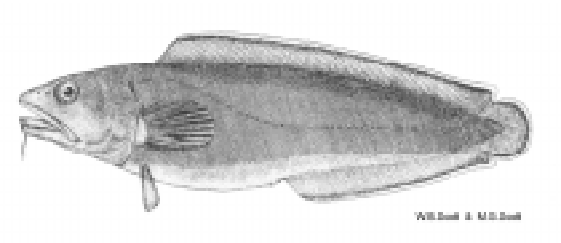
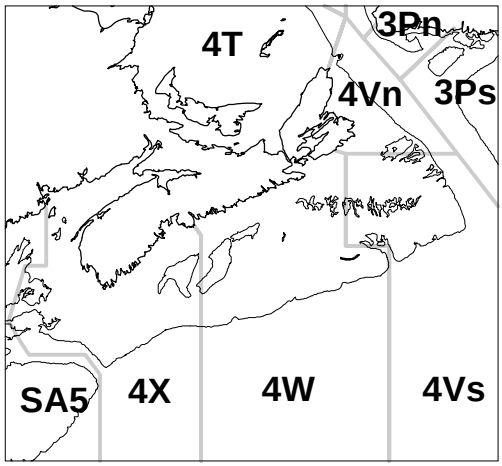
Fisheries and Oceans Pêches et Océans

**Maritimes Region**

**DFO Science**
**Stock Status Report A3-14(1998)**



# Cusk on the Scotian Shelf




***Background***

*Cusk (Brosme brosme) is a solitary, slow swimming species, found primarily on the southwestern Scotian Shelf and Slope and in the Fundian Channel, that seldom moves from bank to bank. Based on July research surveys, cusk occur in temperatures ranging from 3 to 11°C with most being caught in the 6-10$^0$ C range, at depths of 75-150 m. They also prefer a rocky bottom, or gravel and occasional mud but seldom sand.*

*Spawning on the Scotian Shelf is believed to occur from May to Aug., peaking in June. The buoyant eggs are 1.3-1.5 mm in diameter with a pinkish oil globule. The pelagic larvae are about 4 mm when hatched, migrating to the bottom when they have grown to approximately 50 mm in length. Males appear to grow slightly faster than females, (reaching 45 cm at five years of age) and appear to mature more rapidly.*

*The diet of cusk on the Scotian Shelf is unknown, as their stomachs evert when they are brought to the surface. In European waters, cusk feed primarily on crabs and molluscs, along with the occasional starfish. Observations on this side of the Atlantic revealed cusk feeding on crabs and the occasional mollusc off the coast of Maine. The only known predation record was by a hooded seal off Greenland. There is no record of cusk occurring in seal stomachs on the Scotian Shelf.*

## *Summary*

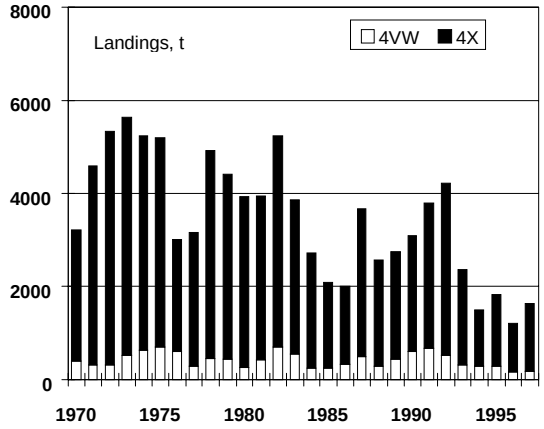

- Landings in 1997 were 1642t, landings have remained below the long-term mean of 3469t since 1993.
- Research vessel survey mean weight per tow declined abruptly in 1992 and has remained below the long-term mean of 1.29 kg since that time. The 1998 value is the lowest in the survey history.
- Research vessel survey catches has shown a restriction of distribution to the western portion of 4X with very few cusk caught in 4W.
- Future catches should be substantially reduced and measures should be undertaken to conserve and rebuild the cusk stock.

## *The Fishery*

Landings (thousands of tonnes)

| Year | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|
| 4VW | 513 | 314 | 294 | 290 | 164 | 174 |
| 4X | 3678 | 2039 | 1209 | 1531 | 1044 | 1468 |
| TOTAL | 4191 | 2353 | 1502 | 1820 | 1208 | 1642 |

