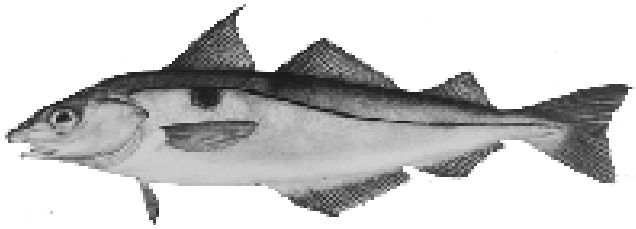


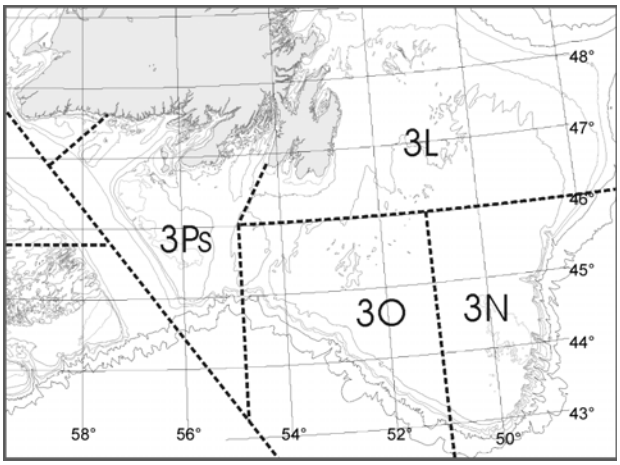
Divisions 3LNO Haddock

Background

Haddock occurs on both sides of the North Atlantic. Along the North American coast it occurs from the Straits of Belle Isle south to Cape Hatteras being more abundant in its southern range.

Haddock are primarily bottom feeders and food varies with size. Those less than 50 cm eat crustaceans, in particular amphipods, pandalid shrimp and hermit crabs. Also a part of the diet are echinoderms (brittle stars, sea urchins and sand dollars), mollusks, (snails and clams) and annelid worms. In haddock greater than 50 cm small fish make up about 30% of the diet with sand lance, capelin, silver hake, herring and argentines being consumed. When available large numbers of herring and capelin eggs are eaten. Haddock larvae are pelagic, settling when 50 mm. Males and females attain sexual maturity at ages 3-5; males usually at a slightly younger age than females. Growth rates vary and are generally slower in northern stocks.

Prior to 1945 catches on the Grand Bank (NAFO divisions 3LNO) were low but increased rapidly in the late 1940s and remained high until the early 1960s. There is evidence to suggest that haddock were abundant earlier but were not a desired species in the saltfish trade and catch was either not kept or not recorded separately. The high catches of the 1950s and early 1960s were the result of several strong year-classes. The fishery of this era was characterized by high discard rates (30-40% by weight and 50-70% by numbers). This was a result of small mesh size (70-100 mm) and a requirement by plants that landed catch be at least 45 cm. Catches since the 1960s have declined to very low levels. There was a small increase in the mid to late 1980s which did not exceed 10,000 t in any one year.



Summary

- The haddock fishery in 3LNO peaked at 76,000 t in 1961 based on a few strong year-classes.
- Annual landings of haddock from 3LNO have been very low throughout the last decade with less than 200 t being landed each year since 1994.
- There is currently no directed fishery allowed for 3LNO haddock.
- Recent warm water conditions on the Grand Bank may have favoured haddock recruitment.
- There is some evidence that the 1998 year-class may be somewhat stronger than others over the last decade.
- If the warm period continues and survival is good there is the potential for increases

in the haddock biomass on the Grand Bank.

The Fishery

The post war fishery was prosecuted mainly by Canada with significant landings reported by Spain and USSR in some years. Landings were highest during the 1950s and early 1960s with a peak of 76,000 t in 1961. The presence of the strong 1949 and 1955 year-classes supported these catches. Landings remained low from the mid 1960s to mid 1980s because of poor recruitment. In 1988 landings increased to 8,200 t, the highest since 1967 due to the presence of the relatively strong 1983 and 1984 year-classes. Since 1988 catches have declined and have been less than 200 t since 1994.

Landings (thousand metric tons)

Year	53-76 Avg.	77-96 Avg.	1997	1998[1]	1999[1]	2000[1]	2001[1]
TAC	N/A	N/A	0.2	0.1	0.1	0.1	0.1
Can	0.9	1	0.2	0.1	0.1	0.1	0.1
Other	2	0.8	0	0	0	0	0
Total	20	2.9	0.2	0.1	0.1	0.1	0.1

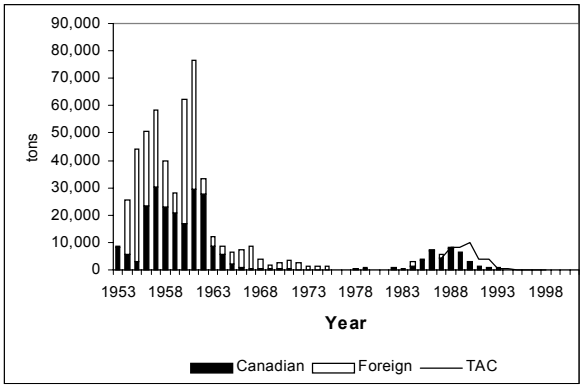


Figure 1. Historical landings and TACs for haddock in Divisions 3LNO.

Resource Status

Some changes have been made to the **trawl survey** in recent years. In the fall of 1995 the survey trawl gear was switched from the Engels 145 otter trawl to the Campelen 1800 shrimp trawl. This trawl has improved the survey catchability for young fish. However, for haddock there are no conversion factors to convert the pre 1996 data. Direct comparisons of pre and post 1996 data cannot therefore be made.

