



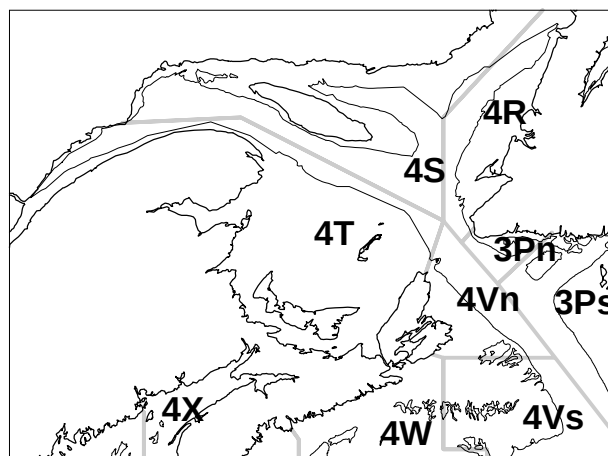
Updates on Selected Gulf of St. Lawrence Groundfish Stocks in 2001

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Updates on Selected Gulf of St. Lawrence Groundfish Stocks in 2001

Background

The most recent full assessments of the status of 4T winter flounder and 4T yellowtail flounder were conducted in 1999. The SSR reference for the last complete assessment and most recent update is listed under the “Background” section of each update. This report provides a brief update of stock status based on fishery and survey data on these stocks for 2000.



Summary

- Survey data suggest that **winter flounder** abundance is below average throughout 4T relative to estimates since 1971 and their average size and weight have declined. Winter flounder abundance varies among areas of 4T. The groundfish survey does not cover the full range of the distribution of the resource and the mean numbers in the different inshore areas are highly variable. Nevertheless, the stock biomass in the aggregate has declined. In the 2000 telephone survey, most fishers expressed the view that the abundance of this resource was the same as in previous years.
- **Yellowtail flounder** abundance has been fairly stable since 1985. The length frequency distribution of yellowtail caught in the survey shows a smaller proportion of commercial-size fish (25+ cm) in 2000 compared to the 1984-1999 average. The number of fish <25 cm in 2000, however, is higher than the 1984-1999 average, and may indicate improved recruitment.

Winter Flounder (Div. 4T)

Background

Winter flounder is a coastal flatfish distributed in the west Atlantic from southern Labrador to Georgia. In the southern Gulf of St. Lawrence (NAFO Division 4T), winter flounder are limited to the Magdalen Islands and to southern parts of 4T: Chaleur Bay, the Shediac Valley-Miramichi area, Northumberland Strait, and St. George's Bay. They are associated with soft or moderately hard bottoms and depths less than 40 m. They occupy a range of water temperatures and are capable of inhabiting sub-zero water conditions. Throughout their range, they migrate seasonally from the coast and in the southern Gulf they overwinter in estuaries. Spawning occurs in late winter or early spring. Female winter flounder release several hundreds of thousands of eggs that settle to the bottom, adhering to rocks and vegetation. The larvae drift in surface waters for 2-3 months before metamorphosis. Growth rates vary widely between regions, with female winter flounder reaching sexual maturity by about 25 cm and with males maturing by approximately 20 cm. Winter flounder feed opportunistically on a variety of benthic organisms, mainly molluscs and small crustaceans. They also feed on the eggs of other aggregations of spawning fish, in particular capelin and herring. In some areas of the southern Gulf, modified gillnets (tangle nets) are set on the spring and fall spawning beds of herring to capture winter flounder.

Winter flounder in 4T came under quota management in 1996. With the closure of the Atlantic cod fishery in 1993, concern was expressed that species without quota restrictions, such as winter flounder, would become subject to increased directed effort. The first assessment of the stock status was made in 1994.

The 4T winter flounder resource supports localized fisheries for lobster bait and limited food markets. The flesh of winter flounder is of good quality and in certain parts of their range, as in northeastern US, winter flounder are commercially valued in sport and commercial fisheries. Winter flounder was also a by-catch in fisheries for cod, white hake and American plaice; however, during closure of the cod fishery, winter flounder became a mainly directed fishery. The fishery in 4T is prosecuted mainly by mobile gear operated by vessels less than 45 feet.

