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# Some Problems of Optimum Utilization and Management of Grenadier and Halibut Stocks in the Northwest Atlantic in the Conditions of 200-mile Zones

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Technological progress in ship building for fisheries, and techniques of commercial fishing had allowed to initiate large--scale research from the late 1950-s. Based on its results, they undertook to commercially develop the living marine resources of great depths over the continental shelf in the Northwest Atlantic from the mid-1960-s.

It took a relatively short period of time (3-5 years) for the research effort by a number of nations to refute the opinion, common among some biologists and experts, that the existence of fish stocks of relatively high abundance capable of ensuring commercial catches is hardly possible over great depths of the continental shelf. The two species which, as indicated by research, can be the basic fishing objects at 550 to 1200-1600 (2000) metres are Greenland halibut and roundnose grenadier. They had yielded the total commercial catch of over 100 th. tons in 1971. The total catch by all countries throughout the period of exploitation in the Northwest Atlantic (1968-1986) exceeded one million tons.

Although Greenland halibut and grenadier are distributed in a wide range of depths in different periods of life history, fishing concentrations accessable to bottom and mid-water trawl fisheries are formed on the continental shelf of the Canadian--Greenland ridge, along the Baffin Land, Labrador and North Newfoundland at 550-600 to 1200-1600 (2000) metres, All these areas of the Northwest Atlantic (Figure 1), except for some small grounds,

became incorporated into the 200-mile zones of Canada and Greenland (Denmark) in 1976-1977.

The review of catch dynamics of Greenland halibut and roundnose grenadier by years(Figure 2) shows their instability between 1968 and 1976.However on the whole catches were growing in the absense of the 200-mile zone regime between 1968 and 1976,and they dropped when the 200-mile zone regime was being fully excersised.This latter period is characterised by a decline in the number of fishing cruises,and consequently of the total fishing effort, particularly in the fishery for roundnose grenadier.Dynamics of TAC by years for the two species,as recommended by the Scientific Council of ICNAF/NAFO in 1974-1987 (Figure 3),when compared,give interesting results.While TAC for Greenland halibut tends to increase under the 200-mile zone regime,the roundnose grenadier TAC under the same regime shows decline (Figure 3).Such trends in TAC and yearly catch variations were,in our view,caused in the first case by the insufficient scientific data base for TAC projections, and in the second case by the restricted access for fishing vessels of a number of countries to the fishing areas where these countries had previously made research and carried out fishing for roundnose grenadier and Greenland halibut,especially to the northern areas: North Labrador,Baffin Land,and Canadian-Greenland ridge.

The most ample and reliable scientific data on the distribution and status of stocks of roundnose grenadier and Greenland halibut were obtained during the large-scale fishery prior to 1976-1979 followed by a decrease in the fishing effort,especially in the northern part of the area,smaller number of research expeditions which led to a decline in the volume of scientific and fishing data.All this probably gives rise to a very cautious approach within the Scientific Council of NAFO in advising on TAC which is hardly justifiable.In view of the contemporary knowledge of the biology of these two species (continuous range north to south;probable existence of a single population of Greenland halibut throughout the whole Northwest Atlantic ;NWA as the area of marginal deportation of the population) the advice of the NAFO Scientific Council to manage stocks by means of TAC separately for subareas 0+I and 2 + 3KL appears to be debatable.

In the light of the recent research in biology and population dynamics of roundnose grenadier and greenland halibut, as well as of the results of commercial fishing in I968-I986 it appears that the level of actual exploitation of resources of these species in the Northwest Atlantic is below the optimum.

It would be reasonable to expand commercial catches in North Labrador, Baffin Land, Canadian-Greenland ridge and West Greenland (subareas 0,I,2) for the purpose of management of these species, and of receiving a scientific data base.

At the same time it becomes economically feasible only in the event when fishing vessels engaged in a fishery for these species are allowed to move freely between subareas 0 and I following the concentrations of these objects.

One thing is certain that there is only one way to secure new data on Greenland halibut, roundnose grenadier, and on other species inhabiting great depths of the continental shelf: coordinated scientific international research, and commercial fishery on the optimum level.

