

## Distribution and seasonality of killer whales in the eastern Canadian Arctic

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### ABSTRACT

Records of killer whales, *Orcinus orca*, in the eastern Canadian Arctic, Hudson Bay and northern Labrador were compiled and plotted on a chart. The distribution of records reflects the distribution of human settlements and sites of scientific research activity, thus the distribution of potential observers/informants. There are clusters of records in the areas of Pond Inlet and Cumberland Sound. In both of these areas as well as in the Lancaster Sound region west to Prince Regent Inlet and along the east coast of Baffin Island, there appears to be a regular, possibly annual visitation by pods of killer whales. In other parts of the eastern Canadian Arctic, killer whales seem to occur more sporadically and in lower numbers. Contrary to previously published assertions, killer whales do enter Hudson Bay, probably following herds of white whales, *Delphinapterus leucas*, and less often narwhals, *Monodon monoceros*. Killer whales prey on seals, bowhead whales, *Balaena mysticetus*, white whales and narwhals (not necessarily in that order of importance) in northern Canada. There is no tradition of hunting killer whales in the Canadian Arctic, and we found only a few instances of their being killed by Native people.

### INTRODUCTION

The distribution of the killer whale, *Orcinus orca*, in the western North Atlantic Ocean has been described as extending from the "coast of Greenland, thence southward to New Jersey" (Hall and Kelson 1959). Peterson (1966, p. 374) described the killer whale as more common in "the true Arctic" than in Canadian waters from Labrador south. He knew of no record of this species in Hudson Bay. Banfield's (1974, p. 265) description of the killer whale's distribution in eastern Canada included Lancaster Sound, Admiralty Inlet, Eclipse Sound, Baffin Bay, Davis Strait, Cumberland Sound, Frobisher Bay and the entrance to Hudson Strait. He asserted that the species "does not enter Hudson Bay." This statement may have been based on what J. Ford of the Hudson's Bay Company post at

Payne Bay told Banfield in April 1954 (A. W. F. Banfield *in litt.* to H. D. Fisher, 15 December 1955, Arctic Biological Station files), that no killer whales occur west of Cape Weggs.

In a recent review of the status of marine mammals in the Canadian Arctic, Davis *et al.* (1980, p. 36) described the killer whale as "infrequently seen, and then only in small numbers" in the eastern Canadian Arctic. They considered the evidence for its presence in Hudson Bay equivocal, concluding that the species "must be at most sporadic in its occurrence during the summer season" there.

Previously, there has been no attempt made to summarize and interpret the scattered literature on killer whales in northern Canada. Our principal objectives were to: (1) find and verify all available published and other writ-

ten accounts of the killer whale's occurrence in the eastern Canadian Arctic, (2) summarize and evaluate verbal accounts provided to us by Canadian Inuit, (3) assemble available photographs of killer whales and (4) develop multiple hypotheses concerning the movements and stock relationships of killer whales in this region.

The Arctic Circle is at approximately 66°30'N, but for purposes of this paper, the eastern Canadian "Arctic" is defined as all waters north from about 55°N on the Labrador coast. It includes all of Hudson Bay, Davis Strait and Baffin Bay, although our coverage was much more comprehensive for the Canadian than the Greenland side of the latter two areas (see Heide-Jørgensen 1988 - this volume). Our use of 55°N as the approximate southern boundary of the study area is arbitrary. Canadian records south of 55°N are presented in Mitchell and Reeves (1988 - this volume).

#### MATERIALS AND METHODS

Extensive searches of Canadian archives were undertaken for previous projects (Mitchell and Reeves 1981, 1982; Reeves *et al.* 1983; Reeves and Mitchell 1985, 1987a, 1987b, 1987c). Details can be found in those publications, but in general our searches covered potentially relevant materials in the Hudson's Bay Company (HBC) Archives (Winnipeg), the General Synod Archives of the Anglican Church of Canada (Toronto), the Public Archives of Canada (Ottawa) and the files of the Arctic Biological Station (ABS) (1954 to present). The last of these include the Royal Canadian Mounted Police (RCMP) Game Reports, which cover the period 1949-1974. Also, since the early 1970's D. E. Sergeant, W. Hoek and others at the ABS have compiled sighting reports from Canadian Armed Forces observers, pilots, icebreaker personnel, scientists and others working in the Canadian Arctic. Sergeant and Hoek kindly allowed us to use the few killer whale reports included in their collection of Arctic Whale Sighting Record (AWSR) cards.

In connection with the projects mentioned above, M. McLaughlin acquired and indexed (for cetaceans, by species) some relevant titles cited by Cooke and Holland (1978). Previously, under Mitchell's direction, K. Nesheim compiled a detailed subject index from 25 prominent arctic travelogues and natural histories, and M. McLaughlin indexed the literature on marine mammals for the coast of Labrador (Brice-Bennett 1980 MS; 1983? MS).

During our own field work on northern Baffin Island in 1975, 1978 and 1984, we questioned Inuit hunters concerning local movements and behaviour of cetaceans. In this manner we obtained some information on the occurrence of killer whales and on their predatory behaviour in this region.

#### RESULTS

All our sight and specimen records of killer whales in the eastern Canadian Arctic are given in the tables, organized by subarea, as shown below. These include some qualitative descriptions of occurrence taken from archival sources. It should be emphasized that we have included some records where the presence of killer whales was only inferred from the behaviour (or unexpected absence) of other species, as well as a few records for which the species identification is uncertain. The sight and specimen records are numbered continuously from one table to the next, and all are plotted in Figure 1. Place names mentioned in the text are shown in Figure 2. We found few unpublished photographs of killer whales from this region; one of those available to us is reproduced as Figure 3.

The killer whale's occurrence in northern Canada can be summarized as follows.

