

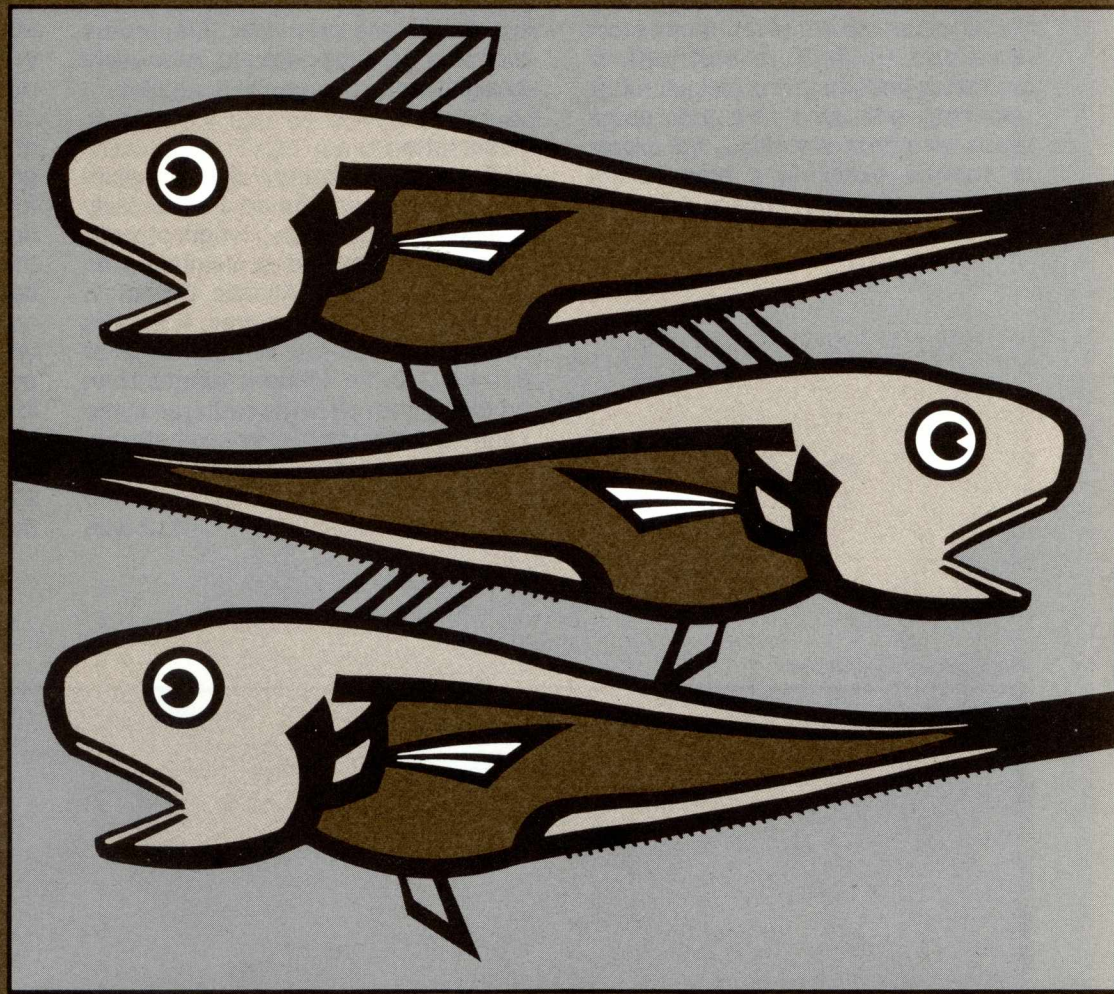
DFO - Library / MPO - Bibliothèque



04037922



UNDERWATER WORLD



Roundnose Grenadier

FS
41-33
/7

Fisheries
and Oceans

Pêches
et Océans

Canada

Roundnose Grenadier

The grenadier, or rattail, are worldwide in distribution, living near the sea bottom from the Arctic to the Antarctic. Some live in the great depths, others on the continental slopes and some swim off the bottom in the upper layers of the ocean. Although they are related to the cod family, in general they have large heads and a body which tapers rather uniformly to a point (hence the name 'rattail'). At least seven species have been reported off the east coast of Canada but only one, the roundnose grenadier (*Macrourus rupestris*) is considered to be present in significant commercial quantities.

