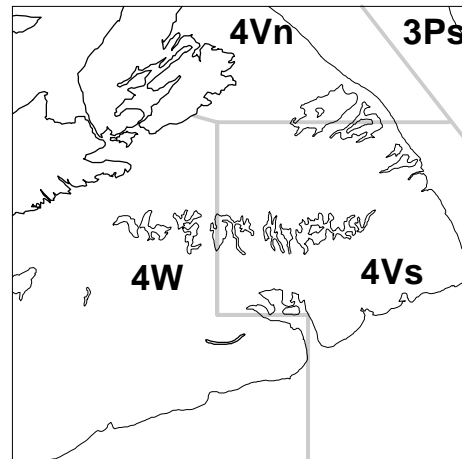


Scotian Shelf Capelin



Background

Four stocks of capelin are generally recognized in waters to the north and east of the Scotian Shelf. These stocks can be considered lightly exploited given that catches in Div. 3L during 1982-89 were 4.3% of the estimated mature biomass and 10% or less in the Div. 2J3K management unit. Capelin do not normally occur in the Scotian Shelf/Bay of Fundy region however two exceptions have been noted in the recent past: during the mid-1960s capelin were extremely abundant in the Bay of Fundy and since the mid-1980's on the eastern Scotian Shelf. Both episodes have coincided with colder-than-normal bottom water conditions. The most recent excursion of capelin on the Scotian Shelf shows no sign of ceasing - increases in the size of the adult population have occurred with gradual accumulation of smaller individuals through recruitment.

Capelin distributions are generally confined to Div. 4Vs during both spring and summer research vessel surveys. Peak concentrations have occurred over a wide range of depths (40-150 m) but a narrow range of temperatures (<4 C). Capelin spawning occurs during June/July and direct observations of capelin in spawning condition has been noted during the conduct of the summer RV survey. Capelin are short-lived and grow rapidly during the first four years of life. Growth rates average about 2-3 cm/yr and body size is at a maximum near 20 cm. Capelin begin to mature at age three and most spawning populations are dominated by 3 and 4 yr olds. Post-spawning mortality is generally high. Capelin feed primarily on plankton with copepods, euphausiids and amphipods making up most of the diet. In Newfoundland waters and the northern Gulf of St. Lawrence, capelin are an important forage item for several groundfish species, marine mammals and seabirds.

No directed fishery exists for capelin on the Scotian Shelf although experimental licenses were granted in 1994 and 1995 to fish for capelin in Div. 4VW. In the Newfoundland Region, capelin are caught using purse seines and trap nets during the inshore spawning migration, the principal markets being for roe.

The Fishery

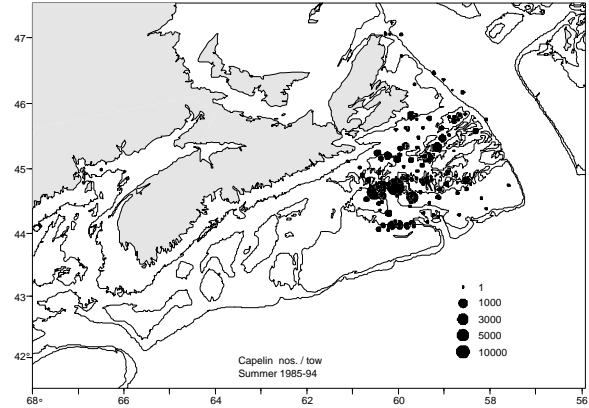
There has never been a directed fishery for capelin on the Scotian Shelf and only occasionally have capelin been reported as by-catch in commercial fisheries operating in Division 4VWX. In Division 4X, 37t and 124t of capelin was reported **caught** in 1965 and 1967. One to two tons of capelin were reported from Division 4Vn in 1975, 1983, and 1984. Small amounts of capelin are collected on the beaches of Cape Breton for personal consumption. Recent observer reports have indicated significant quantities of capelin in the Scotian Shelf shrimp fishery. Experimental licenses to fish for capelin in Division 4VW were granted in 1994 and 1995. The vessels involved, equipped with purse seines and searching for capelin using sonar and whale sightings, caught few capelin that were mainly immature. In 1996, there were no licenses issued to fish capelin on the Scotian Shelf.

Resource Status

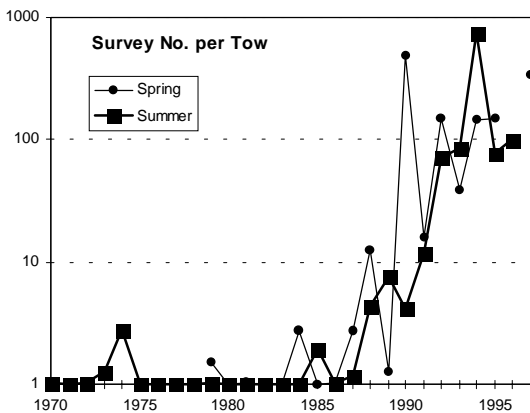
Capelin occur as a by-catch in the bottom **trawl surveys** of the Scotian Shelf. It is likely that the efficiency of the survey gear to catch

capelin is low given that capelin school and migrate vertically. Therefore, the survey catch rates provide useful information on trends in abundance but extrapolation to estimates of absolute biomass is unwarranted.

The **spring and summer surveys** both show a progressive increase in capelin abundance in Div. 4VW during the past decade with recent capelin catch rates during the summer survey among the highest ever observed. Throughout the remainder of the survey series, capelin were not abundant except for the early 1970s when catch rates exhibited a minor peak. The 1997 spring survey catch rate of 334 fish per tow was the second highest value in the time series. In 1995, the third highest value of 150 fish per tow was recorded (note: the 1996 spring survey was incomplete and therefore not comparable to the other years). The summer survey in 1994 yielded the highest catch rate in the 27 year time series of 750 fish per tow and in 1996 the second highest value was recorded.



The **distribution** of capelin from the 1996 and 1997 surveys is consistent with the recent past. Capelin are confined to the eastern half of the Scotian Shelf where the average bottom water temperatures have been below normal and are generally colder, on average, relative to other shelf areas. More information on these environmental trends can be found in the Stock Status Report on the State of the Oceans, Scotian Shelf, Bay of Fundy and Gulf of Maine.



Outlook

Capelin have been generally absent from the Scotian Shelf until recently. The presence of capelin in our region is associated with colder-than-normal bottom water conditions. Adult capelin were first noted in the mid-1980s on the eastern Scotian Shelf and have persisted and flourished there since. Successful reproduction has occurred based on the appearance of immature size groups entering the population (as witnessed during the 1994 spring survey when the 1993 year-class was evident and the 1997 spring survey when the 1996 year-class was evident). This most recent episode of capelin on the Scotian Shelf has evolved over the past decade and will likely persist until environmental conditions change. However, given the short-lived pattern of past occurrences on the Scotian Shelf, any fishery will run the risk of being shortened by a return to more normal environmental conditions on the eastern

Scotian Shelf. Any fishery would need to be experimental to determine the bycatch implications and allow time to address ecosystem considerations.

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- DFO Science. 1997. State of the Oceans - Scotian Shelf, Bay of Fundy and Gulf of Maine. Stock Status Report G3-01.

This report is available from the:

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