##### *Lancaster Sound region*

We define the Lancaster Sound Region (LSR) as including the large area from Peel Sound (centered at 73°N, 96°10'W) and Franklin Strait (centered at 71°20'N, 97°W) east to northwest Baffin Bay and Smith Sound, including the northern Baffin Island and Queen Elizabeth Islands areas as well as

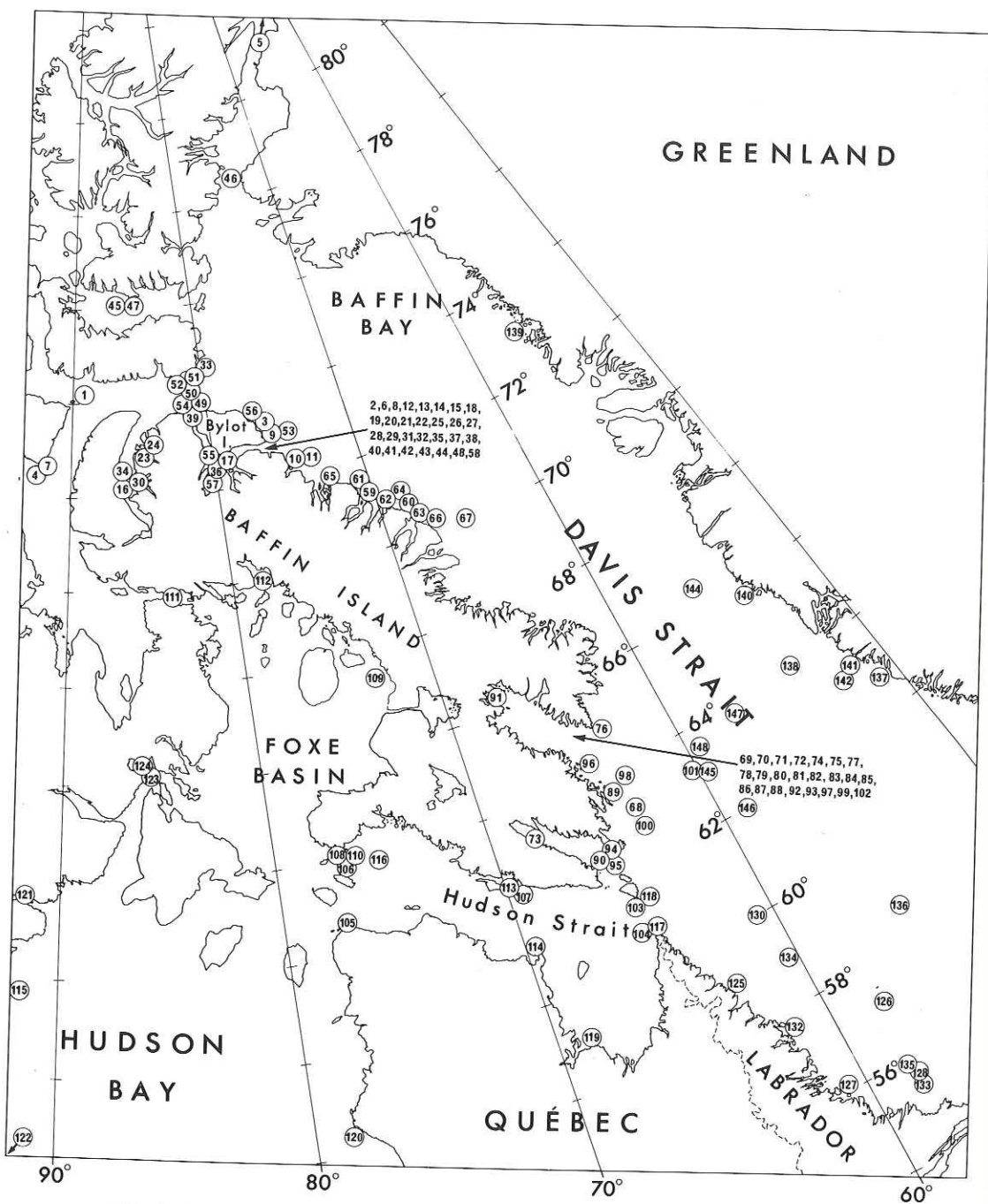


Fig. 1. Map of Eastern Arctic and Hudson Bay, with records plotted from Appendix 1.