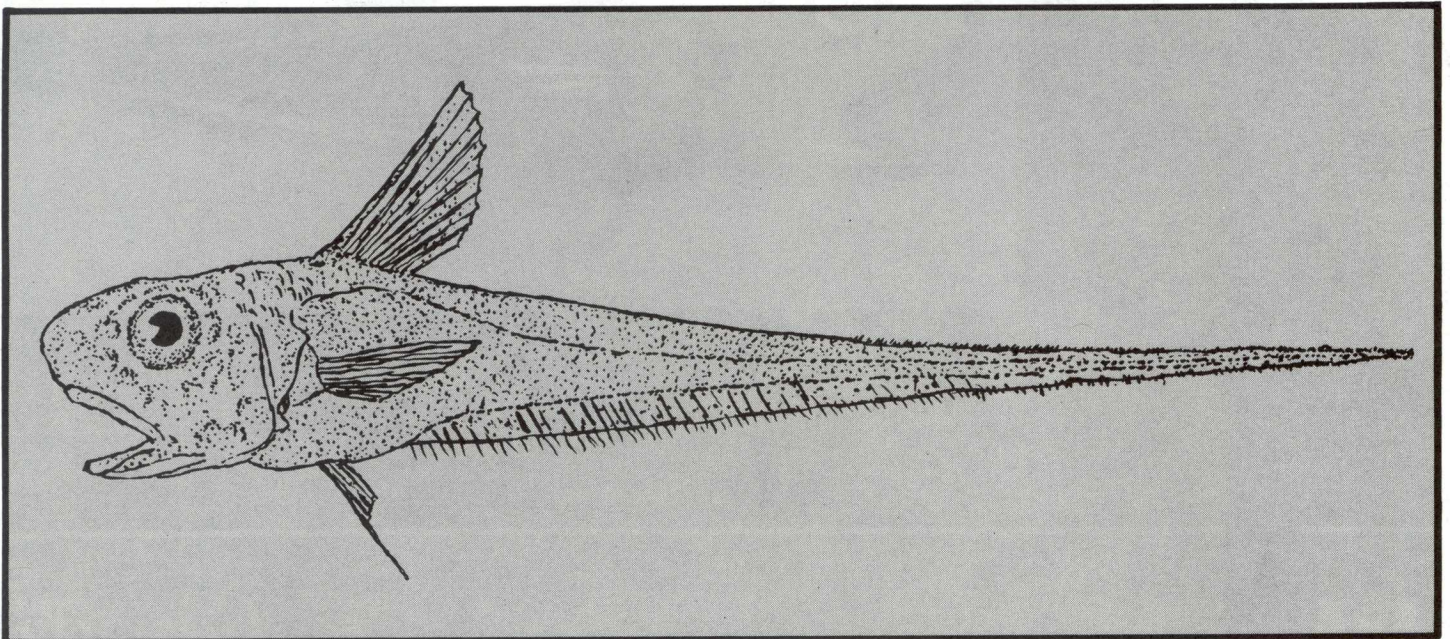
Description

The roundnose grenadier is medium brown in colour and has a blunt, fairly soft nose. It can attain a length of more than one metre and is distributed on both sides of the Atlantic Ocean in depths of 350-2500 metres. It prefers water temperatures in the range of 3.5-4.5°C. In the Western Atlantic it can be found from off Cape Hatteras in the south to just south of the ridge between Baffin Island and Greenland in the north. The greatest concentrations are found from about 50°N northward (see map).

