The diet of the minke whale in Greenland – A short review

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ABSTRACT

Information on the diet of minke whales (*Balaenoptera acutorostrata*) in Greenland waters is reviewed. The knowledge is based on reports by whale catchers in Greenland, supplemented by limited scientific studies of stomach contents. The available material indicates that capelin (*Mallotus villosus*) is the predominant prey item in Greenland waters, particularly in coastal areas. In offshore areas, sand eel (*Ammodytes* spp) is consumed rather frequently, and krill (euphausids) appears to play a certain role in some areas or periods.

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Introduction

The role of minke whales (*Balaenoptera acutorostrata*) (Fig. 1) in the marine ecosystem, and their effects on important fish stocks in the North Atlantic, may be particularly relevant to understanding the migration patterns of the whales, and thus their fluctuations in abundance in their North Atlantic feeding areas. However, further information on the population size and dynamics, energy requirements and diet of minke whales is required. This paper addresses the last issue by presenting a review of earlier published results on minke whale diet in Greenlandic waters, together with recent information reported by local hunters.

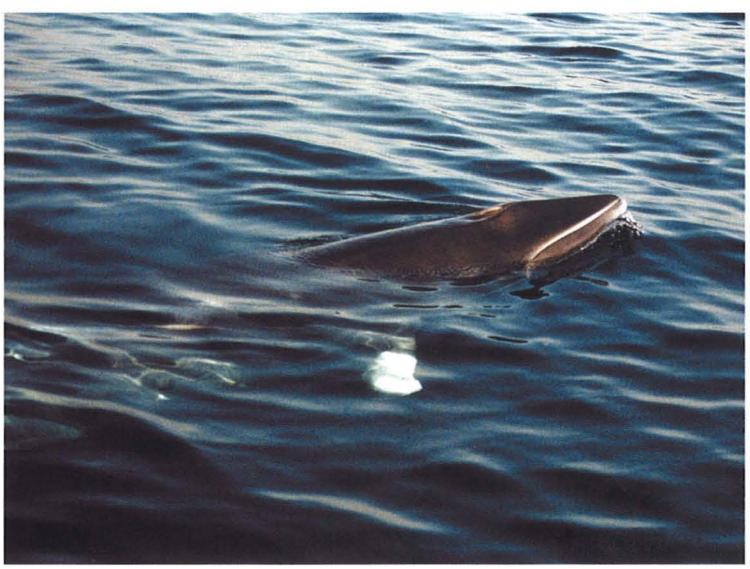

Fig. 1.
The minke whale has a characteristic white patch on its flipper.

Photo: Eric Martin, Marine Mammal Images

RESULTS AND DISCUSSION

Information on the food habits of minke whales in Greenlandic waters was first presented by Fabricius (1780), who stated that the predominant prey item was capelin (*Mallotus villosus*), but that they also consumed other small fish. Casual information collected during the following century was summarised by Winge (1902), who noted that the predominant prey items were small fish, especially capelin. According to Pedersen (1931) and Born (1983), the diet of minke whales caught at Ittoqqortoormiit (Scoresbysund), Northeast Greenland (Fig. 2), was composed mainly of polar cod (*Boreogadus saida*), and, to a lesser extent, crustaceans. Jonsgaard (1982) reported on the stomach contents of 31 minke whales caught off Southeast