Spring surveys

Research vessel surveys have been conducted in the spring since 1972. The biomass index for haddock was low from 1972 to 1982. The index peaked in 1984 due to the relatively strong 1981 year-class. In 1997 the survey biomass index increased sharply due to one large catch of pre-spawning fish, accounting for 98% of the biomass. The 1998 survey located few haddock.

There is evidence the 1998 year-class may be strong. Young-of-the-year haddock were encountered in the 1998 pelagic 0-group survey, the fall 1998 multi-species survey and as 1 year olds in the 1999 spring survey.

The 2000 spring survey biomass estimate was similar to the 1999 estimate. Fish were predominately small, immature and thought to be the 1998 and 1999 year-classes based on examination of length frequency data.

The 2001 spring survey biomass estimate was less than the 2000 estimate. Fish were again predominately small and immature and again thought to be the 1998 and 1999 year-classes.

In spring haddock tend to be concentrated in the warmer slope water. This may increase the variance in the survey estimates because coverage is minimal in these narrow slope strata.

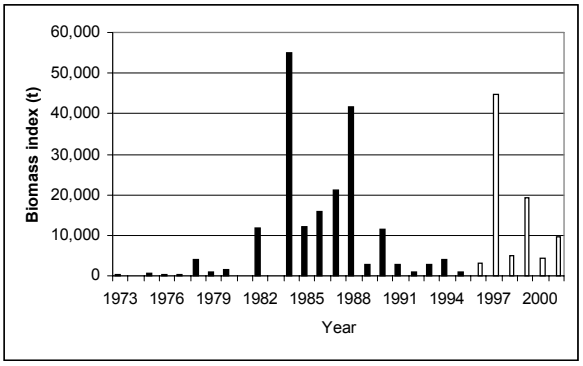


Figure 2. Index of haddock biomass (t) from spring multispecies surveys. Values derived from surveys using the Campelen net are indicted by the open bar.

Fall surveys

In 1990 Canada extended the fall survey to cover the Southern Grand Banks (Divisions 3N and 3O). This survey is valuable for haddock because as temperatures warm, fish disperse over the bank from the slope waters where they tend to congregate in winter and early spring. In 1995 the fall survey estimate was the highest on record as the consequence of a single catch of large fish in the western portion of 3O.

Since 1998 the biomass of small haddock, thought to be the 1998 year-class, has increased and the distribution has expanded. This increase and expanded distribution may be a result of the warming trend evident in 3LNO in the late 1990s after a prolonged cold period in the early 1990s. However in 2001 the temperatures on the Southern Grand Banks decreased over 1998-2000 values and haddock were found mostly along the slope in the fall survey. This is similar to the distribution that was observed in the spring.

Based on length composition, the 1998 and 1999 year-classes predominated in the 2000 and 2001 RV surveys; however, aging analysis is required to confirm this.

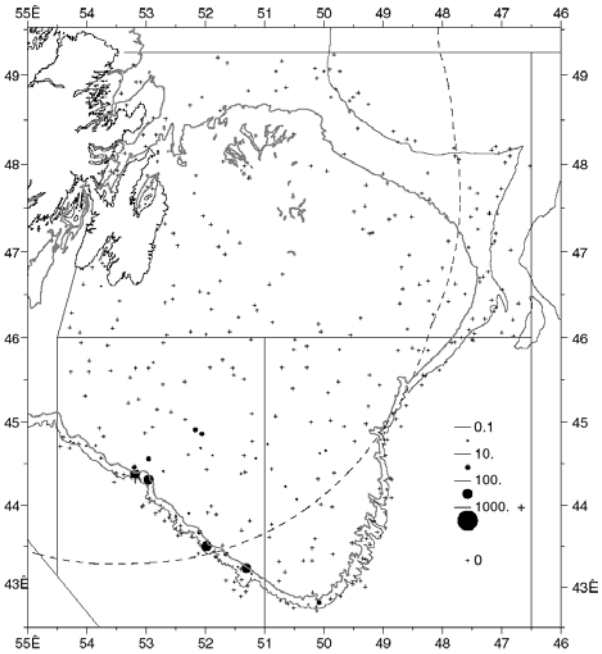


Figure 3. Haddock distribution (numbers per tow) from the fall multispecies survey in 2000.

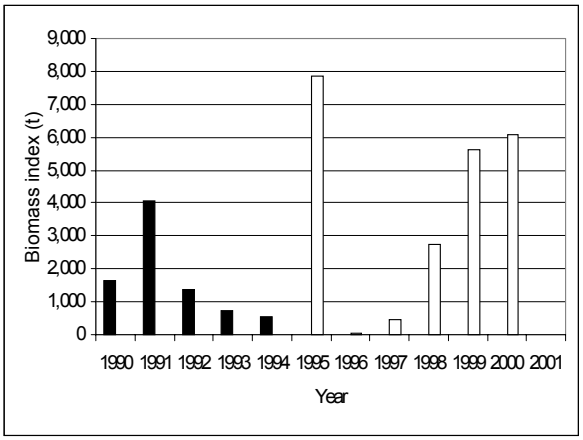


Figure 4. Index of haddock biomass (t) from fall multispecies surveys. Values derived from surveys using the Campelen net are indicted by the open bar.

Outlook

The actual strength of the 1998 year-class is not known. If the warm period continues and survival is good there is the potential for increases in the haddock biomass in this area. With the increase in the yellowtail flounder TAC from 6,000 t in 1999 to 13,000 t in

2001, an increase in the haddock bycatch may be expected if this year class is strong.

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References

Murphy, E. 1995 The status of 2GH Cod, 3LNO Haddock, 3Ps Haddock, and 3Ps Pollock. CSAS Res. Doc. 95/33

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