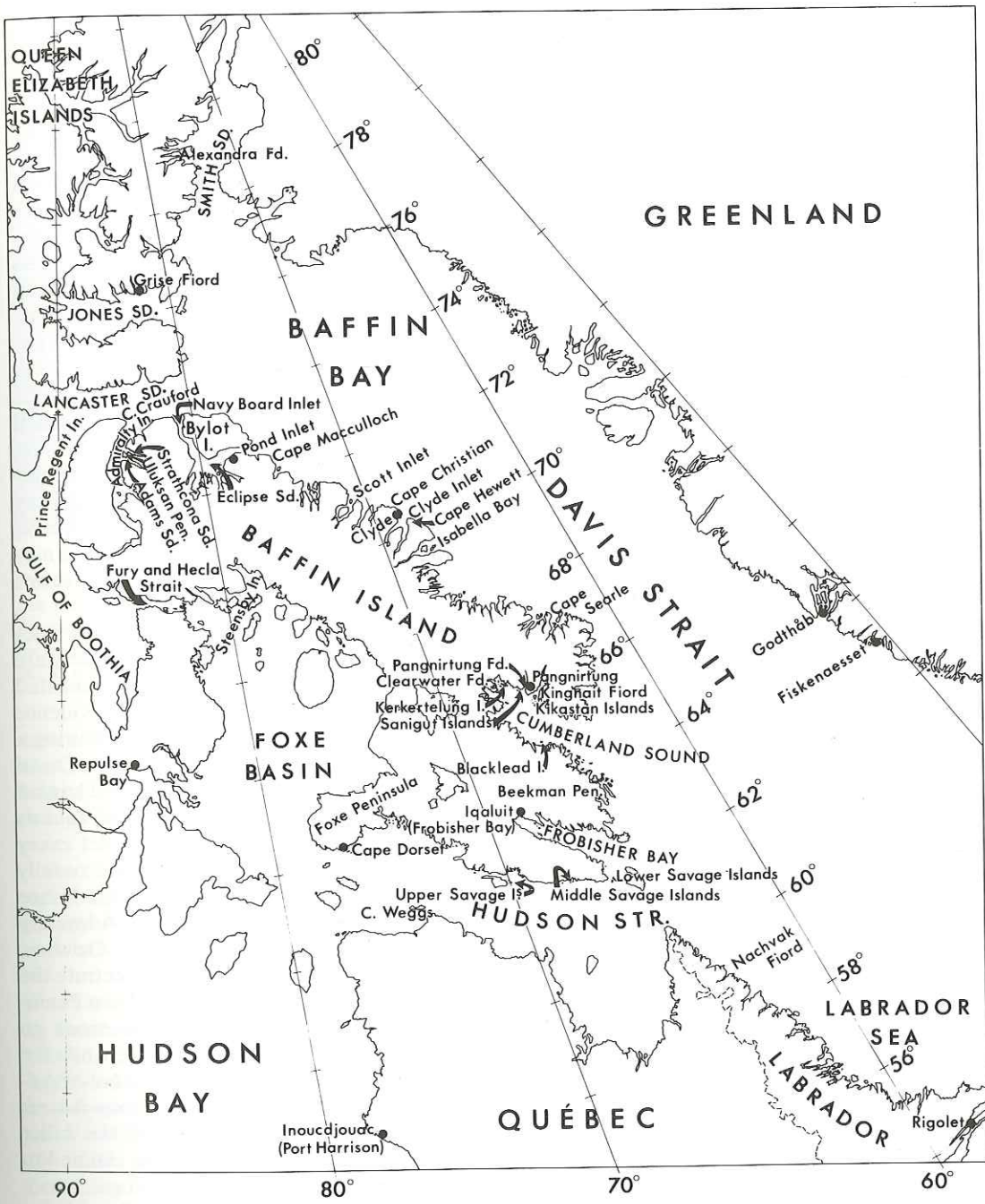


Fig. 2. Map of Eastern Arctic and Hudson Bay, showing place names mentioned in text.

Prince Regent Inlet and the Gulf of Boothia. The killer whale's presence in the LSR has almost invariably been interpreted, by Inuit hunters, British whalers and modern naturalists alike, as a phenomenon associated with local concentrations of whales and seals. As Peter Freuchen concluded after 20 years in the eastern Canadian Arctic, Eclipse Sound is "a region where the killer whale occurs frequently and exercises a great influence on animal life" (Degerbøl and Freuchen 1935, p. 262). In his summary of verbal accounts by LSR Inuit, Brody (1976, p. 212) claimed that narwhals, *Monodon monoceros*, are "anxious" to penetrate Lancaster Sound and Pond Inlet in the spring "because they are closely pursued by killer whales, which follow them through Pond Inlet, along Eclipse Sound, and the entire length of Navy Board Inlet." Residents of Pond Inlet are familiar with killer whales and their habit of entering the Pond Inlet-Eclipse Sound-Navy Board Inlet complex to prey on narwhals (e.g. Titus Allooloo and Seeana Attagootak, pers. comm., 31 August 1984). There are at least two published descriptions of bowhead whales, *Balaena mysticetus*, being herded close to shore or the ice edge by killer whales in the Pond Inlet area (Munn no date; Smith 1922). T. Allooloo (pers. comm., 31 August 1984) described an attack on a bowhead he witnessed in about the second week of September 1981. William Adams, a Scottish whaling captain, claimed that killer whales facilitated the driving of white whales, *Delphinapterus leucas*, by the whalers in coastal embayments along the west side of Prince Regent Inlet (Southwell 1885, p. 86-87; see Reeves and Mitchell 1987c for an interpretation). Miller (1955), who surveyed the mammals of Bylot Island and surrounding waters in 1954, reported that at least 10-20 killer whales were seen in Eclipse Sound and Pond Inlet every August, apparently following the migratory mammals and preying on ringed seals, *Phoca hispida*. He mentioned how the pods of killer whales drove seals close to shore where the seals could be taken easily by Inuit hunters. Similar reports were made by Brown (1868),

Tremblay (1921, p. 261), Bissett (1968, p. 77), Ellis (1957) and in the RCMP Game Reports (see Appendix 1, Table 1).

Much of the lore concerning annual, or at least regular, visitation of the LSR by killer whales seems to be based on indirect evidence, e.g. the observed "panic" behaviour of seals and cetaceans leading to the inference that killer whales are in the area. Nevertheless, there are sufficient reliable eyewitness accounts of killer whales preying on narwhals in Eclipse Sound and environs, including some documented with photographs (Steltner and Steltner 1980MS, 1983, 1984; Steltner *et al.* 1984; Newman and Cavanagh 1986; R. C. Campbell, pers. comm.; Reeves and Mitchell 1987c; Fig. 3), to conclude that the indirect evidence is meaningful. Killer whales apparently visit the Pond Inlet-Eclipse Sound-Navy Board Inlet complex on a regular basis, possibly annually. The large concentration of narwhals found there each summer clearly forms at least part of the attraction for them.

Although periodic forays by killer whales into Admiralty and Prince Regent inlets are less thoroughly and persuasively documented than for Eclipse Sound, the available evidence (Table 1) suggests a similar pattern. During a taped interview on 5 September 1984, David Ipirq of Arctic Bay, who had lived and hunted in Admiralty Inlet for over 60 years, told us that killer whales come into the inlet every year. It was Ipirq's belief that they usually come into Lancaster Sound and visit Prince Regent Inlet before arriving in Admiralty Inlet in late September or early October. They round Cape Crauford and penetrate the inlet only about as far as the Uluksan Peninsula as a rule, although they sometimes go farther in. If the killer whales arrive while the narwhals are attempting to migrate out of Admiralty Inlet, the narwhals move into Adams and Strathcona sounds to avoid the killer whales or escape from them. Ipirq claimed to have witnessed a successful attack on a bowhead by a large group of killer whales deep inside Admiralty Inlet in an unstated year. The Inuit found many pieces of blubber washed onto the beach afterward, but no car-



Fig. 3. A pod of killer whales near the mouth of Koluktoo Bay in August 1985. The photographer did not see the killer whales attack narwhals. However, narwhals with open wounds were seen in the area, an indication that some attacks did occur. Photograph by R. R. Campbell.

