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An additional food supply for humpback (*Megaptera novae-angliae*)
and minke whales (*Balaenoptera acutorostrata*)

by

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Abstract

Humpback whales *Megaptera novae-angliae* and minke *Balaenoptera acutorostrata* approach ships. The former species certainly, and the latter probably, come round draggers hauling their nets and probably take the incapacitated or dead fish escaping through the meshes. Fin whales *B. physalus* are indifferent to ships and do not show this behaviour. Humpback and minke, but not fin whales, are preadapted to this behaviour since they take large fish naturally. If food-limited, humpbacks should reach a higher population than formerly so long as fishing lasts. There are no historical population assessments for minke.

Introduction

The following three episodes document behaviour of humpback whales to man. It has been documented only briefly before by Mitchell (1975).

(1) On July 10, 1959 I was on board the research vessel A.T. Cameron out of St. John's, Newfoundland en route to the southeast edge of the Grand Bank at position 42°45'30"N, 50°29'W approx. A group of humpback whales approached the vessel, which was travelling, but did not stay. On July 13 at 43°28'N, 49°17'W the ship was dragging, obtaining cod *Gadus morhua* and American plaice *Hippoglossoides platessoides* in 40-80 fa (70-150 m). A single humpback approached the ship very closely (Fig. 1) while it was hauling in. The July 1959 research cruise was primarily for redfish *Sebastes marinus* but this phase did not attract humpbacks; perhaps redfish are too spiny.

(2) On November 24, 1960 I was on board CNAV Sackville, an oceanographic research vessel, on the southwest edge of the Grand Bank at 44°27'N, 53°44'W. One to two humpback 40 ft or so in length were seen thrashing their tails round the ship. I was operating a 6 ft Isaacs-Kidd trawl which took a few pieces of squid and some larger zooplankton at depth of from 350 to 50 fa (550-90 m). On November 30 at position 43°38'N 52°34'W, a pair of humpbacks were seen jumping clean out of the water. I was hauling vertically a 1 m Stramin net to ca 400 fa (750 m).

(3) In early March, 1961, A. T. Cameron was fishing for haddock on the southern edge of the Grand Bank. Williamson (1961) recorded a humpback with its calf on March 8 near this area (at 42°53'N, 50°50'W). Dr. Vincent Hodder, who had been on this cruise, told me in January, 1975 that there had been numerous humpbacks round the ship when it hauled its nets. The position of these sightings, judged from the published fishing stations for the voyage, and catches of haddock, was on the Continental Slope NE of Williamson's sighting, over depths of 80-100 fa (150-180 m).

Note that (1) all these three episodes occurred in the same area (Fig. 2), the southern part of the Grand Bank, within a two year period; (2) humpbacks were present at all seasons; (3) all approaches of humpbacks to ships were associated with the use of nets, large or small.

I have not been to sea enough since 1965 to add to these accounts. However, Dr. P. F. Brodie photographed a humpback close to a Soviet dragger which was transferring its catch of capelin (*Mallotus villosus*) to a larger transport ship in Notre Dame Bay, Newfoundland in late November, 1974.

Discussion

Humpbacks are unusually tame to ships, as compared with fin whales *Balaenoptera physalus*. Thus, on August 1973 I was in one of 5 small fishing vessels seabird-watching 5-7 km south of Brier I., SE Bay of Fundy. Krill *Meganyctiphanes norvegica* were swarming near the surface, fed on by herring *Clupea harengus* and seabirds, especially shearwaters *Puffinus gravis*. Several fin whales were in the vicinity shy or indifferent to the vessels. One humpback, feeding with the most exaggerated leaping and dives, was totally indifferent to three of the vessels which crisscrossed its position.