The most recent assessment of this stock was conducted in spring 1999 (SSR A3-22 (1999)). An update was provided in 2000 (SSR A3-36 (2000)).

The Fishery

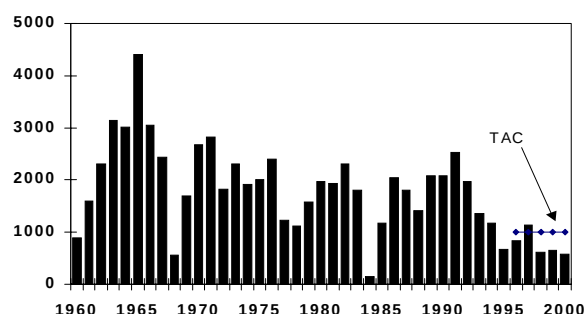
Landings and TAC's (thousands of tonnes)

	1980-89	1990-95	1996-98	1999	2000*
Year	Avg.	Avg.	Avg.		
TAC			1.0	1.0	1.0
Total	1.7	1.6	0.8	0.6	0.6

*Preliminary statistics

Winter flounder **landings** have been around 600 tonnes since 1997. In the 1990s, otter trawls have caught 50-60% of the annual landings, with most of the remainder caught by gillnets. Most of the respondents in a telephone survey felt that winter flounder were at the same level of abundance in 2000 as in 1999 and in previous periods.

Landings and TAC's (tonnes)

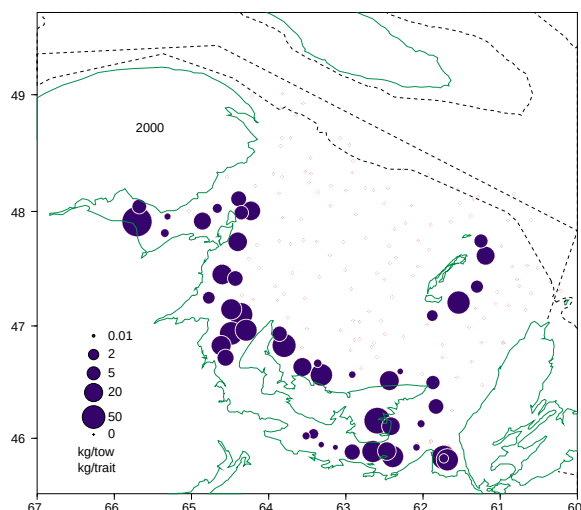


In the past, winter flounder landings have varied widely from year to year due to a number of factors. Winter flounder were widely used as bait, often reported as unspecified flounder or misreported as other species. Lastly, mesh sizes in the fishery have increased considerably since 1960, including an increase from 130 mm to 140 mm mesh for mobile gear in the Northumberland Strait region. These changes have probably affected the amounts landed. Several measures have been taken to improve landing statistics for winter flounder in recent years, including improved identification of the species caught and the introduction of logbooks for fixed gear in 1998.

Resource Status

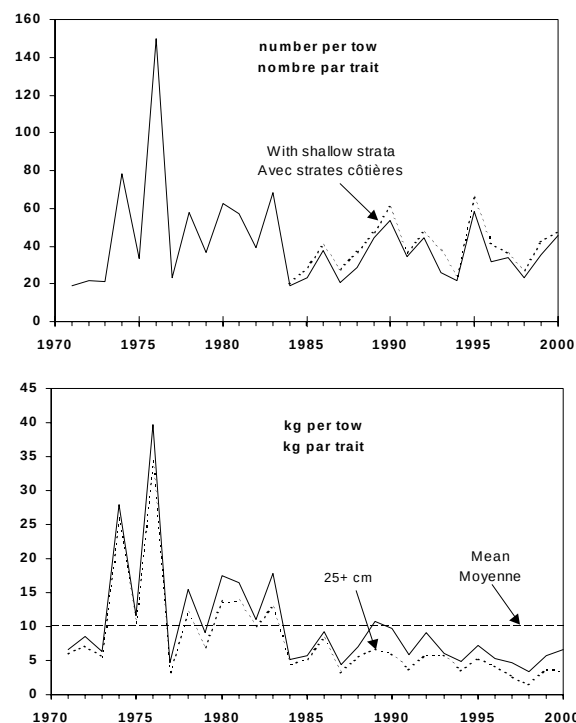
Winter flounder has a coastal distribution in the southern Gulf.