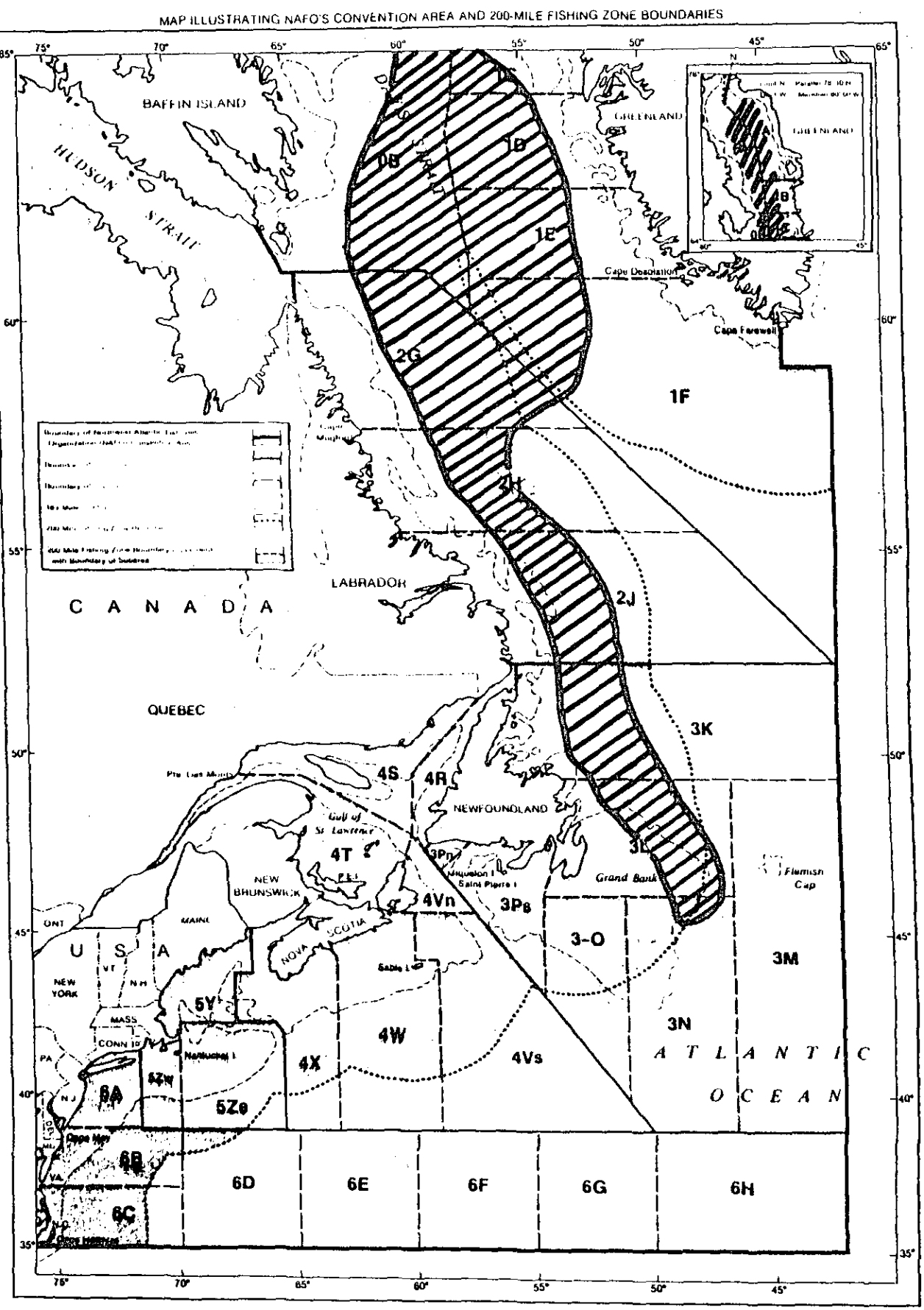


Figure 1. Area of potential commercial fishery for Roundnose grenadier and Greenland halibut in the northwest Atlantic based on materials of 1964 - 1966 (hachured)