Minke *Balaenoptera acutorostrata* are tame to stopped ships (Beamish and Mitchell, 1973), as I have also observed. I have not seen minke feeding around fishing nets, but in July 1965 at the whaling station at Dildo, Newfoundland, I was shown the frozen head of a minke which had been caught earlier that summer (Fig. 3). It had the meshes of a net, probably the cod end of a trawl, grown in to its snout

Evidently it had been cut out.

According to Thompson (1943), trawling (dragging) on the Grand Bank prior to 1939 was carried out only experimentally from Newfoundland, but on some scale by Spanish, French and Portuguese trawlers. This phase is documented by ICNAF (Anon, 1954) which shows the development of considerable otter trawling by Spain in the 1930's in the Northwest Atlantic. According to Templeman (1966) dragging greatly expanded on the southern Grand Bank between 1945 and the early 1960's for haddock, American plaice and redfish, as well as presumably cod.

According to Hinds and Trimm (1975) discards, i.e. fish thrown overboard from trawling, in the Northwest Atlantic, may total 200,000 tons per annum. This statistic does not measure the undersized fish escaping from the trawls, which is what the whales presumably take, but gives an idea of the quantities of fish that may be available to the whales.

Humpbacks winter and calve in waters near West Indies (Kellogg, 1929; Winn et al., 1975), pass Bermuda in April and May, and arrive on the Grand Bank in June-July (Sergeant, MS 1966) where they, in company with many fin and some minke whales, feed on capelin, which spawn on the southeast shoal at this season (Pitt, 1958). Such whales are out of range of shore based catching, but in summer, humpbacks disperse somewhat further northeast (Sergeant, MS 1966, 1968), where they came into catching range of shore stations in eastern Newfoundland in 1945-1951 and 1969-1971. [Humpbacks were protected in the North Atlantic in 1955 but an experimental catch of 4 humpbacks was taken in 1969-1971 for scientific study (Mitchell, 1973)].

Humpback and minke whales both take fish up to the size of codfish (Klumov, 1963; Sergeant, 1963), whereas fin whales take fish only up to the size of herring and mackerel (Mitchell, 1975).

Humpbacks at least, and probably minke too, are thus preadapted for feeding on fish escaping from nets being hauled. (There is some evidence that minke also come round vessels long-lining, perhaps for the bait fish coming off hooks.)

Humpbacks were also preadapted for this habit by their migratory pattern on the Grand Bank.

There is some suggestion that in 1961, humpbacks stayed on the southern Grand Bank all the year and a few calved there. Perhaps this behaviour was related to the year round fishing for cod and haddock that then occurred there, but we lack later data on humpback distribution and fishing effort.

Humpbacks had a primeval population around Newfoundland which from cumulative catches from 1898 to 1951 may have numbered about 1500 (Sergeant, MS 1966). The ratio of fin to blue to humpback whales was comparable at 10/15/75 for the southern oceans according to shipboard census (Mackintosh and Brown, 1956), and 15/15/70 for the Northwest Atlantic according to cumulative catch estimates (Sergeant, MS 1966 and Mitchell, 1973). Mitchell (1973) now finds about 1200 humpbacks in the north, mainly in the northwest Atlantic and Winn et al. (1975) about 900 at the winter calving grounds in the Antilles. Evidently the population has not yet reached its primeval abundance since Winn et al. find few humpbacks around Trinidad where Kellogg (1929) recorded much catching. Humpbacks are known to have a low reproductive rate and numbers in 1955 were probably fairly low. Nevertheless in a few more years the species should recover fully. Since food is probably a limiting factor for these whales, given the additional food supply obtained from man as described above, humpbacks should overshoot their original abundance.