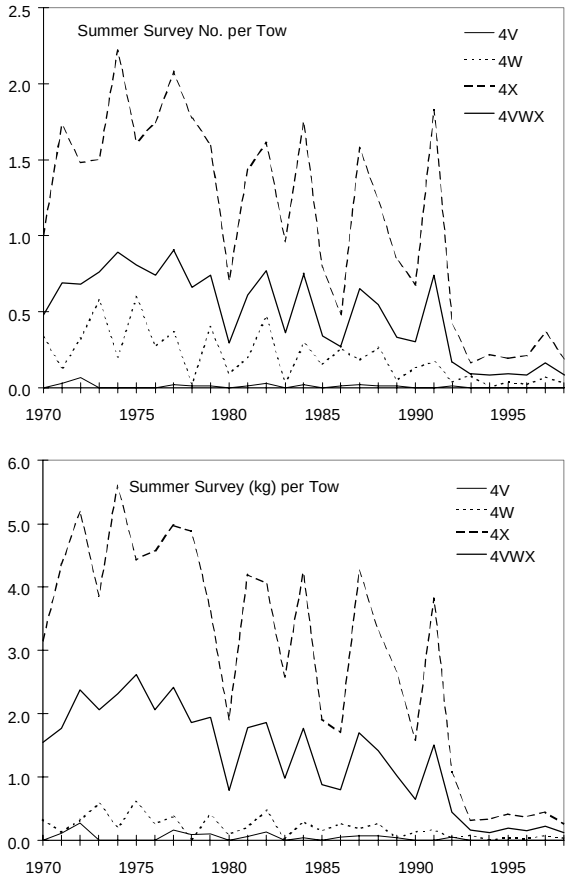
Cusk are primarily caught by longline (95%), with over 80% of the landings coming from 4X. In 4X, landings have varied from a maximum of 5,130t in 1973 to a low of 1044t in 1996. The general pattern of landings is one of a gradual decrease from the early 1970s to the present. Landings in Division 4W have rarely exceeded 500t, while landings in Division 4V have been negligible.



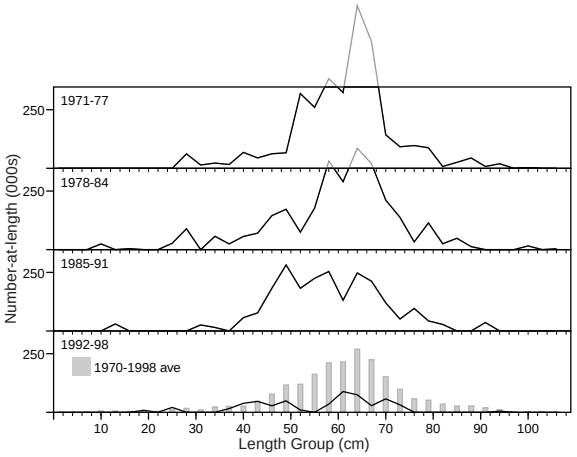

The most common (modal) size in commercial length frequency samples of cusk from the early 1970s and early 1980s was between 64 to 67cm, similar to modal size in the research vessel survey over the same period. These are consistent with modal sizes reported by Oldham (1972) from LaHave Bank in the mid 1960s. The size composition from commercial samples since 1988 has shown no consistent pattern with modes ranging from 52-61 cm. The most abundant size was 52 cm in 2 of the past 3 years.

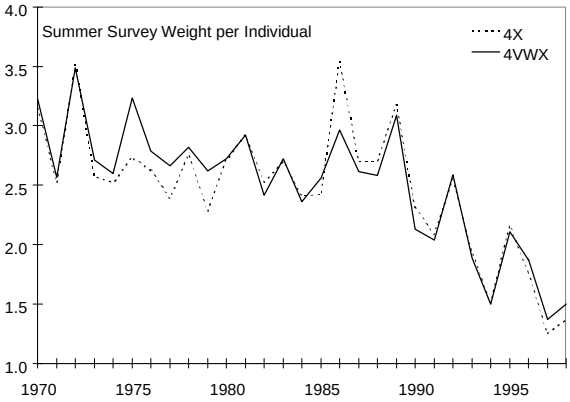
## *Resource Status*

Cusk **biomass** in both 4W and 4X (the centre of the historic distribution) has shown a gradual decline since the start of groundfish research vessel surveys in 1970. Research survey indices show a substantial decrease in both numbers per tow and weight per tow since the late 1980s.



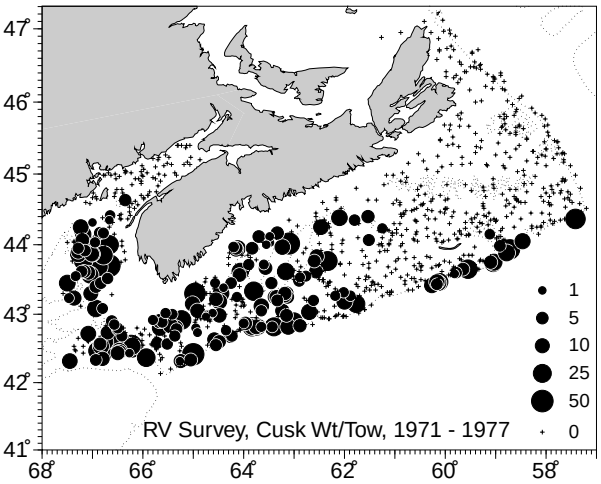

Summer research vessel surveys also show a decrease in abundance of cusk greater than 50 cm.