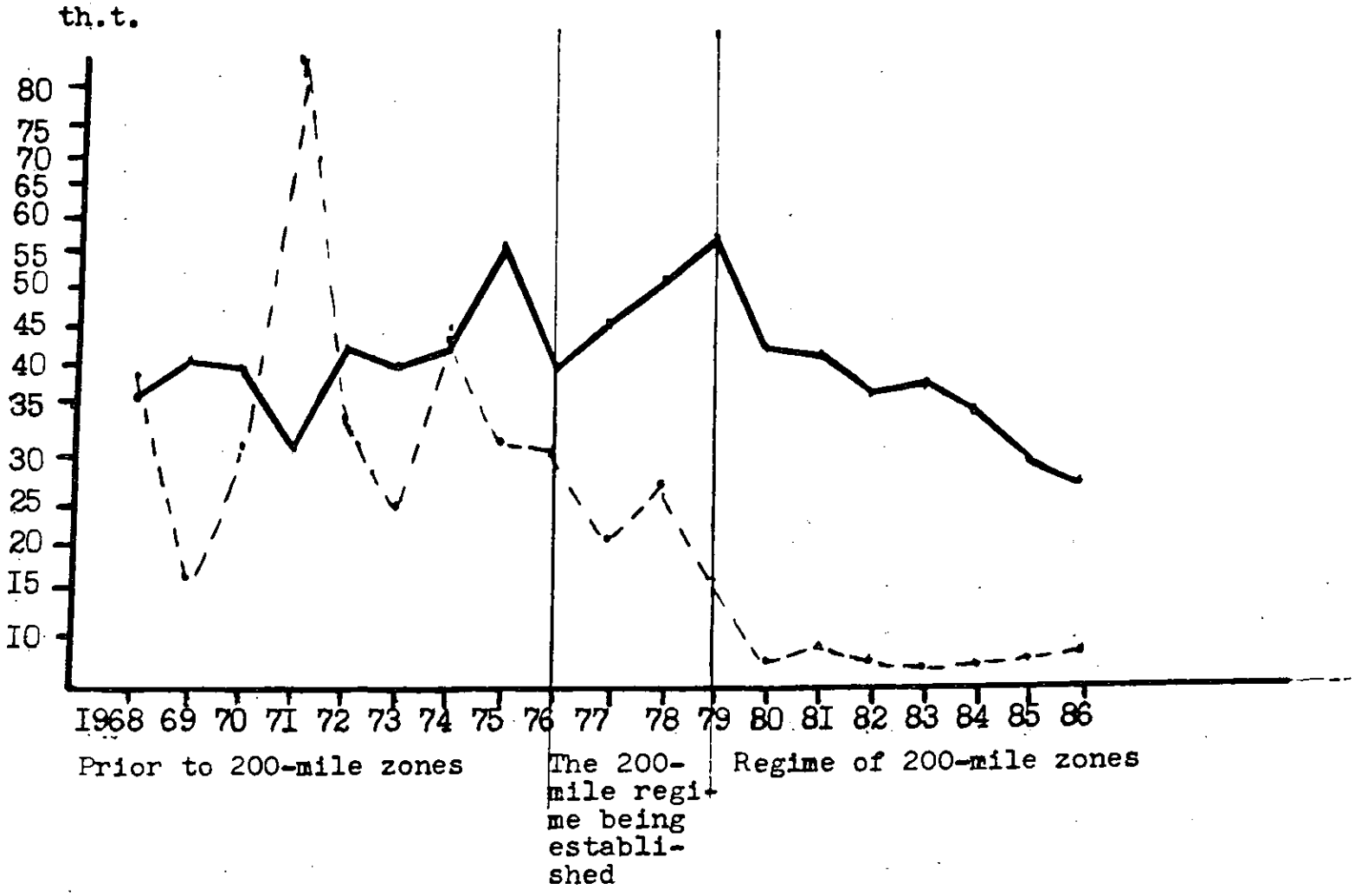


Figure 2. Cathes of Greenland halibut (solid line) and of Roundnose grenadier in the northwest Atlantic (NAFO subareas 0+1 and 2+3KL) in 1968-1986

