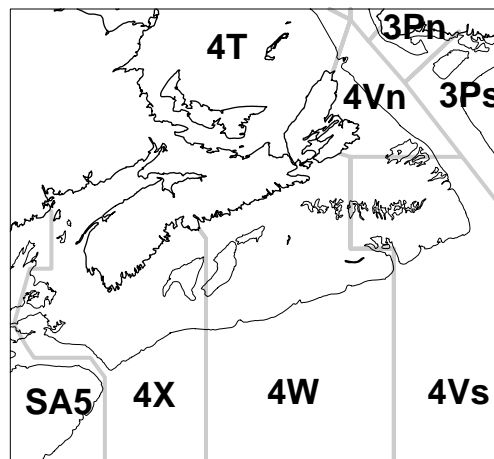


## WOLFFISH ON THE SCOTIAN SHELF



### Background

The Atlantic Wolffish (*Anarhichas lupus*) is found on the Scotian Shelf from shallow water to waters approximately 150m deep with a few occurring even deeper. Seasonal inshore migrations may occur in spring when mature fish are found in shallow waters 0 to 15m. These fish are solitary by nature and do not exist in schools. Wolffish are found to be most prevalent in the approaches to the Bay of Fundy, the Browns, Roseway and La Have banks, and the northeastern portion of the Scotian Shelf adjacent to the Laurentian Channel. During the past 5 years, wolffish appear to have decreased in prevalence in the southwestern portion of this range and have become more abundant and highly concentrated along the Laurentian Channel in the Northeast. Stock structure is presently unknown, although it is interesting to note that the increase in abundance of wolffish along the Laurentian Channel coincides with a decline in this same species on the southern Grand Banks. Although there is no evidence for exchange between these areas, this observation raises that possibility. Summer surveys show that wolffish are caught at temperatures ranging from 0-9°C with some apparent preference for the cooler temperatures. They have been caught at depths ranging from 50-200 m with some preference for depths of 50-100 m. More wolffish are caught at night than during the day.

In Newfoundland wolffish spawn in September, in the White Sea in July, and in Iceland in January-February. Powles (1967) reported egg masses in abundance south of LaHave Bank in March 1966 and empty egg masses were found near Sable Island in February. However the actual spawning time on the Scotian Shelf remains unknown. The large cohesive eggs range from 5.5 to 6.5 mm, are demersal, and are laid in clusters. These egg clusters may be guarded by an adult male. Partially hatched larvae were 17-18 mm in length. The larvae are pelagic, but remain close to the bottom until the yolk sac is absorbed. The entire larval stage is spent near the area where the eggs were laid (Bigelow and Schroeder 1953). Growth may be rapid for the first year, and then slows; in subarctic water, fish at five years of age, were only 24 cm.

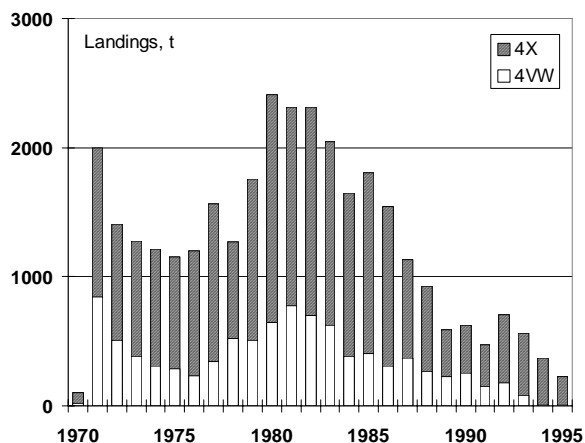
Wolffish feed on rocky bottom on whelks, sea urchins, brittle stars, crabs, scallops (shells are crushed), and occasionally redfish (Templeman 1985). Cod have been reported predators of small wolffish.

### The Fishery

#### Landings (tonnes)

Year	70-79	80-89	1991	1992	1993	1994	1995
	Avg.	Avg.					
4VW	396	471	154	179	79	13	11
4X	898	1202	317	526	483	360	226
Total	1294	1673	471	705	562	373	237