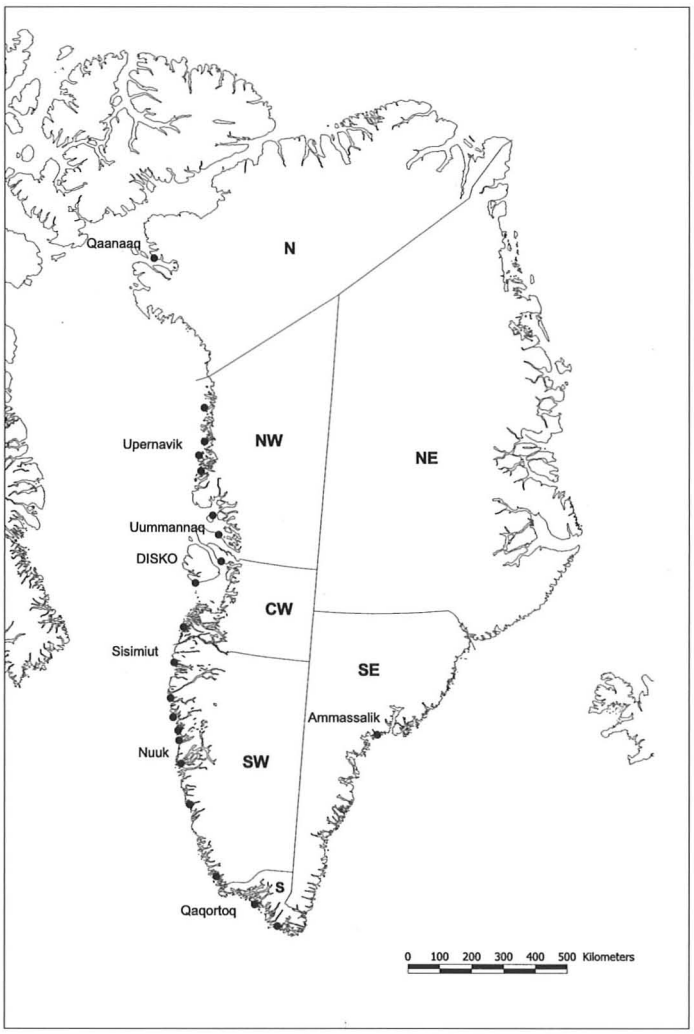

Fig. 2.
Map of Greenland showing the regions and locations referred to in the text

Greenland in July-August, and five caught off Southwest Greenland in August 1968. All the Southeast Greenland animals had consumed capelin. Two of the Southwest Greenland whales had fed upon sand eels (*Ammodytes sp.*), and 3 had eaten pelagic crustaceans. Christensen (1974) reported that minke whales caught off Southeast Greenland in July-August, 1973, had fed upon either capelin (55% of stomachs examined), capelin and krill, or just krill. Of minke whales caught off West Greenland in July-August 1973, 34 had sand eels in their stomachs, 20 animals had krill, 4 animals pelagic pteropods, and 1 animal had capelin.

Information on feeding from the examination of regurgitated material obtained during Norwegian whaling off West Greenland from 1979-81 was reported by Larsen and Kapel (1981,1982, 1983). In 1979, information was obtained on seven whales, five of which had fed upon sand eel, and two on krill (Anonymous 1981). In 1980, information on feeding was available for 32 whales. Thirty of these had fed on sand eel, 1 on small unidentified fish, and the last on krill. In 1981, information was obtained on 21 whales, 20 of which had fed on sand eel, and 1 on small unidentified fish. These findings demonstrated that sand eel was the predominant prey in offshore areas of West Greenland, as they were identified in 92% of the whales examined.

During field work conducted in 1978, the stomachs of 4 minke whales caught at Qeqertarsuaq were examined. Two contained euphausiids, 1 a mixture of euphausiids and capelin , and 1 only capelin (Larsen and Kapel 1981). A minke whale caught at Qeqertarsuaq in 1986 had only capelin present in its stomach (Heide-Jørgensen, Greenland Institute of Natural Resources, DK-2200, Copenhagen N, Denmark, unpubl. data). In 1996, the stomachs of 2 minke whales caught at Nuuk were examined. One had fed upon krill and capelin and 1 contained only capelin (Neve unpubl. data).

Stomach content data reported by Greenland whaling vessels from 1955-1979 were reviewed by Larsen and Kapel (1981), and are presented in Table 1 for the northern and southern part of West Greenland. Small fish species, particularly capelin, were found in most stomachs (76% to 91%), but planktonic organisms (euphausiids, other crustaceans, and pteropods) were also reported rather frequently (9% to 24%).

Licensed whale catchers in Greenland are obli-

Table 1: Composition of minke whale diet in Greenland during 1955-1979. NW= northwest, CW = central west, SW = southwest (from catch reports, Larsen and Kapel 1981).
*krill includes plankton and crustaceans.
**Other includes small fish and other small animals.