Catches (kg/tow) in the 2000 research survey



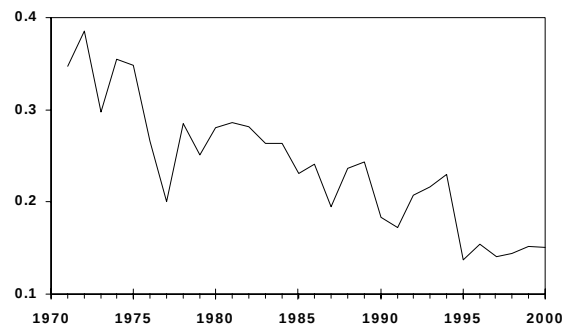
The **annual research vessel survey** in 2000 averaged 46 winter flounder per tow, or approximately 7 kg per tow. The abundance index is higher than the values observed over the previous four years and is slightly above the long-term average of 42 per tow. However, there has been a decline in the size of winter flounder and the index of total stock biomass has been below the long-term average for most of the past decade. In catches of the 2000 survey, commercial-sized winter flounder (minimum 25 cm) comprised about half of the total biomass. Beginning in 1984, three shallow-water strata were added to the survey. Including the shallow-water strata, the trend in abundance is similar to that without these strata.

Survey abundance and biomass indices



The survey data indicate that winter flounder have become smaller in size and weight since 1971. The same pattern has not been observed in samples of commercial catches since 1983.

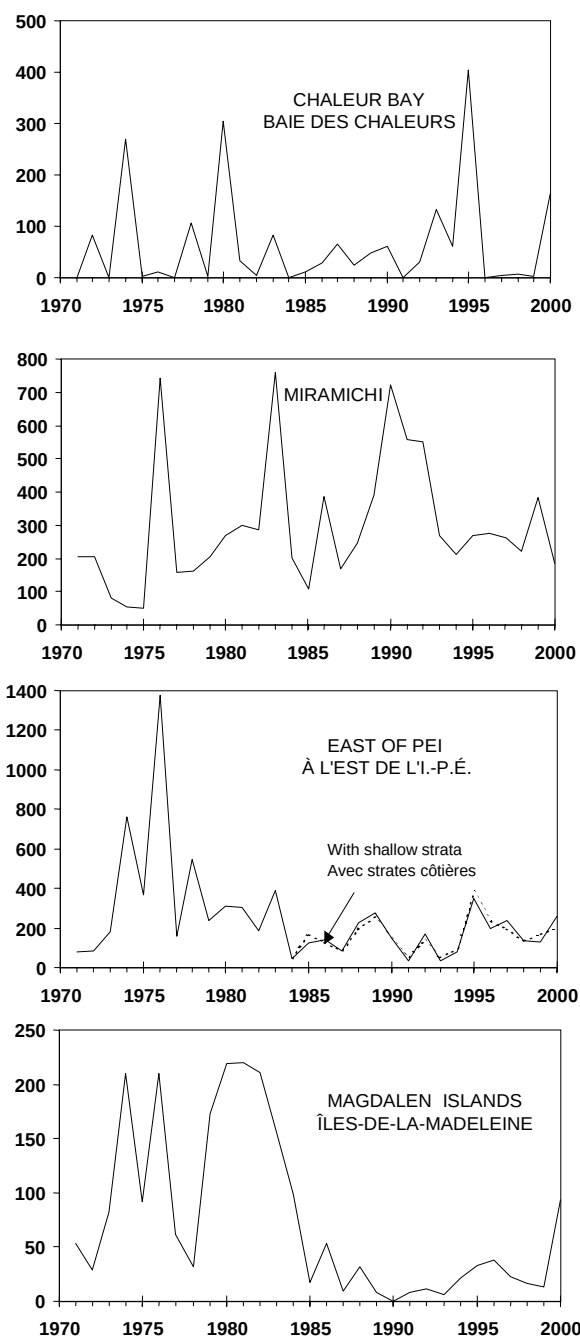
Mean weight (kg) of winter flounder in research surveys



The annual research vessel survey of 4T does not sample in shallow coastal waters where young winter flounder are found. Typically, the survey does not signal incoming recruitment, nor does it track size modes that indicate year-class strength.