Most of the scientific research conducted on roundnose grenadier has been carried out by the Soviet Union and the German Democratic Republic with some further studies by the Federal Republic of Germany and Poland. This includes work on distribution, feeding, aging and growth and suitable fishing methods as well as sampling of the commercial catches. Canadian work has been minimal with the collection of length frequencies and distribution information being incidental to other primary objectives of research cruises. With the initiation of the Canadian Foreign Observer Program in 1978, Canadian personnel have been able to get a first hand look at the grenadier fishery while on board the foreign fishing vessels and the collection of data and overall knowledge of this fishery has been greatly enhanced.

Although reliable age determination is not possible at present, this species appears to be relatively slow growing, long lived and late maturing. The females are apparently larger than males. Fish tentatively aged up to 27 years have been reported in commercial catches.

Roundnose Grenadier

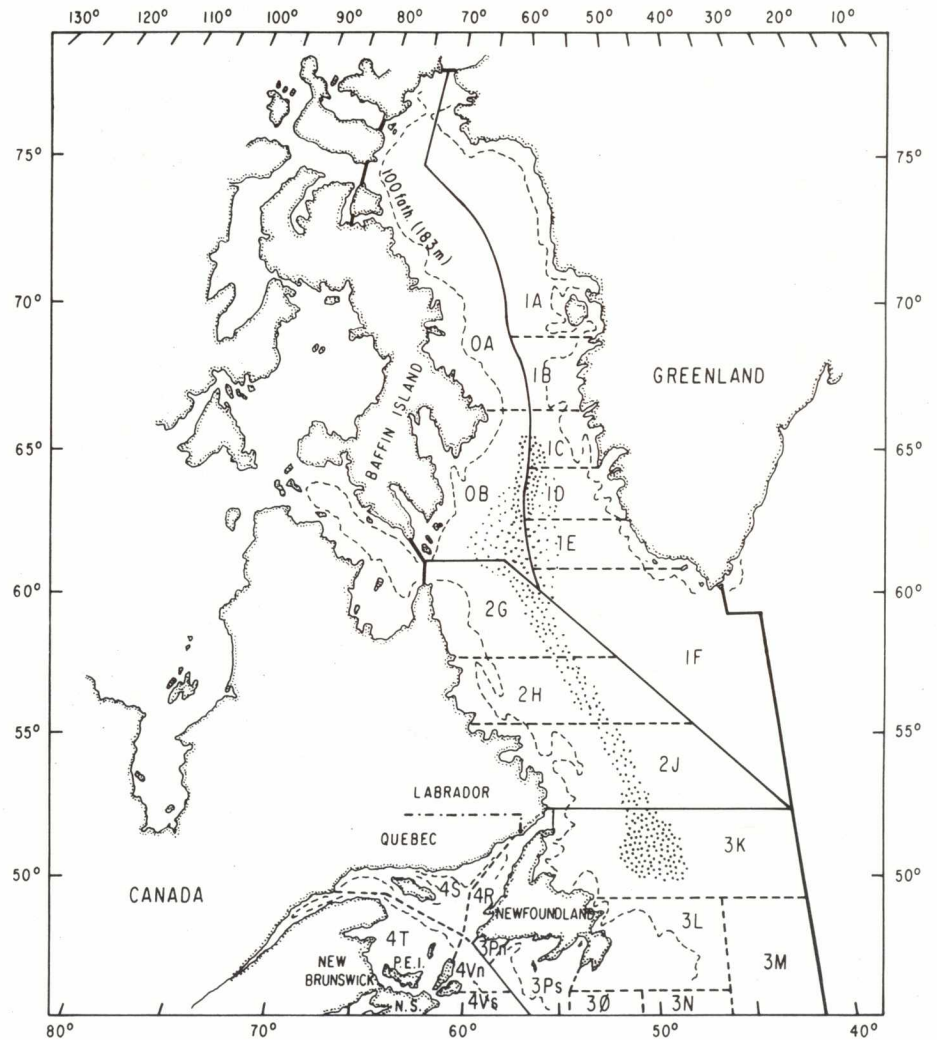


Reproduction

Very little is known concerning the reproductive biology of roundnose grenadier. Mature individuals have been found commonly in the Northeast Atlantic (in the Irminger Sea off the east coast of Greenland) but very few sexually mature specimens have been encountered in the Northwest Atlantic. Various investigators have found, however, that the incidence of sexually mature and maturing individuals increases with increasing depth in the West Atlantic and have concluded that in this area spawning concentrations occur at depths greater than those now studied. The exact time of spawning is also poorly understood. Studies have suggested that they may be spring spawners, fall spawners or both.