... was ever found in spite of a purposeful search. This was the only observation Ipirq had ever made of an attack on a bowhead, although he had seen attacks on narwhals many times.

According to Ipirq killer whales entered Admiralty Inlet in October 1949. There were strong winds from the east, and more than 20 narwhals died on the beaches along the west side of the inlet. His interpretation of the event was that the narwhals moved too close to shore in trying to escape from the killer whales, then got washed ashore by the very high waves. Ipirq referred to three tactics used by narwhals to escape from killer whales: (1) movement into heavy ice, (2) movement close to shore and into shallow water and (3) breathing more quietly to avoid detection. He added that tusked narwhals sometimes accidentally ram the tusk into the sea bottom in their panic to escape, and that this accounts for some tusk breakage.

We found little evidence that killer whales enter Jones Sound, but in 1966 the Inuit at Grise Fiord made an exceptional catch of white whales and narwhals, claiming that these whales had been driven inshore by killer whales (RCMP Game Reports). The RCMP officer at Alexandra Fiord noted in 1960 that the Inuit in that area believed the behaviour of narwhals there to differ from that observed in Pond Inlet (RCMP Game Reports). Rather than heading for shore when hunted as the narwhals do in Pond Inlet, those in Smith Sound supposedly flee seaward and dive deep to escape. The narwhals do this, according to the Inuit, because killer whales rarely visit Smith Sound and its adjoining fiords. In Pond Inlet the narwhals supposedly are deterred from using this escape strategy because they anticipate encountering killer whales in deeper, offshore waters.

#### *Eastern Baffin Island*

There are few published or other written reports of killer whales on the east coast of Baffin Island south of Pond Inlet and north of Cumberland Sound (Appendix 1, Table 2). This can be explained partly by the sparse human settlement on this stretch of coast. British whalers searching for bowheads observed killer whales from time to time between Cape Macculloch and Clyde Inlet (Smith 1922, pp. 37-8; Table 2). The RCMP Game Reports and the few available HBC post journals for Clyde suggest that killer whales were not observed often by the hunters in that area. However, recent observations by K. J. Finley and his co-workers while studying bowheads in Isabella Bay indicate that killer whales visit this area during late summer and autumn (K. J. Finley, pers. comm., 24 April 1987).

#### *Southeast Baffin Island, including Cumberland Sound*

There is a relatively large number of records of killer whales in Cumberland Sound (Appendix 1, Table 3). The logbook of one New England whaling vessel indicates that these whales were frequently seen on the

grounds where bowheads were hunted around Blacklead Island and the Kikastan Islands (Andrews 1865-66MS, 1867MS; Table 3, entry nos. 69-71). Kumlien (1879, p. 66) described killer whales as "very common" in the sound and was convinced that they followed the white whales there in summer. Soper (1944) was given similar information in 1924 during a visit to Clearwater Fiord, the area at the head of Cumberland Sound where white whales congregate. During a study of the biology of white whales, Brodie (1967MS, p. 49) observed killer whales several times in Cumberland Sound but not in Clearwater Fiord. He surmised that some of the larger scars on the bodies of white whales had been made by predators and noted that local Inuit had witnessed attacks by killer whales. Smith and Taylor (1977) noticed that when killer whales were present, seals and cetaceans were more wary and scarcer.

Killer whales supposedly are seen "annually" between Pangnirtung Fiord and the Sanigut Islands (Murphy 1973 MS). According to the RCMP Game Reports, narwhals have been driven into Pangnirtung Fiord by killer whales in some years, allowing the Inuit to make larger catches of narwhals than usual (Table 3). In other years, the hunters have complained that the "steadily increasing" number of killer whales in Cumberland Sound was having a "marked [negative] effect" on the numbers of seals, walruses, white whales and narwhals in the area (RCMP Game Report, Pangnirtung, 2 July 1966). Anders (1967, p. 27) stated in 1966 that the residents of Pangnirtung believed killer whales to have come into Cumberland Sound "with increasing frequency in the past eight years."

A group of 11 killer whales was seen in Kingnait Fiord in August 1977, and late in the following month 14 killer whales became trapped in a saltwater lake on Kekertelung Island at the head of Cumberland Sound (MacLaren Atlantic Ltd 1977 MSa, p. 4-16). The killer whales supposedly had been chasing white whales when they became trapped (R. A. Hunter, A. F. W. O., NWT Fish and Wildlife Service, *in litt.* to D. E. Sergeant, 12

October 1977, ABS files). All 14 entrapped whales were killed in early October by local people (Mitchell 1979). Davis *et al.* (1980, p. 36) indicated that the August sighting was of the same group, although they gave no basis for making this assumption. J. Parsons (pers. comm., April 1987), who made the August sighting and was present in Pangnirtung within several days of the October kill, told us that he knew of no direct evidence that the same pod was involved. Two of the whales' stomachs were examined and found to contain ringed seal claws (MacLaren Marex Inc. 1979 MSb, p. 7-1). According to Hunter (*op. cit.*), one entire calf and the flukes and flippers of some of the other whales were brought to Pangnirtung by the hunters. However, the hunters "were advised against eating the meat of these whales by the older people and there was no muktuk to speak of on the whales." According to Davis *et al.* (1980) the carcasses were not used, and a local game officer was not allowed to collect biological samples from them.

Although there is little written record of the Cumberland Sound Inuit capturing killer whales previous to the 1977 incident (see Table 3), Boas (1901, p. 273) recounted a local legend as follows:

"*Nutaakdju*, and his wife Inukdjua, lived at *Kimaksook*. One day *Nutaakdju* caught a killer-whale, and the people saw him towing it to an island. They went off in their kayaks to assist him; but when they came near enough to see him more distinctly, they saw him and his kayak diving up and down just as killer-whales do. They became frightened, and ran to the shore. When they looked back again from shore, they saw *Nutaakdju* towing the killer-whale as before, but he was going very fast. *Nutaakdju* landed, and began to cut his game. They continued to watch him, and saw that for some time he looked like a killer-whale."