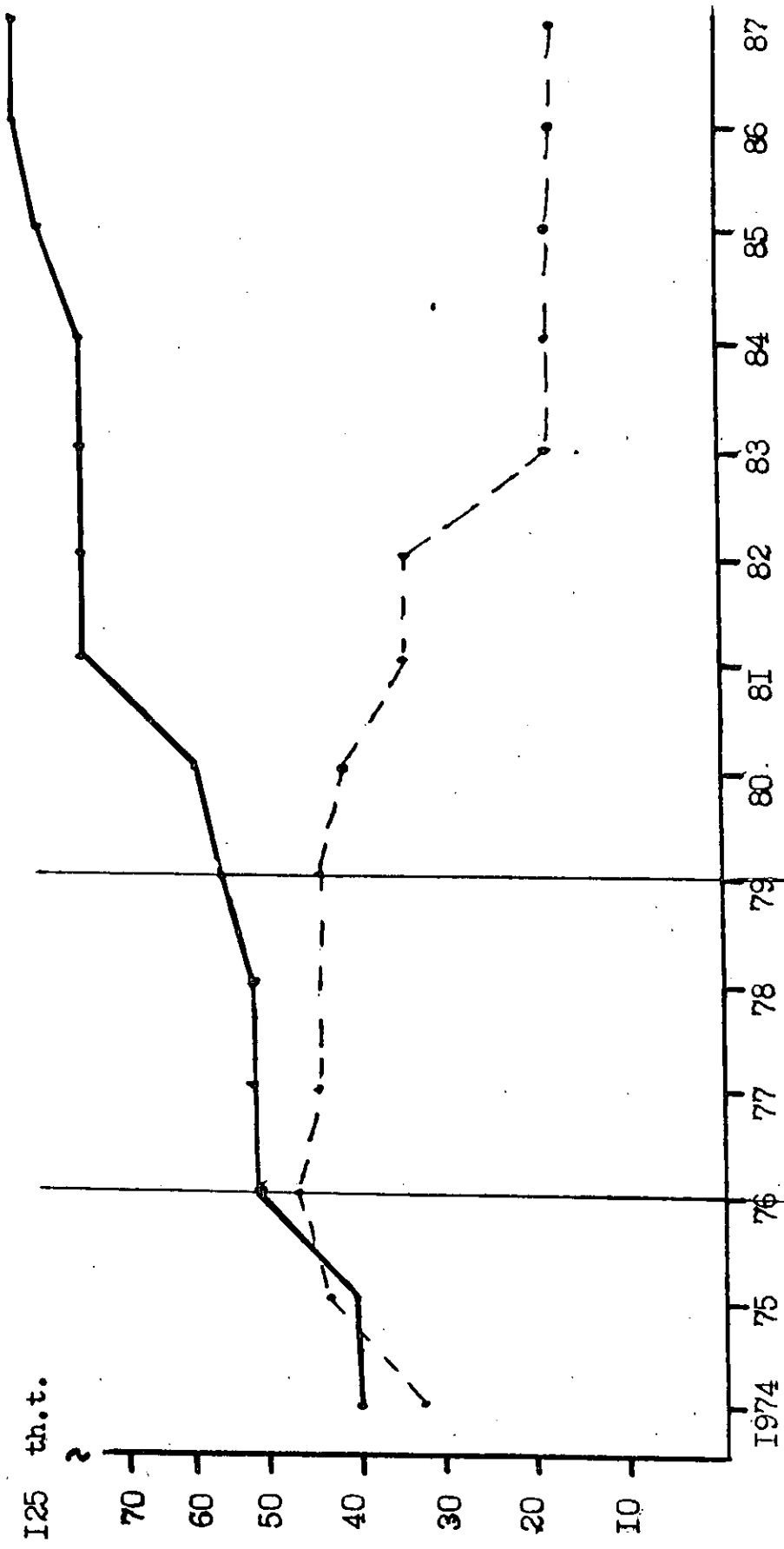


Figure 3. Total allowable catch of Greenland halibut (solid line) and of Roundnose grenadier (dashed line) as recommended by the ICNAF/NAFO Scientific Council for areas of the northwest Atlantic (subareas 0+1 and 2+3KL) in 1974 - 1987