Studies indicate that roundnose grenadier feed close to, but off, the bottom, and they feed on a wide variety of small invertebrates as well as some small fish and squid. Indications are that they are heavily preyed upon at certain times by Greenland turbot.

Two separate stocks have been identified in the Northwest Atlantic. The more southerly one is found off the coasts of Newfoundland and Labrador along the edge of the continental shelf, and the other resides in the deeper waters between Baffin Island and Greenland. The latter is in NAFO Sub-areas 0+1 while the former is in Sub-area 2 and Division 3K. The stock off Newfoundland and Labrador is thought



Distribution in Northwest Atlantic

to be three to four times larger than that between Baffin Island and Greenland although reliable estimates of biomass are at present unavailable. Very little is known regarding the distribution of roundnose grenadier within these two areas and knowledge concerning the existence of concentrations comes only from an examination of historical fishing patterns.

The Fishery

A directed fishery was first reported to the International Commission for the Northwest Atlantic Fisheries (ICNAF; now replaced by NAFO) in 1968 when 6,000 metric tons (t) were caught from the northern stock and 31,000 t were caught in the southern area. Initially, in both areas this species was taken almost entirely by the Soviet Union, but since 1973 the German Democratic Republic, Federal Republic of Germany, Poland and Romania have participated to a greater degree. Canada, at present, has no directed fishery toward this species.

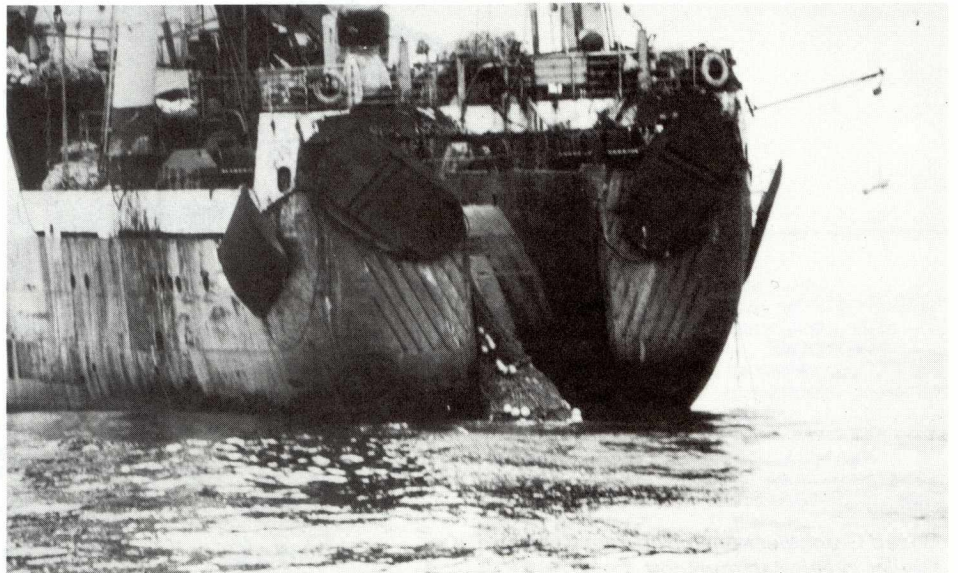
From 1968 to 1974, no Total Allowable Catch (TAC) was in force on either of the two stocks. In 1974, a TAC of 32,000 t was first placed on the southern stock based on a Canadian assessment. This TAC ranged in subsequent years between 35,000 t and 27,500 t. The first TAC was imposed on the northern stock in 1975 at a level

of 10,000 t. This has been subsequently reduced to 8,000 t since 1977. Since 1978 assessments of both stocks have been carried out exclusively by Canada based on commercial fishing data submitted to NAFO by the participating countries. These assessments are presented to and appraised by NAFO annually.