In spite of a close watch for marine mammals at Beekman Peninsula, southeast Baffin Island, during 3 May-3 October 1978, Smith *et*

*al.* (1979) saw no killer whales; and they learned from the Inuit at Allen Island that these whales are not known to occur there. There are few reports of killer whales in Frobisher Bay (Table 3), even though this area is frequently visited by people.

#### *Hudson Strait and Hudson Bay*

Killer whales enter Hudson Strait at least occasionally (Appendix 1, Table 4). There, as elsewhere, unusual inshore occurrences of white whales, narwhals and seals have sometimes been explained by the inferred presence of killer whales in the vicinity (e.g. RCMP Game Report, Cape Dorset, 20 August 1968).

Freuchen had no evidence of the killer whale's occurrence in Hudson Bay but thought "it would be strange if it did not go in now and then" (Degerbøl and Freuchen 1935, p. 262). He had been told of killer whales being seen as far into the strait as Savage Island (the Middle Savage Islands?). Soper (1944, p. 251) learned from the Inuit of Cape Dorset that killer whales were sometimes seen along the south and west coasts of Foxe Peninsula. Of particular interest is the report of a mother and calf entrapped by ice in Steensby Inlet, northern Foxe Basin (Blackadar 1964). The killer whale reported by natives to have drifted ashore dead in Fury and Hecla Strait in 1947 (Table 4, record no. 111) could have come from Foxe Basin or drifted south from Prince Regent Inlet and the Gulf of Boothia. The question of whether cetaceans move through Fury and Hecla Strait, thus establishing a connection between stocks from Prince Regent Inlet/Lancaster Sound and those from Hudson Strait/Foxe Basin, has been discussed as it relates to bowhead stock identity (cf. Reeves *et al.* 1983).

Although they had not observed killer whales directly, Doan and Douglas (1953, p. 20) heard many reports of their occurrence on the west side of Hudson Bay, particularly in the Tavani (62°03'N, 93°05'W) region:

"It seems that their presence at times aids in the capture of beluga. These killer whales apparently pursue the beluga and

frighten them into very shallow water where they are at the mercy of hunters or left stranded by the ebbing tide."

Sergeant (1968, p. 395) stated that killer whales had been "reported in recent years in the vicinity of the beluga herds off Whale Cove [62°10'N, 92°34'W] and Eskimo Point [61°05'N, 93°59'W] in August and September" (note that the photograph of killer whales on p. 394 in Sergeant's paper was *not* taken in Hudson Bay - D. E. Sergeant, pers. comm., 4 March 1987). On 17 August 1964 about 20 killer whales were seen near Whale Cove (D.E. Sergeant trip report, 8 September 1964, ABS files). The Inuit hunters who saw the whales from a Peterhead boat "made quickly for shallow water." On the same day "the beluga struck in to the coast in numbers for the first time, so close as to provide good catches [of white whales] in the nets," and large numbers of arctic char, *Salvelinus alpinus*, were seen near shore for the first time that month (D. E. Sergeant *in litt.* to Lewis Evans, 15 September 1964, ABS files). There are a few other unconfirmed sight records from Churchill (58°47'N, 94°12'W) and Repulse Bay (Table 4).

The only specimen record we have found for Hudson Bay or Strait is an adult male (based on photographs) killed in the Prince River near Baker Lake (approximately 64°13'N, 95°50'W) in August 1978 (Kayuryuk and Innakatsik 1982). Sergeant (1986) referred to this specimen, and Davis *et al.* (1980) noted that two specimens, rather than only one, might have been involved. Sergeant (1986) also mentioned, without giving details, the observation of a dead killer whale in 1977 on an islet near Inoucdjouac (formerly Port Harrison), northeast Hudson Bay. R. Morin (pers. comm., February 1987), Sergeant's source, was unable to provide further details. However, he referred us to R. Chenier, who also was at Inoucdjouac at the time. Chenier (pers. comm., 13 March 1987) knew nothing further about the stranded killer whale but did recall having been with Inuit seal hunters when they sighted killer whales near In-



oucdjouac (in an unspecified year). Chenier did not see the killer whales himself but was impressed by the hunters' frightened response: they immediately left the area where they were hunting and returned to the settlement.

#### *Labrador coast*

The killer whale has been described as "common" on the east coast of Labrador (Bangs 1909, p. 459) and "not very rare" (Hantzsch 1932, p. 8) or "frequently observed" (Williamson 1964 MS, p. 21) in northern Labrador. Weiz, who spent 17 years as a missionary at Okak during the nineteenth century, had heard stories from fishermen about killer whales attacking mysticetes (Weiz and Packard 1866, p. 272). Killer whales certainly occur along much of the Labrador coast and offshore in the Labrador Sea (Appendix 1, Table 5; Reeves and Mitchell 1988 – this volume; Mitchell and Reeves 1988 – this volume).

One vexing problem with historical cetacean records for the Labrador coast is the confusion surrounding the term "grampus." Williamson (1964 MS) took it to mean the Risso's dolphin, *Grampus griseus*. However, Brice-Bennett (1977, p. 375) understood it to mean the minke whale, *Balaenoptera acutorostrata*. Brice-Bennett (1980 MS, p. 32; 1983? MS) added that, although it probably refers mainly to the minke whale, the term might be applied more generally to several kinds of cetaceans seen along the north coast of Labrador. "Grampus" and "grampus" seem not to have been applied to the killer whale in Labrador, as at least "grampus" was in the Arctic (see Tables 1–3). Rather, it usually has been called "swordfish" or "thrasher" by English-speaking settlers in Labrador (Brice-Bennett 1977, p. 375). On the basis of interviews with people in the Makkovik region, Schwartz (1977, pp. 258, 260) claimed that male killer whales were called "swordfish" and females "thrashers." Schwartz was told that killer whales appear inshore from late July until September and that they follow white whales and other large sea

mammals close to the coast. They supposedly do not penetrate far into bays.

