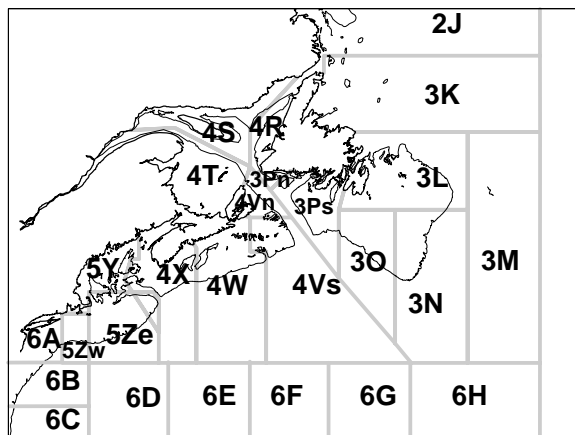




NORTHWEST ATLANTIC SPINY DOGFISH



Background

The spiny dogfish (*Squalus acanthias*) is a migratory species distributed in Northwest Atlantic waters between Labrador and Florida, but is most abundant from Cape Hatteras to Nova Scotia. They prefer temperatures ranging from 7.2 to 12.8°C and depths less than 360m. They begin seasonal migrations from wintering grounds in southern offshore waters in Subarea 6 in the late spring. The larger fish (predominantly female) migrate northward first and generally spread along the edge of the shelf to the Laurentian Channel, making limited excursions onto the shelf and into the Gulf. It has also been reported that there is some limited over-wintering in deeper waters off the Nova Scotia shelf and off southern Newfoundland.

Younger dogfish tend to school by size and larger, mature individuals by sex. They are opportunistic feeders, feeding primarily on sand lance, mackerel and herring, but also include other fish species, crustaceans and molluscs in their diet. Dogfish are a very long lived, slow growing species, living to ages of approximately 40 years, reaching maximum lengths of 120cm for females and 96cm for males. Sexual maturity occurs at a median length and age of about 60cm and 6 years for males, and 80cm and 12 years for females. Reproduction occurs offshore in the winter when female dogfish bear live offspring after a gestation period of 18 to 22 months. The 2 to 15 pups (ave. 6) produced are 25 to 30cm in length.

The available evidence indicates that spiny dogfish in the Northwest Atlantic comprise one stock in NAFO subareas 2-6. They have long been considered a nuisance by fishermen causing a loss of gear and fishing time for other species. The relatively recent development of markets for dogfish products from North America has resulted in the establishment of directed fisheries in the Northwest Atlantic, where landings have increased significantly since 1990. The principal gear used by U.S. fishers to catch spiny dogfish has been otter trawls and gill nets, whereas dogfish caught by other foreign fleets have almost entirely been taken by otter trawl. Recent Canadian landings have been mainly by gillnets and longlines.

The Fishery

(Landings in thousands of tonnes)

Year	70-79 Avg.	80-89 Avg.	1991	1992	1993	1994	1995
Canada	0.2	0.3	0.3	0.7	1.4	1.8	0.8
US*	1.5	5.6	15.0	18.4	21.6	20.4	n/a
Other	13.2	0.5	0.2	0.1	0.0	n/a	n/a
TOTAL	14.8	6.4	15.6	19.2	23.0	22.2	0.8

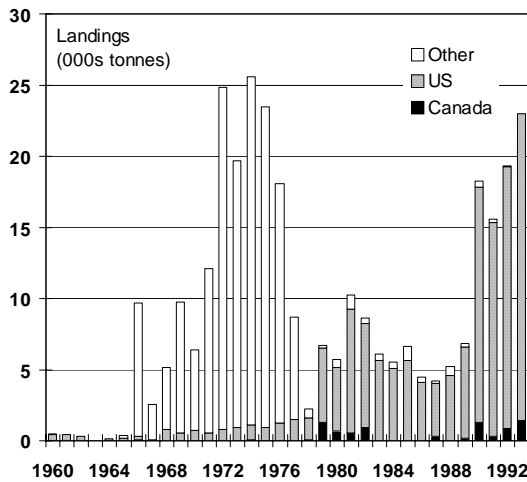
* not available for 1994-95

There is currently no **management** plan for the Canadian Atlantic dogfish fishery (NAFO subareas 2-6). In the southern Gulf of St. Lawrence, where directed fishing for spiny dogfish has increased recently, management measures were imposed in 1995 which included a small fish protocol (minimum fish size 76cm) and regulated minimum mesh and hook sizes.