Fishing is generally carried out by large freezer or factory stern trawlers in depths from 700-2000 metres using either bottom trawls or mid-water trawls. Most of the fishing takes place in the last half of each year when ice doesn't hamper operations. The fish are commonly processed on board the vessels. Fillets are removed and frozen and the livers kept as they are a good source of vitamin A. Grenadier fillets are white with a texture similar to cod. They taste very much like cod, but are somewhat sweeter. In recent years countries of the European Economic Community have been bringing into port whole, gutted grenadiers which have been kept on ice from time of catch.

Markets

Although at present there is no market for grenadier in Canada, Fisheries and Oceans' staff in St. John's, Newfoundland have carried out extensive studies on the acceptability of grenadier as a potential food source. They have found that when gutted and iced



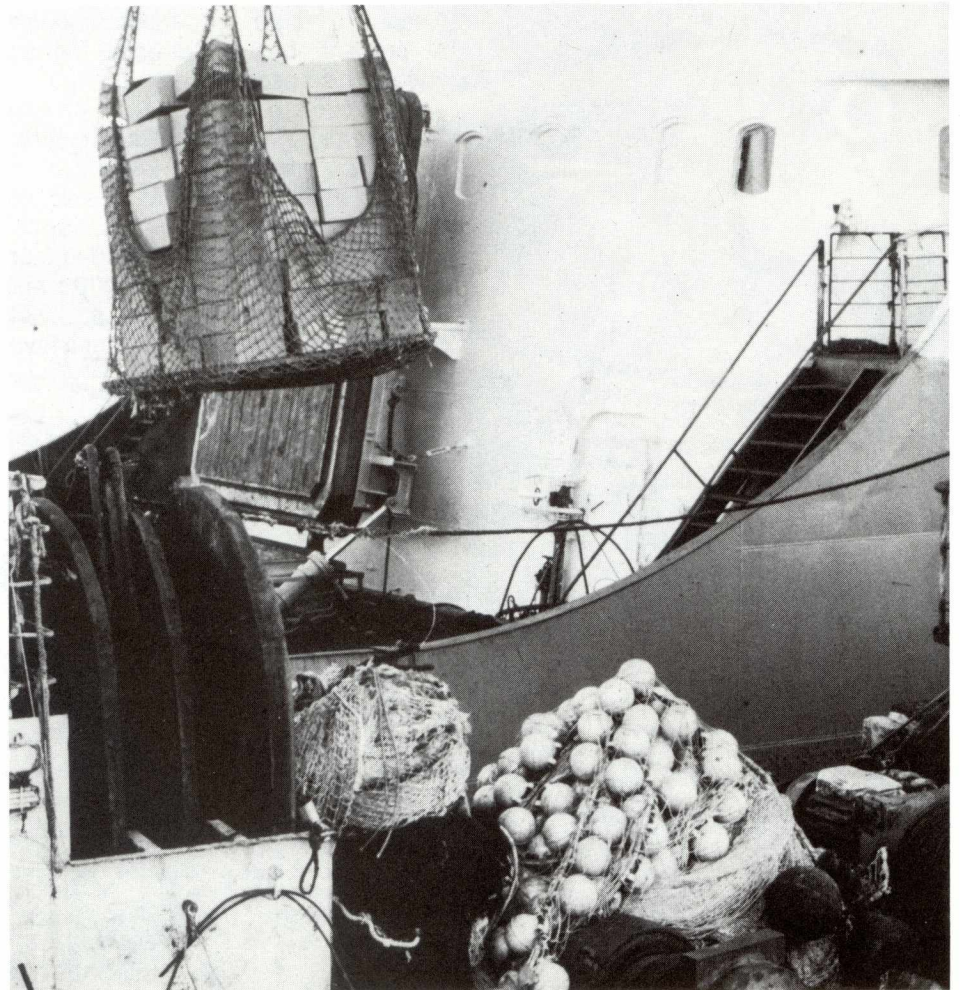
Russian stern trawler hauling in Grenadier

immediately after being caught, the keeping time of at least 18 days is better than that of most species of whitefish (e.g. iced, gutted cod has an 11-12 day storage life). This is a valuable asset since Canadian fishing vessels would have to travel farther to participate in this fishery and therefore would have to spend longer times at sea.