After interviewing fishermen and hunters, Brice-Bennett (1980 MS, pp. 33–34; 1983? MS) concluded that killer whales occur inshore along much of the Labrador coast in groups of up to ten individuals. She was told of killer whales attacking other sea mammals, and the residents of coastal Labrador generally expressed fear of being attacked themselves. Although Brice-Bennett (1980 MS) mentioned that a hunter from Nain once shot and wounded a killer whale, this species was not among those traditionally hunted by coastal residents of Labrador (Brice-Bennett 1977).

#### *West coast of Greenland*

We did not make a thorough search for information on killer whales off the west coast of Greenland because this task was undertaken by another investigator (Heide-Jørgensen 1988 – this volume). A few previously unpublished records for Greenland and central Davis Strait are given in Table 6 (see Appendix 1). In addition to these, Mitchell learned from Nikolau Heinrich (pers. comm., 25 August 1966), a Greenlander who had been hunting whales since 1961, of a group of about 50 killer whales seen outside Fiskenæsset, some 3 naut. miles offshore, in June of an unspecified year. Also, Erik Egede (pers. comm., 24 August 1966) told Mitchell that killer whales appear in the vicinity of Godthåb during summer and autumn in years when there is no *storis* (i.e. drifting packice). He was unaware of any particular area where they congregated and noted that they were most often encountered in small groups of 2–3, occasionally as many as 10 individuals.

## DISCUSSION AND CONCLUSIONS

### *Effects of killer whales on other marine mammals in the Arctic*

It has been stated frequently that one of the reasons bowheads, narwhals and white whales associate with ice edges and ice fields is to

evade and avoid killer whales (see e.g. Brown 1868; Munn no date, pp. 194–195; Tremblay 1921, p. 8). The latter supposedly are reluctant to enter areas infested with ice (e.g. Gray 1934). Certainly ice entrapment is a threat to killer whales. However, we are aware of only one documented instance of their becoming ice-entrapped in the eastern Canadian Arctic (Blackadar 1964). The entrapment in a salt-water lake at the head of Cumberland Sound, noted above, apparently was not caused by ice formation or movement. In addition, there is a well-documented record of ice entrapment in the Antarctic (Taylor 1957), and Mitchell (1976) mentioned an incident of fatal ice entrapment involving two killer whales off southwest Newfoundland. The mass stranding of at least 19 killer whales in Trinity Bay, Newfoundland, in April 1957 may have been caused by ice-entrapment (Dearden 1958; also see Lowry *et al.* 1987).

Considering all the available evidence, there is no doubt that predation by killer whales affects the behaviour and short-range movements of arctic marine mammals. As one Scottish whaling captain remarked (Smith 1922, p. 38):

“If we see swordfish [killer whales] about we never think of looking for [bowhead] whales, for if any have been in that neighbourhood then swordfish are sure to drive them away. Whales is frightened to death of them.”

A surgeon aboard an arctic whaler noted (Sutherland, 1852, vol. I, pp. 326–327):

“... it is remarkable what dread even the common Greenland whale [bowhead] has of the swordfish or grampus [killer whale]. I recollect, one beautiful morning in October, when hundreds of huge whales, both young and old, were enjoying themselves in their native element, and were often seen leaping out of it like salmon, and falling with a thundering noise as if they had nothing to fear, a ‘school’ of swordfish were observed in the offing, and in less than half an hour the

whales were on their flight, and far out of our sight.”

The Scottish whaling captain Thomas Robertson of Dundee noted that the 1890 bowhead whaling season east of Greenland may have been such a poor one (no bowheads killed, only two seen at 80°N, 3°E) because “the whales were driven off their usual ground by ‘Grampuses’ as there were a great many seen on the fishing grounds during the month of May” (Southwell Papers). Robert Kinnes of Dundee, in referring to the *Active’s* “experimental” voyage to Franz Josef Land in 1897, claimed the bowheads in that area did not “seek the shelter of the ice like the Greenland & Davis Straits Whales”; rather, they were found in open water. He explained this difference by noting that there were “no grampuses to molest them” in the waters near Franz Josef Land (Southwell Papers).

It is well established that bowheads, narwhals, white whales and seals exhibit fright or panic responses to the presence of killer whales. There is no doubt that predation by killer whales occurs, and thus it is a factor in the natural mortality of arctic marine mammals. However, it is not easy to disentangle the effects of predation pressure from those of other ecological variables on the movements and distribution of these animals. For example, it is often alleged that bowheads remain close to ice, narwhals penetrate deep into fiords and white whales congregate in estuaries and embayments at least partly because this behaviour reduces the probability of encounters with killer whales. Other factors, however, are needed to explain these animals’ fine-scale distributions.

Sutherland (1852, vol. I, p. 326) recognized this while considering the conventional wisdom that white whales keep close to the coast of Greenland during their fall migration to “elude the vigilance of their enemies the swordfish.” He suggested that other factors, such as their own access to prey, probably affect the migratory behavior of white whales at least as much as the threat of killer whale predation. It has also been suggested that white

whales seek shallow estuaries to molt (Finley 1982) or to reduce energy expenditures in offsetting heat loss, particularly for neonates (Sergeant and Brodie 1969; Sergeant 1973). Ice-edge habitat may be exceptionally productive for a filter-feeder like the bowhead, which specializes as a predator on organisms at the lower end of the trophic pyramid. The bowhead's extreme accommodation to heavy ice conditions (as for example indicated by the observations of spring-migrating bowheads in the Chukchi Sea [Krogman *et al.* 1986; Ko *et al.* 1986; Clark *et al.* 1986]) enables it to reach and exploit foraging areas that are essentially inaccessible to potential competitors, e.g. gray whales, *Eschrichtius robustus*, which are less well adapted to traveling through heavy ice. Competing for small and medium-sized nektonic and benthic prey (Mitchell 1984), narwhals and white whales may occupy the areas where they occur to avoid each other as much as to avoid killer whales.

