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Note on Deep-sea Trawling Beyond the Limits of the Canadian 200-mile Zone

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Research vessels of the Polar Research Institute of Marine Fisheries and Oceanography have made repeated trawl hauls in deep-sea regions of the Northwest Atlantic outside the Canadian 200-mile fishing zone.

During 8-14 October 1975, the *Persey III* surveyed the deep-water elevation, known as "Orphan Elevation" (50°00' to 50°30'N, 46°00' to 46°30'W), which is distinct from the continental slope. After information on depth and bottom relief had been obtained by echo-sounder, four trawl hauls were made with a one-warp bottom trawl. The depths where the trawl hauls were made varied between 1750 and 2600 m. The setting of the trawl took about one hour and the retrieval took about 1½ hours. The duration of actual trawling ranged from one to two hours at a towing speed of 1.5-2.0 knots. The largest catch taken on 12 October per hour trawling was 0.5 tons, 50% of the catch being longfin cod (*Antimora rostrata*) 34-58 cm in length, 15% being slickhead (*Alepocephalus bairdii*) 24-74 cm in length, 10% being roundnose grenadier (*Macrourus rupestris*) 15-83 cm in length, and the remainder being single specimens (14 species) of deep-sea skates, sharks and ghost sharks. During the same cruise a small number of deep-sea trawl hauls were made on the continental slope of the Scotian Shelf and the south-western slope of the Grand Bank without commercially-important results.

During 25-28 February 1978, the research vessel *Artemida* made some trawl hauls at depths of 1000-2000 m north of the Flemish Cap (47°00' to 48°30'N, 43°30' to 45°00'W). The bottom temperature in the trawling areas was about 3.3°C. Catches amounted to 0.7-0.8 tons per hour trawling with roundnose grenadier predominating. The length range was 15-104 cm with a modal group at 50-70 cm. The numbers of males and females were approximately equal, and some mature specimens occurred. Crustaceans, squids and digested fish constituted the bulk of the stomach contents of the roundnose grenadier sampled.

Deep-sea trawling were carried out during other cruises to the Northwest Atlantic, and it seems that bottom fishes are practically absent at depths greater than 1500 m between 45° and

(over)

50° latitude. Can we say that the results obtained testify to the hopelessness of further research?

One important biological regularity is worth noting. Many deep-sea fish species (as well as invertebrates) inhabiting high latitudinal regions are found at shallower depths than in the low latitudinal regions. For example, roundnose grenadier form commercial concentrations at 600-800 m in the Baffin Island and Davis Strait Ridge areas, at 800-1000 m in the Labrador area, and at 1000-1300 m in Div. 3K off northeastern Newfoundland.

Many experts ascribe bipolar distribution of various marine animals (in arctic and antarctic regions) to the considerable depths in which these animals may live in equatorial and tropical regions. It is possible that roundnose grenadier (the main object of the deep-sea fishery) in latitudes of 45-50° and southwards are concentrated at such great depths that existing commercial gears are not capable of exploiting them successfully. Only poor catches, of naturalistic rather than commercial interest, have been obtained in the experimental fishing at great depths with small trawls towed at a rather slow speed.