Further studies have shown that this fish has a very good shelf life, remaining in good condition for periods up to 15 months when stored at -23°C . A potential problem of dehydration or drying out exists during this storage period but can be solved by careful packaging. Taste panel studies indicate that during these periods the overall acceptability was from fair to good. These researchers concluded

that the roundnose grenadier has a high potential for use as human food and have strongly recommended that the Newfoundland fishing industry seriously consider utilizing it.

The roundnose grenadier stocks off the northeast coast of Canada are of great importance to those countries now utilizing this fishery. Canada's interest has been minimal in the past but should grenadier become acceptable to the western fish-eating public, these stocks will undoubtedly become more important to the domestic fishery in the future. Fishing captains, technologists and marketing personnel agree that with time, the grenadier stocks off Canada's northeast coast will become a profitable addition to Canada's marine resource.



Boxed Grenadier transferred from Russian trawler to Russian transport

Further Reading

- Leim, A.H., and Scott, W.B. 1966. *Fisheries of the Atlantic Coast of Canada*. Fish. Res. Board Can. Bull. No. 155. p. 220.
- Marshall, N.B., and T. Iwamoto. 1973. Family Macrouridae. In: *Fishes of the Western North Atlantic*. Sears Foundation for Marine Research. No. 1, part 6. p. 496-662.
- Parsons, L.S. 1976. *Distribution and Relative Abundance of Round-nose, Roughhead and Common Grenadier in the Northwest Atlantic*. ICNAF Selected Papers No. 1. p. 73-88.

Underwater World factsheets are brief illustrated accounts of fisheries resources and marine phenomena prepared for public information and education. They describe the life history, geographic distribution, utilization and population status of fish, shellfish and other living marine resources, and/or the nature, origin and impact of marine processes and phenomena.

Text:

D.B. Atkinson
Northwest Atlantic Fisheries Centre
Department of Fisheries and Oceans
Saint-John's, Newfoundland
A1C 5X1

Published by :

Communications Directorate
Department of Fisheries and Oceans
Ottawa, Ontario
K1A 0E6

DFO/4848 UW/07

© Minister of Supply and Services
Canada 1993
Catalogue Number Fs 41-33/7-1993E
ISBN 0-662-20596

Aussi disponible en français



Printed on recycled paper

Others in this series:

Alewife	Atlantic Salmon	Lumpfish	Sea Scallop
American Eel	Atlantic Shellfish	Marine Fish Eggs and Larvae	Selected Freshwater Fish
American Oyster	Atlantic Snow Crab	Narwhal	Selected Shrimps of British Columbia
American Plaice	Beluga	Northern Shrimp	Soft-Shell Clam
American Shad	Bluefin Tuna	Pacific Salmon	Spiny Dogfish
American Smelt	Bowhead Whale	Pollock	Squid
Arctic Char	Capelin	Red Hake	Thorny and Smooth Skates
Arctic Cod	Cetaceans of Canada	Red Sea Urchin	Trout in Canada's Atlantic Provinces
Atlantic Cod	Crabs of the Atlantic Coast of Canada	Red Tides	Turbot (Greenland Halibut)
Atlantic Fishing Methods	Dungeness Crab	Redfish (Ocean Perch)	Walleye
Atlantic Groundfish	Grey Seal	Rockfish	White Hake
Atlantic Halibut	Haddock	Sand Lance	Winter Flounder
Atlantic Herring	Irish Moss	Sea Cucumber	Witch Flounder
Atlantic Mackerel	Lake Trout	Sealing — A Canadian Perspective	Yellowtail Flounder
Atlantic Pelagic and Diadromous Fish	Lingcod		