We have suggested (Mitchell and Reeves 1982) that killer whales may be partly responsible for the failure of bowheads to recover more quickly from over-exploitation in the Eastern Arctic. Assuming that individual pods of killer whales function as generalist predators whose numbers are regulated intrinsically, they might be viewed much like a multi-species fishery (cf. Small 1971; Mitchell 1977). By prey-switching, the alternative prey including white whales, narwhals and seals, they are able to keep a traditional migration schedule even though the density of one important prey species (in this case the bowhead) is drastically reduced. Thus, rather than experiencing the "benefits" of scarcity, i.e. being left alone to recover, the bowhead stock remains at risk from continued predation long after it has become too small to maintain a large population of predators. In other words, the simple predator-prey feedback cycle, which under normal conditions in a "closed system" might tend toward establishing an equilibrium between killer whales and bowheads (cf. Tanner 1975), is no longer functioning. As opportunistic, versatile predators which have not themselves been heavily exploited in this area

(although these pods may be part of the wider population[s] exploited elsewhere by Norway – Jonsgård 1977; Greenland – Heide-Jørgensen 1988 – this volume; and Canada – Mitchell and Reeves 1988 – this volume), killer whales may continue to exist at "normal" abundance levels, while the bowhead stock in the Eastern Arctic is driven even farther below its "initial" (prior to commercial exploitation) abundance. Under such conditions, killer whales could threaten the survival, or at least prevent the recovery, of an otherwise viable bowhead stock, even if they only killed or injured a few bowheads per year.

We stress that the above discussion is speculative and rests on some untested assumptions. While recent research suggests that the Davis Strait bowhead stock probably numbers no more than a few hundred individuals today (Davis and Koski 1980), there is no reliable information on population trends or dynamics over the past 50–100 years. It is not known whether the bowhead population in the eastern Canadian Arctic is declining, stable or increasing. It is thus difficult to evaluate the importance to this population of predation or any other mortality factor (Mitchell and Reeves 1982).

#### *Possible patterns of killer whale distribution and movements*

Given the lack of direct evidence of stock relationships or of movements through time by individual killer whales, any hypothesis concerning their seasonal distribution or annual movement patterns in the eastern Canadian Arctic is largely speculation. Elsewhere (Mitchell and Reeves 1988 – this volume) we have attempted to interpret killer whale movements and stock separation in the North Atlantic generally. Because killer whales are excluded from Baffin Bay and much of Davis Strait, and certainly from their adjoining sounds and embayments on the western (Canadian) side of the strait, by ice in winter, a seasonal migration of some sort has to occur. The pods of killer whales that move into arctic waters of Canada in summer and autumn are probably a part of a broader

stock, or at least a complex of "communities" (*sensu* Ford and Fisher 1982), that range into the Labrador Sea and along the west and southwest coasts of Greenland during some part of the year. Sightings of killer whales far offshore in Davis Strait and the Labrador Sea (Tables 5 and 6; Fig. 1; Mitchell and Reeves 1988 – this volume; Reeves and Mitchell 1988 – this volume) suggest that there may be a continuous distribution of killer whales between Greenland and Canada.

A pod or group of pods may move into the Lancaster Sound Region annually, subsisting at least to some extent on seals, bowheads, narwhals and white whales. Whether the same whales patrol the east coast of Baffin Island, including Cumberland Sound and environs, before or after making forays into Pond Inlet and Lancaster Sound, is unclear. However, we consider it likely that separate pods make regular visits to the Lancaster Sound and Cumberland Sound regions, since visits to the two areas often occur at the same time of year (Tables 1 and 3).

There is no reason to believe that these pods of killer whales winter in the Arctic, but it is impossible to say where they do winter. It could be in offshore portions of the Labrador Sea, in the open Atlantic east of Newfoundland or south of Greenland, or possibly somewhere along the North American coast from Labrador south. It is even possible that these whales reach as far south as the Caribbean Sea in winter (see Katona *et al.* 1988 – this volume; Mitchell and Reeves 1988 – this volume).

Contrary to the commonly expressed opinion that killer whales rarely or never enter Hudson Strait and Hudson Bay, a few pods may do so annually, although the case for this is not as persuasive as it is for the Lancaster Sound Region and Cumberland Sound.

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#### PUBLISHED REFERENCES

- Anders, G. (Ed.) 1967. The east coast of Baffin Island. An area economic survey. 1966. A.E.S.R. No. 66/4. Industrial Division, Northern Administration Branch, Department of Indian Affairs and Northern Development, Ottawa, 196 pp.
- Banfield, A. W. F. 1974. The mammals of Canada. University of Toronto Press, Toronto and Buffalo, 438 pp.
- Bangs, O. 1909. List of the mammals of Labrador. In W. T. Grenfell *et al.*, Labrador: The country and the people, pp. 458–468. The Macmillan Company, New York.
- Barron, W. 1970. Old whaling days. Conway Maritime Press, London, 211 pp.
- Bissett, D. 1968. Northern Baffin Island, an area economic survey. Vol. 2 of the Northern Baffin Island Report, 1967 A.E.R.S. 67.1. Department of Indian Affairs and Northern Development, Ottawa, 131 pp.
- Blackadar, R. G. 1964. A prehistoric whale? *North* 11(1): 42–43.
- Boas, F. 1901. The Eskimos of Baffin Land and Hudson Bay. *Bull. Amer. Mus. Nat. Hist.* 15(1): 1–370.
- Brice-Bennett, C. (Ed.) 1977. Our footprints are everywhere. Inuit land use and occupancy in Labrador. Labrador Inuit Association, Nain, Labrador, 381 pp.