Landings of dogfish in subareas 4VWX and 5 increased dramatically in the early 1970s when the foreign fleet (primarily U.S.S.R.) began to direct effort to the species. This peaked at 24,000t in 1974 and declined to very low levels by 1978. The US effort increased quickly between 1976 and 1980. Landings

Available from: Maritimes Regional Advisory Process, Department of Fisheries and Oceans, P.O. Box 1006, Stn. B105, Dartmouth, N.S., Canada B2Y 4A2. Telephone: 902-426-8487. E-mail: d_geddes@bionet.bio.dfo.ca

remained steady at 3000 - 8,000t during the 1980s, increased sharply to 18,000t in 1990 and are expected to continue in excess of 20,000t for 1995. Canadian landings were generally less than 30t until the mid 1980s. Since 1987, a small directed fishery, primarily by fixed gear, has landed 300 - 1,800t annually, mainly in southwestern Nova Scotia and the southern Gulf of St Lawrence.



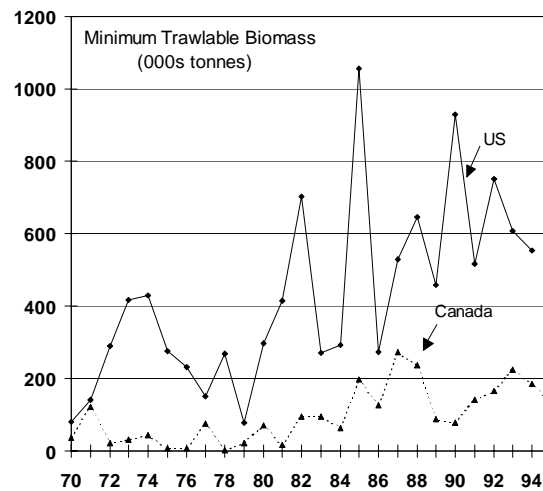
The current directed fishery targets larger individuals, with landings consisting primarily of mature females. Smaller males and immature fish are discarded. The US discard rates are 11 to 43%, while Canadian discard rates are 40 to 76%. US statistics show a decline in average length of females landed from 1982 to 1993 while the average length of males landed over the same period did not change.

Discard rates in the traditional groundfish fishery are also significant. Estimates by Canadian observers range from 3 to 30% of the total landings (when dogfish are available). US estimates are higher, ranging from 11 to 174% of total landings. Estimates of mortality from discarding are 50% for otter trawls and 75% for gillnet and longlines. The resulting loss to the stock equals two thirds of the total landings; the

majority of these being immature. These estimates of discarding are likely low. Spiny dogfish are considered a nuisance and fishers would like eliminate dogfish from the fishing grounds. There are anecdotal reports of intentional mutilation before discarding .

Resource Status

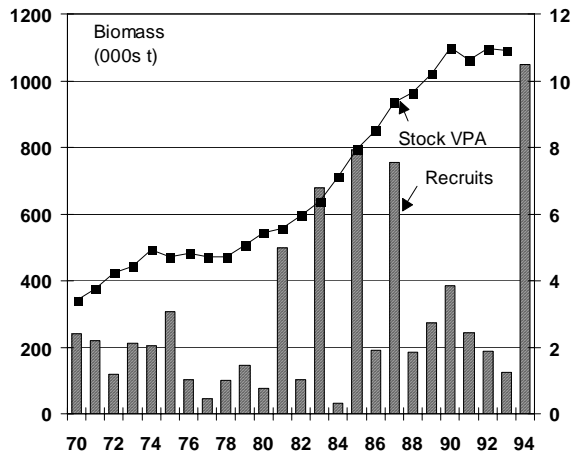
The spiny dogfish are a migratory trans-boundry stock which spawns in offshore US waters (Subarea 6). The evaluation of the stock status was derived from Canadian summer research vessel surveys and the US spring research vessel surveys, as well as the most recent US assessment. The catch rates of both **surveys** show variable but increasing numbers in recent years.



The US VPA calculation of **total biomass** is consistent with these. The lower Canadian estimates reflect the proportion of the stock which migrates into Canadian waters annually. There was an expansion of dogfish onto the Scotian Shelf and into the Gulf of St. Lawrence in the late 1980s.

Recruitment (less than 35cm) was consistent from 1968 to 1994 with higher values observed in 1981, 1983, 1985, 1987 and 1994.

Recruits appear in the Canadian research vessel surveys only in recent years when population size has been large and the stock range expanding.



Outlook

Biomass of dogfish is presently high and has expanded into Canadian Waters. This has been especially evident in the Gulf of St. Lawrence. If the market expands and handling methods improve, there could be pressure to expand the Canadian fishery. Substantial gains could be realized through better use of fish discarded under current harvesting practices. Not only would there be greater yield from the present level of fishing mortality, but there would be more accurate biological data on true exploitation rates, leading to more accurate assessments. Also, while the Canadian fishery is not yet contributing significant mortality, the low fecundity, slow growth, high proportion of larger females taken by the US fishery, high discards and current level of exploitation all indicate caution. Joint assessment and consistent management of this stock by Canada and the US should be considered.

For More Information

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