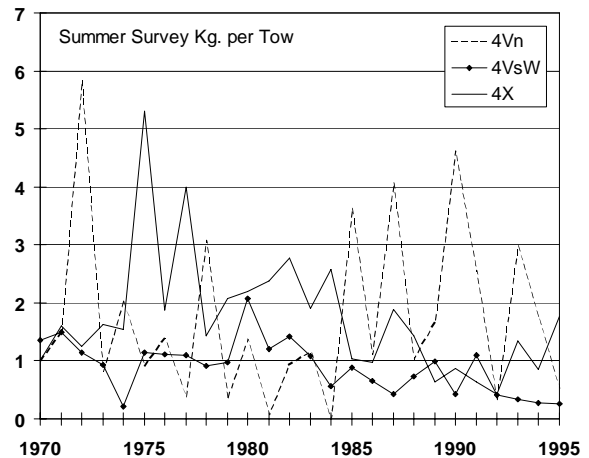
Wolffish are primarily landed from Division 4X, with over 70 percent of the catch being reported by trawlers. In 4VW, most wolffish are landed by longline (up to 60%) followed by trawlers. Landings in 4X peaked in 1980 at 1,500t and dropped to less than 500t by 1991. Reported landings in 4X have remained below 500t since. Wolffish landings from the rest of the Scotian Shelf have usually totalled less than 300t, and are presently negligible.



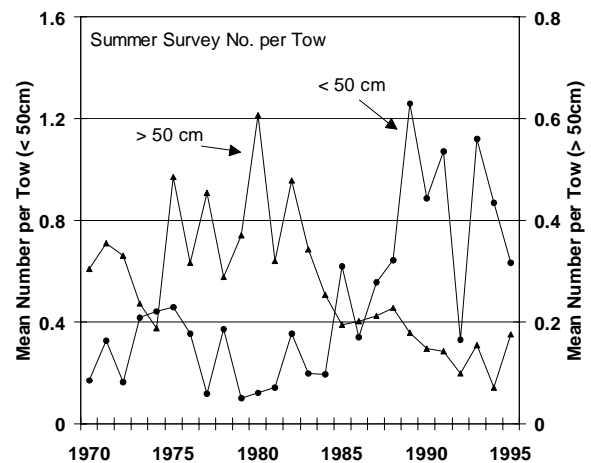
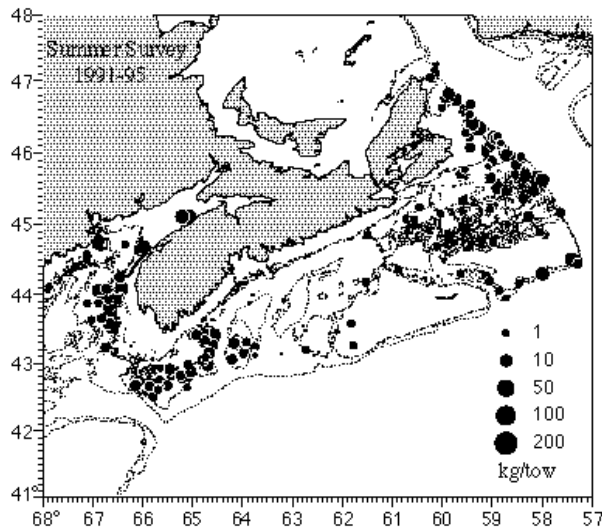
This species has only been sampled sporadically as it is usually landed in small quantities as a by-catch in other fisheries. These samples do not provide a clear indication of sizes landed or of trends in landed sizes.

**Resource Status**

The evaluation of this stock was derived from trends in abundance and biomass from the **July Research Vessel Survey**. Until 1984, most of the wolffish trawlable biomass was concentrated in Division 4X. Biomass in 4X has shown a gradual decline, most notably since 1984. At present wolffish biomass is distributed about equally in Divisions 4V and 4X. Biomass in Division 4W has shown a gradual but steady decline since 1981. Total trawlable biomass estimates have ranged from a high of about 11,000t to present estimates of about 3,500t.



**Abundance** of wolffish, as estimated from survey number per tow has been highly variable from year to year and without apparent trend until 1987 when it appeared to increase. This increase is most evident in Division 4V and particularly along the edge of the Laurentian Channel and appears to be due to an increase in the prevalence of smaller fish.



Research survey results show a marked increase in the numbers of small (10-43 cm) wolffish caught in the last six years versus the last twenty-five years. Larger wolffish (longer than 50 cm) are less abundant now (1989-1995) than they were over the long-term (1970-1995).

### ***Outlook***

Wolffish biomass in 4X and 4W has declined since the mid 1980s while biomass in 4V has remained relatively stable over that period. The fishery has been concentrated in 4X and has likely contributed to the observed decline. Continued heavy fishing pressure will not be conducive to stock rebuilding. The appearance of small fish in 4V may be indicative of incoming recruitment, although our understanding of this resource is insufficient to state where (or if) on the Scotian Shelf these fish will recruit to the population. Catches in 1997 in excess of the 1988-1994 average (600t) are unlikely to be sustainable.

### ***For More Information***

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