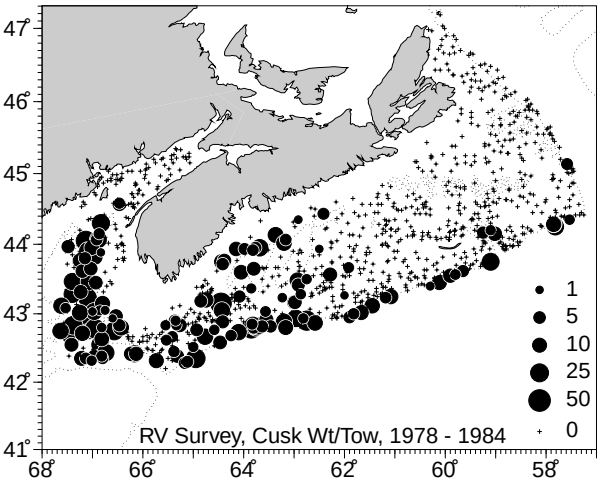


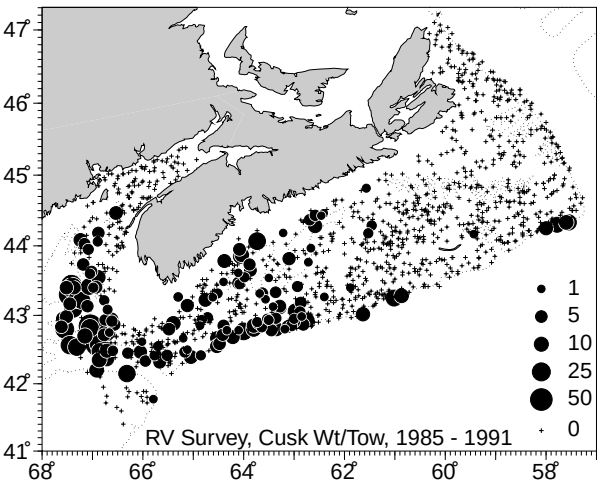



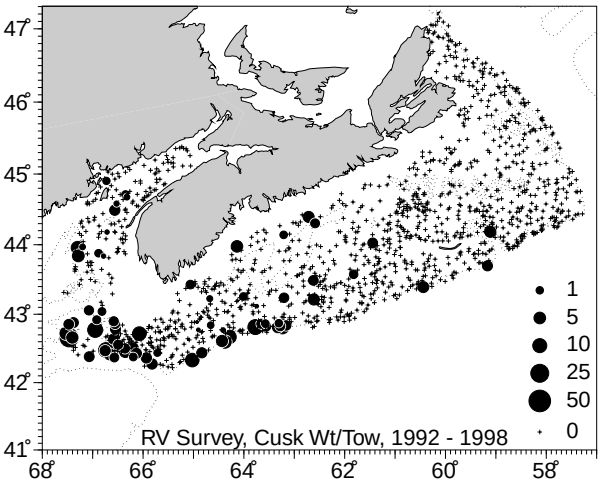

Mean weight per individual from the research vessel survey has declined since 1989.

A comparison of the **geographic distribution** from summer research vessel surveys indicates a significant decline of cusk in recent years. Few cusk are distributed along the seaward edges of Western/Emerald/Sable Island and Banquereau banks.






## *Outlook*

Given the apparent collapse of the cusk population since 1992, immediate and substantial restrictions of cusk landings are required. Elimination of the directed fishery is necessary. Rebuilding of the stock will probably require a combination of both traditional and innovative measures. A restrictive bycatch would aid in rebuilding efforts, but may be difficult to implement without discarding. More innovative measures may include no-take closed areas. Whatever is done to conserve and rebuild the cusk stock, an integrated management plan which deals with the fisheries interactions of this area will undoubtedly be required. An essential initial requirement is the accurate recording of the location of all catches.

## *For More Information*

Contact:

Peter Comeau
Marine Fish Division
Bedford Institute of Oceanography
P.O. Box 1006, Dartmouth
Nova Scotia, B2Y 4A2

TEL: (902) 426-4136
FAX: (902) 426-1506
E-mail: comeaupa@mar.dfo-mpo.gc.ca

## *References*

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This report is available from the:

Maritimes Regional Advisory Process
Department of Fisheries and Oceans
P.O. Box 1006, Stn. B203
Dartmouth, Nova Scotia
Canada B2Y 4A2
Phone number: 902-426-7070
e-mail address: myrav@mar.dfo-mpo.gc.ca

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