Winter flounder are believed to overwinter in estuaries of the southern Gulf. Migration studies conducted elsewhere indicate that they make limited seasonal movements, suggesting that several stock units may occur in 4T. Patterns of abundance in the research survey have varied among areas of 4T, also suggesting that winter flounder in 4T may comprise several stock units. In Chaleur Bay, catches have varied widely, rising to an average of 404 per tow in 1995, averaged fewer than 10 per tow from 1996 to 1999, then increased to 162 per tow in 2000. Similar abrupt increases in the index occurred in 1974 and 1980. In the Miramichi area, catch rates were relatively low in the early 1970s with exceptional catches in 1976, 1983, and in the 1990-1992 period. Catch rates since 1993 have been at an intermediate level. In the area east of PEI, catch rates were highest in the mid-1970s, but declined to relatively low levels in recent years. In the Magdalen Islands area, winter flounder catches were strong throughout most of the 1970s and early 1980s but have remained at a low level since then. In 2000, catches in that area rose to 94 per tow from 14 per tow in 1999.

Survey abundance by area of 4T (mean number per tow; note different scales)



Outlook

Survey data indicate that the index of winter flounder biomass in 4T has been below the long-term average during most of the 1990s. The survey also indicates a declining trend in the size composition of winter flounder. This

view contrasts with that of active fishers, who in interviews over the past five years say that the abundance of the resource is increasing or is stable.

The survey does not cover the full range of the distribution of the resource and the mean numbers in the different inshore areas are highly variable. Nevertheless, the stock biomass of commercial sized winter flounder is below average. Recent catches in the order of 600 t have not resulted in a significant change in stock status.

Management Considerations

Several stock units of winter flounder probably occur in 4T and their abundance appears to vary differently over time. Since 1998, the FRCC has recommended that DFO Science, managers and industry work together to implement local management measures for this resource. The most recent assessment of 4T winter flounder identified the need for improved data on local trends in abundance, recruitment and the biological information necessary to identify stock units. Some progress was made in 1999 and in 2000 through development of an inshore trawling survey on the Magdalen Islands in collaboration with the local industry. In addition, a program is underway to tag and release winter flounder from several sites in the southern Gulf. Such initiatives should improve the information base required to improve the management of winter flounder in 4T.

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Yellowtail Flounder (Div. 4T)

Background

Yellowtail range from Labrador to Chesapeake Bay. In the southern Gulf of St. Lawrence (NAFO Division 4T), yellowtail flounder are most prevalent around the Magdalen Islands, and in the southern parts of 4T, including Chaleur Bay, the Shediac Valley-Miramichi area, Northumberland Strait, and St. George's Bay. They are associated with sand or sand and mud bottoms usually at depths of 37-91 m and temperatures between two and six degrees Celsius. Throughout their range, they migrate seasonally into shallower waters in the spring and back to deeper waters in the winter. Spawning occurs on or near the bottom in spring or early summer. Female yellowtail deposit large numbers of small eggs that float to the surface once fertilized. Growth rates vary widely between regions, and there is little information on the biology of yellowtail flounder in 4T. The small mouth of yellowtail flounder restricts its choice of food to polychaete worms, amphipods, and other small crustaceans such as shrimp. They feed in lesser quantities on fish such as sand lance.

The 4T yellowtail flounder resource supports localized bait fisheries. Yellowtail is also a bycatch in fisheries for cod, white hake, American plaice and winter flounder. The fishery in 4T is prosecuted mainly by mobile gear operated by vessels less than 45 feet around the Magdalen Islands, off the northeast coast of New Brunswick, and the north coast of Prince Edward Island.

A quota was imposed on yellowtail flounder in 4T for the first time in 1998.