	NW + CW		SW	
Stomach contents reported	**No. of stomachs**	**% of stomachs**	**No. of stomachs**	**% of stomachs**
Capelin	122	48.4	294	72.6
Kapelin + Krill	50	19.8	34	8.4
Kapelin + Krill + Cod	44	17.5	4	1.0
Capelin + Krill + Sand eel	-	-	20	4.9
Capelin + Cod	-	-	8	2.0
Krill*	25	9.9	38	9.4
Sand eel	1	0.4	2	0.5
Cod	1	0.4	2	0.5
Other**	9	3.6	3	0.7
Empty	-	-	-	-
TOTAL	**252**	**100**	**405**	**100**

Table 2: Composition of minke whale diet in Greenland during 1992-1996. NW= northwest, CW = central west, SW = southwest (from catch reports, Greenland Homerule).
*krill includes plankton and crustaceans.
**Other includes medusa, wolffish, small fish, fish larvae and other small animals.

	NW + CW		SW		East Greenland	
Stomach contents reported	**No. of stomachs**	**% of stomachs**	**No. of stomachs**	**% of stomachs**	**No. of stomachs**	**% of stomachs**
Capelin	132	65.0	225	62.5	4	18.2
Capelin + Krill	2	1.0	48	13.3	0	-
Capelin + Sand eel	5	2.5	3	0.8	0	-
Krill	18	8.9	39	10.8	5	22.7
Sand eel	21	10.3	2	0.6	0	-
Cod	2	1.0	1	0.3	2	9.1
Greenland cod	1	0.5	-	-	-	-
Polar cod	1	0.5	-	-	7	31.8
Other**	19	9.4	38	10.6	4	18.2
Empty	2	1.0	4	1.1	0	-
TOTAL	**203**	**100**	**360**	**100**	**22**	**100**

gated to complete reports that include questions about the food items found in the stomachs of minke whales. Information from 1992- 1996 is presented in Table 2, and shows the proportional composition of the diet in different areas (Fig. 2). A total of 563 stomach contents were reported from West Greenland; 22 from East Greenland. Capelin was reported with by far the greatest frequency in West Greenland, whereas in East Greenland, polar cod was the major prey item. Other food items recorded from West Greenland were cod (*Gadus morhua*), Greenland cod (*Gadus ogac*), polar cod, and wolffishes (*Anarhichas sp.*). Of the planktonic crustaceans, both amphipoda (*Parathemisto sp.*), euphausiids, decapoda (*Pandalus sp.*) and pteropods were reported. From East Greenland, 9 stomach contents were composed of codfishes. Two of these stomachs contained cod and 7 stomachs polar cod.

A comparison of the information from the whaling reports for 1955-79 (Table 1) with that from similar reports for 1992-1996 (Table 2) indicates that the feeding patterns of minke whales in West Greenland have remained relatively stable, with capelin as the major prey item. Sand eel, however, appears to be reported more frequently during the period 1992-1996. This could have resulted from a change in hunting patterns, with a greater proportion of the catch coming from offshore areas in recent years, or from changes in minke whale or sand eel distribution or abundance. Høpner Petersen (1977) suggested that a large unexploited stock of sand eels might be found in Disko Bay. In West Greenland, the capelin appears to have a more near-shore distribution than that of the sand eel (Hansen 1954; Jakupstovu and Røttingen 1975). According to Kanneworff (1968), capelin spawn from May to June on the beaches of the bays of the Southwest Greenland and later in June-July on the Northwest Greenland. However, it should be stressed that there is no information on how the licensed whale catchers examined the minke whale stomachs, or on the relative proportions of prey items when more than one prey item was present in the stomach.

CONCLUSIONS

Present data are not comprehensive; sampling is seasonal and restricted geographically. In some cases, there may be problems with inaccurate or unreliable identification of stomach contents.

Information on the feeding of minke whales in Greenland indicates that capelin is the most important prey species. But the data presented in this paper do indicate that sand eel is quite important in the offshore areas of West Greenland, and that krill appears to play a certain role in some areas or periods. However, the range of preferred prey species is wide, and it is likely that minke whales in Greenland have flexible feeding patterns and adapt to local prey availability.

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