths of young-of-the-year bass.

The 1991 year-class, currently the dominant cohort in the spawning population, had the largest observed pre-winter lengths. The 1997 year-class was low in abundance and the average fork length was 11 cm.



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. Less than a few thousand fish remain from the 1991 year-class, of which most are probably females. The expectation of a strong contribution of the 1995 year-class in 1998 and 1999 is reduced because of the low abundance of this year-class in the 1997 sampling.

Any future changes in status of the southern Gulf of St. Lawrence striped bass stock depend on spawner abundance, spawner success and the potential recruitment related to overwinter survival. An increased abundance of spawners is not expected before 1999.

Management Considerations

The abundance of female spawners may continue to decline into May 1998. Measures to deter poaching and to further reduce or eliminate fisheries-induced mortality should be considered. Conscientious angling practices (catch-and-release techniques) should be promoted.

The 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 indications are that 5,000 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.

Excessive fishing exploitation historically, at levels similar to those of 1995 and 1996, has likely been a major contributor to the boom-bust oscillations in the historical landings of striped bass from the southern Gulf of St. Lawrence. The exploitation rate in 1995/96 could have been as high as 80%. Reference points for striped bass in the eastern US are: target exploitation rate = 27%, threshold exploitation rate = 33%.

Some striped bass greater than 50 cm fork length sampled from the Miramichi River in 1995 to 1997 contained levels of mercury in the musculature exceeding the Health Canada guidelines for unrestricted human consumption.

For more Information:

Contact: Gérald Chaput
Science Branch
Dept. of Fisheries and Oceans
P.O. Box 5030
Moncton, N.B.
E1C 9B6

Tel: 506 851 2022
Fax:506 851 2147
E-Mail:ChaputG@MAR.DFO-MPO.GC.CA

References

Bradford, R.G. and G. Chaput. 1998. Status of striped bass (*Morone saxatilis*) in the southern Gulf of St. Lawrence in 1997. Canadian Stock Assessment Secretariat Res. Doc. 98/35.

This report is available from the:

Maritimes Regional Advisory Process
Department of Fisheries and Oceans
P.O. Box 1006, Stn. B105
Dartmouth, Nova Scotia
Canada B2Y 4A2
Phone number: 902-426-7070
e-mail address: myrav@mar.dfo-mpo.gc.ca

Internet address: www.dfo-mpo.gc.ca/csas
ISSN: 1480-4913

La version française est disponible à l'adresse ci-dessus.