The most recent full assessment of this resource was conducted in 1999 (Poirier and Morin, 1999; SSR A3-16 (1999)). An update was provided in 2000 (SSR A3-36 (2000)).

The Fishery

Landings and TAC's (thousands of tonnes)

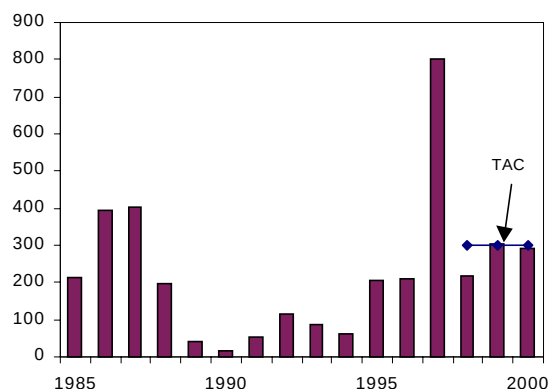
Year	1980-89 Avg	1990-94 Avg	1995-97 Avg	1998	1999	2000*
TAC (Magdalen Islands)				0.3	0.3	0.3
Total	0.1	0.1	0.4	0.2	0.3	0.3

* Preliminary statistics

Landings of yellowtail flounder in 2000 were similar to those of 1999. The TAC was nearly taken when the fishery was closed August 25, 2000. Most yellowtail are

landed on the Magdalen Islands (over 90% since 1996), and seines and otter trawls continue to be the dominant gears in the 4T fishery.

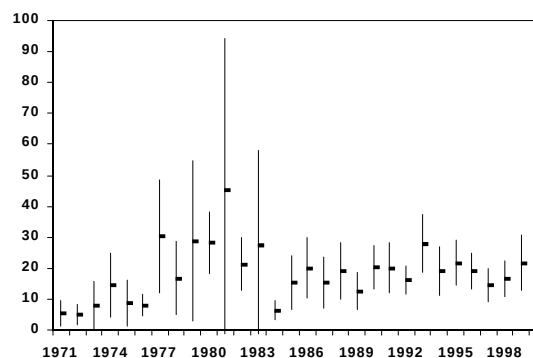
Landings and TAC's (tonnes)



Resource Status

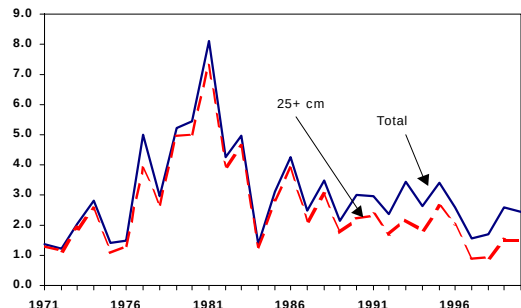
The abundance index of yellowtail (mean number per tow) in the **annual research vessel survey** has been at a fairly stable level of about 19 fish/tow since 1985.

Abundance index of yellowtail per tow

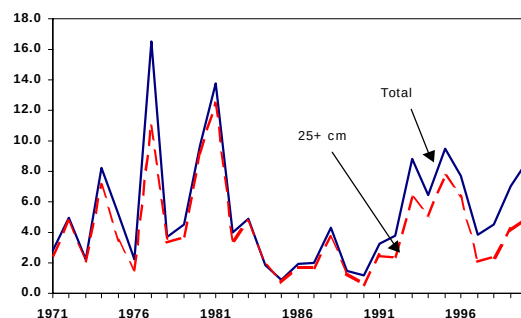


The survey biomass index for the 4T area increased in the late 1970 to relatively high levels, decreased in the early 1980s, and has remained fairly stable since the mid-1980s. The biomass index of yellowtail in the Magdalen Islands area increased from fairly low levels in the late 1980s to relatively high levels since the early 1990s.