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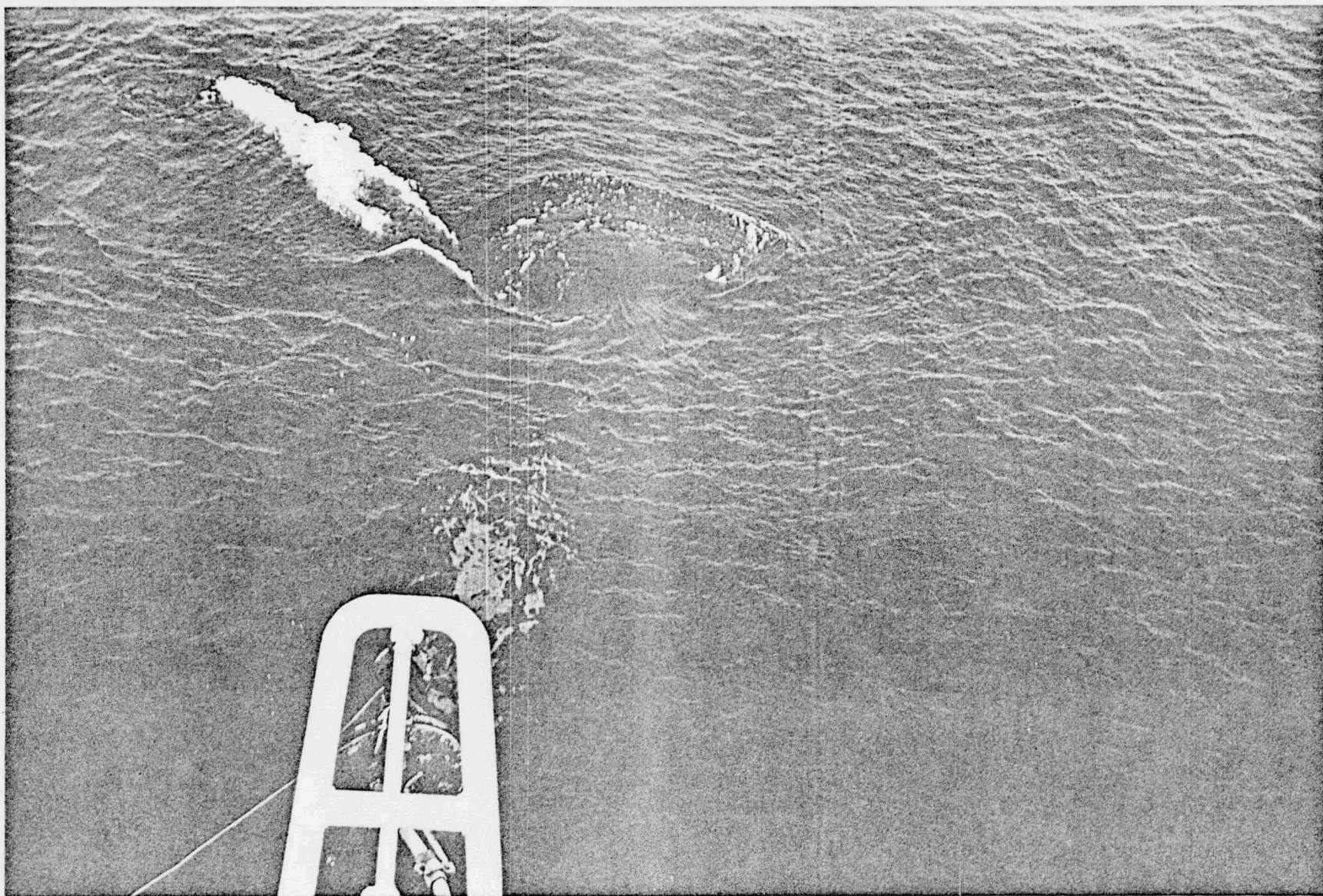
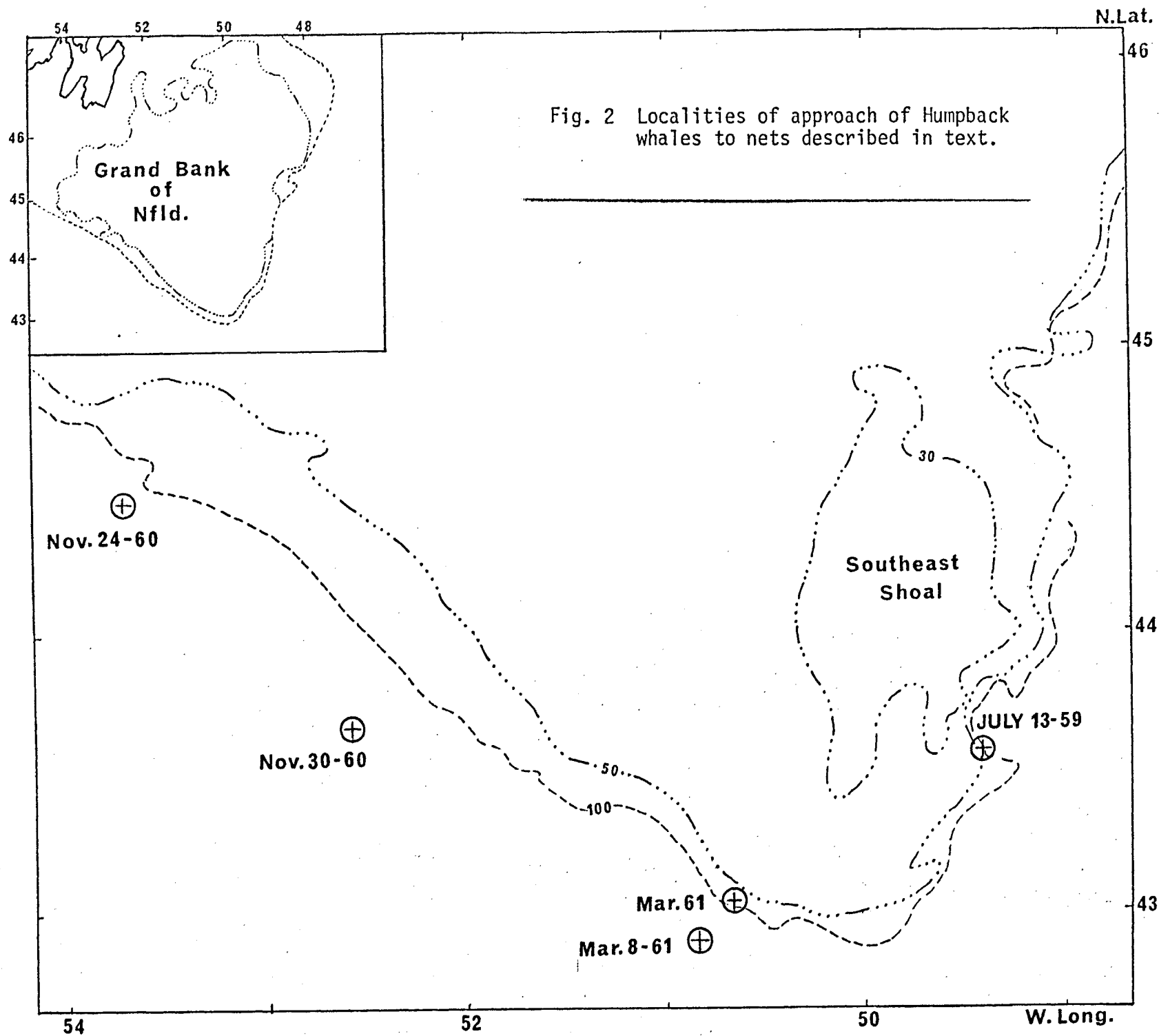