4T survey mean weight/tow (kg)

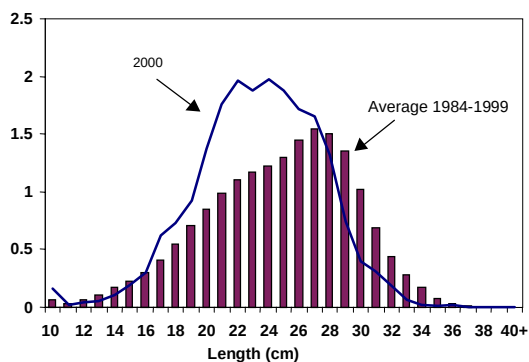


Magdalen Islands survey mean weight/tow (kg)



The **length frequency** of yellowtail caught in the survey continues to contain proportionally fewer large (>25 cm) fish than previously. The modal length in 2000 was 24 cm, compared to the 1984-1999 mode of the average distribution (27 cm). This is the fourth year in a row with a modal length less than 25 cm, however, it has increased each year since 1997.

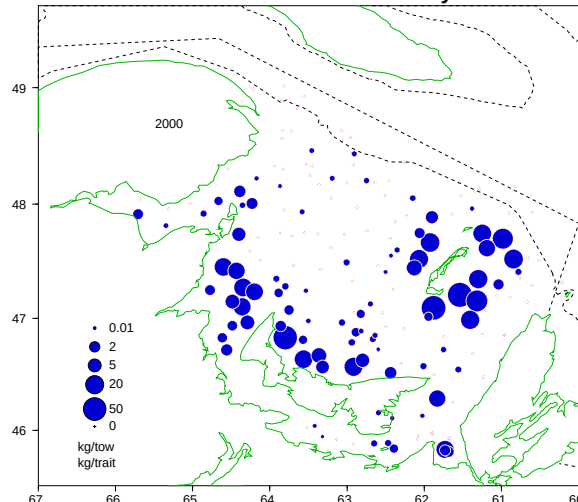
Survey length frequency (numbers per tow)



The **distribution of 4T yellowtail flounder** in the 2000 survey was very similar to that

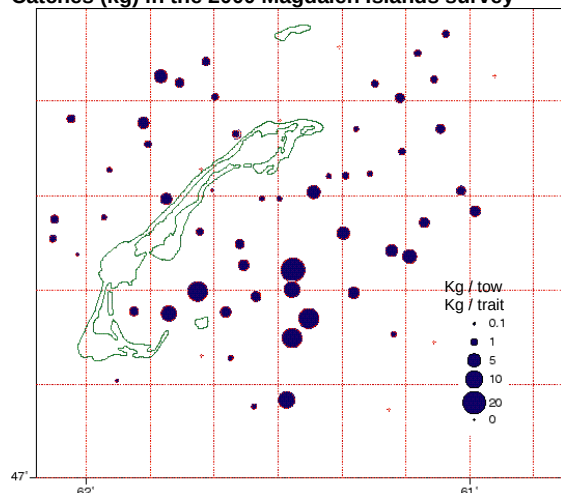
of recent years, with concentrations around the Magdalen Islands and off the eastern and western coasts of Prince Edward Island.

Catches in the 2000 research vessel survey



The annual research vessel survey does not include shallow water close to shore, and therefore does not cover the entire distribution of yellowtail flounder. In 1999, as a result of a joint DFO-industry collaboration, the inshore areas of the Magdalen Islands were surveyed in an attempt to develop indices of abundance and recruitment for yellowtail near the Magdalen Islands. This area was surveyed again in August 2000. Yellowtail were present in most of the sets, but, as in 1999, the length frequency of the catches was similar to that of the annual research vessel survey, with very few fish less than 15 cm.

Catches (kg) in the 2000 Magdalen Islands survey



Outlook

From 1985 to 1996, abundance of 4T yellowtail was stable and was associated with landings of up to approximately 200 tonnes in the mid 1990s. An increase in harvest of over 800 tonnes from the area surrounding the Magdalen Islands in 1997 was followed by a large decline in the abundance index. With catches of about 300t since then, the stock has improved. The length frequency distribution of yellowtail caught in the survey shows a smaller proportion of commercial-size fish (25+ cm) in 2000 compared to the 1984-1999 average. The number of fish <25 cm in 2000, however, is higher than the 1984-1999 average, and may indicate improved recruitment.

For More Information

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