Fig. 1. Humpback inspecting trawl of A.T. Cameron as it was being hauled,
Grand Bank, July 13, 1959. Photo: D.E. Sergeant.



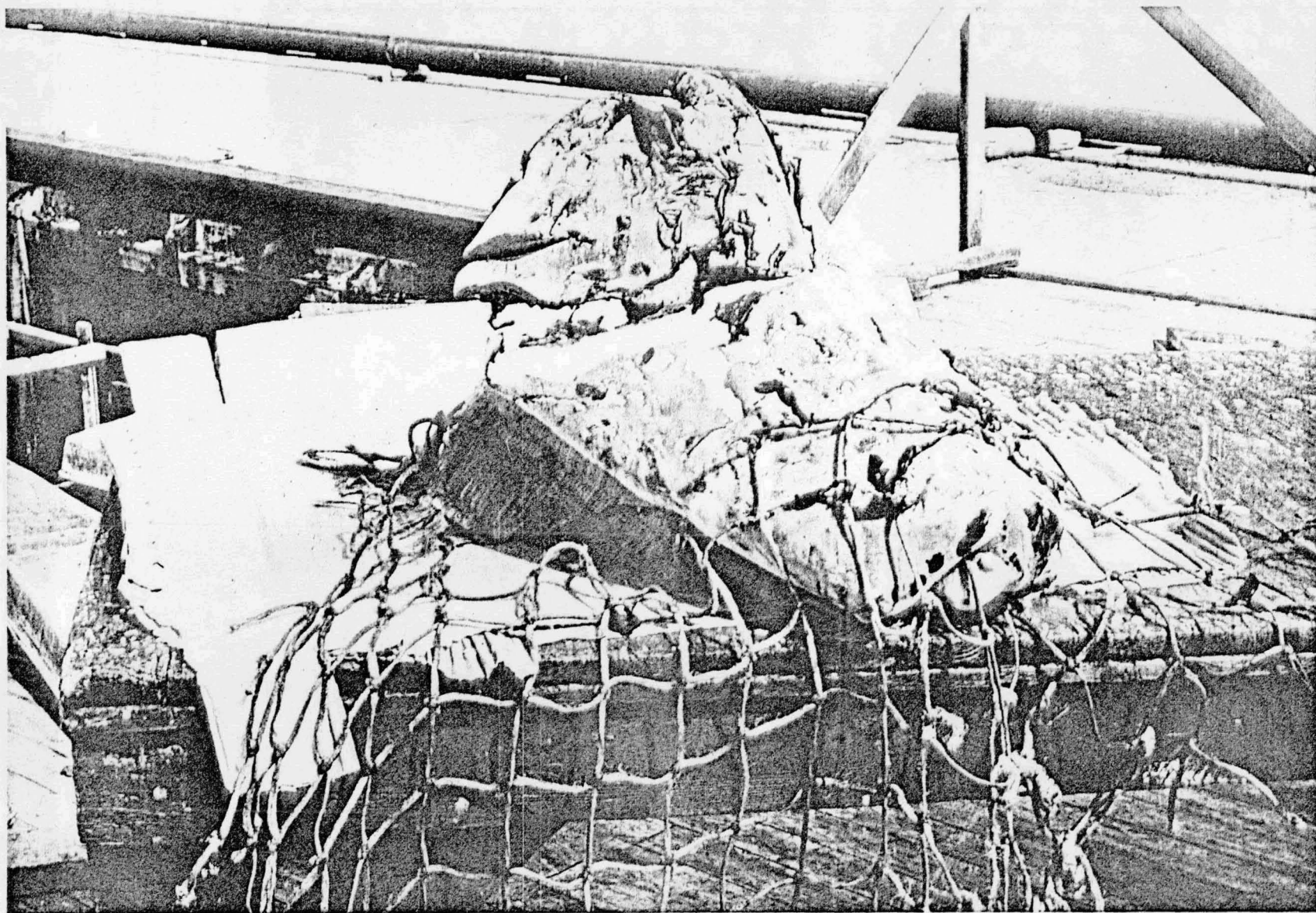


Fig. 3. Rostrum of Minke whale with ingrown netting. Dildo whaling station, Newfoundland, July 1965.