- Brody, H. 1976. Inuit land use in north Baffin Island and northern Foxe Basin. In M. M. R. Freeman (Ed.), Report. Inuit land use and occupancy project, Vol. 1. Department of Indian and Northern Affairs, Supply and Services Canada, Ottawa, pp. 153-242.
- Brown, R. 1868. Notes on the history and geographical relations of the Cetacea frequenting Davis Strait and Baffin's Bay. Proc. Zool. Soc. London 1868(35): 533-556.
- Clark, C. W., W. T. Ellison and K. Beeman 1986. A preliminary account of the acoustic study conducted during the 1985 spring bowhead whale, *Balaena mysticetus*, migration off Point Barrow, Alaska. Rep. int. Whal. Commn 36: 311-316.
- Cooke, A. and C. Holland 1978. The exploration of northern Canada 500 to 1920: A chronology. Arctic History Press, Toronto, 550 pp. + 25 maps + folding map.
- Davis, R. A., K. J. Finley and W. J. Richardson 1980. The present status and future management of arctic marine mammals in Canada. Science Advisory Board of the Northwest Territories, Yellowknife, Northwest Territories, 93 pp.
- and W. R. Koski 1980. Recent observations of the bowhead whale in the eastern Canadian High Arctic. Rep. int. Whal. Commn 30: 439-444.
- Dearden, J. C. 1958. A stranding of killer whales in Newfoundland. Can. Field-Nat. 72: 166-167.
- Degerbøl, M. and P. Freuchen 1935. Mammals. Report of the Fifth Thule Expedition 1921-24 2(4-5): 1-278 + folding map.
- and N. L. Nielsen 1930. Biologiske iagttagelser over og maalinger af hvidhvalen (*Delphinapterus leucas* (Pall.)) og dens fostre. Medd. Grønland. 77: 117-144.
- Doan, K. H. and C. W. Douglas 1953. Beluga of the Churchill region of Hudson Bay. Bull. Fish. Res. Bd. Can. 98: 1-27.
- Ellis, D. V. 1957. Some observations on mammals in the area between Coppermine and Pond Inlet, N.W.T., during 1954 and 1955. Can. Field-Nat. 71: 1-6.
- Eschricht, D. F. 1866. On the species of the genus *Orca* inhabiting the northern seas. In W. H. Flower (Ed.), Recent memoirs on the Cetacea by Professors Eschricht, Reinhardt and Lilljeborg. Ray Society, London, pp. 151-188.
- Finley, K. J. 1982. The estuarine habit of the beluga or white whale, *Delphinapterus leucas*. Cetus 4(2): 4-5.
- Ford, J. K. B. and H. D. Fisher 1982. Killer whale (*Orcinus orca*) dialects as an indicator of stocks in British Columbia. Rep. int. Whal. Commn 32: 671-679.
- Gray, R. W. 1934. Whales and their human enemies. Naturalist 1934: 107-112.
- Greely, A. W. 1886. Three years of arctic service. An account of the Lady Franklin Bay Expedition of 1881-84 and the attainment of the farthest north. Vols. 1 and 2. Charles Scribner's Sons, New York.
- Halkett, A. 1905. A naturalist in the frozen north. Ottawa Nat. 19(4): 85-86.
- Hall, E. R. and K. R. Kelson 1959. The mammals of North America. Ronald Press, New York, Vol. 1, pp. 1-546, Vol. 2, pp. 547-1083.
- Hantzsch, B. 1932. Contributions to the knowledge of extreme north-eastern Labrador. Can. Field-Nat. 46: 7-12.
- Heide-Jørgensen, M.-P. 1988. Occurrence and hunting of killer whales in Greenland. Rit Fiskideildar 11: 115-135.
- Higgins, G. M. 1968. The south coast of Baffin Island. An area economic survey, 1967 A.E.S.R. No. 67/2. Industrial Division, Northern Administration Branch, Department of Indian Affairs and Northern Development, Ottawa, 235 pp.
- Jonsgård, Å. 1977. Tables showing the catch of small whales (including minke whales) caught by Norwegians in the period 1938-75, and large whales caught in different North Atlantic waters in the period 1868-1975. Rep. int. Whal. Commn 27: 413-426.
- Katona, S. K., J. A. Beard, P. E. Girton and F. Wenzel 1988. Killer whales (*Orcinus orca*) from the Bay of Fundy to the Equator, including the Gulf of Mexico. Rit Fiskideildar 11: 205-224.
- Kayuryuk, S. and M. Innakatsik 1982. Killer whale near Baker Lake. Inuktitut 50: 21-22.
- Ko, D., J. E. Zeh, C. W. Clark, W. T. Ellison, B. D. Krogman and R. Sonntag 1986. Utilization of acoustic location data in determining a minimum number of spring-migrating bowhead whales unaccounted for by the ice-based visual census. Rep. int. Whal. Commn 36: 325-338.
- Krogman, B., J. C. George, G. Carroll, J. Zeh and R. Sonntag 1986. Preliminary results of the 1985 spring ice-based census of the bowhead whale, *Balaena mysticetus*, conducted near Point Barrow, Alaska. Rep. int. Whal. Commn 36: 343-352.
- Kumlien, L. 1879. Contributions to the natural history of arctic America made in connection with the Howgate Polar Expedition, 1877-78. Bull. U.S. Nat. Mus. 15: 1-179.
- Lowry, L. F., R. R. Nelson and K. J. Frost 1987. Observations of killer whales, *Orcinus orca*, in western Alaska: Sightings, strandings, and predation on other marine mammals. Can. Field-Nat. 101: 6-12.
- Lubbock, B. 1937. The arctic whalers. Brown, Son and Ferguson, Glasgow, 483 pp.
- Manning, T. H. 1943. Notes on the coastal district of the eastern Barren Grounds and Melville Peninsula from Igloolik to Cape Fullerton. Can. Geog. J. 26(2): 84-105.
- Markham, A. H. 1875. A whaling cruise to Baffin's Bay and the Gulf of Boothia. And an account of the rescue of the crew of the "Polaris", 2nd ed. Sampson

- Low, Marston, Low, and Searle, London, 307 pp.
- Miller, R. S. 1955. A survey of the mammals of Bylot Island, Northwest Territories. *Arctic* 8: 166-176.
- Mitchell, E. 1976. Canada: progress report on whale research, June 1974 - May 1975. *Rep. int. Whal. Commn* 26: 444-447.
- 1977. Evidence that the northern bottlenose whale is depleted. *Rep. int. Whal. Commn* 27: 195-203.
- 1979. Canada progress report on cetacean research, June 1977 - May 1978. *Rep. int. Whal. Commn* 29: 111-114.
- 1984. Ecology of North Atlantic boreal and arctic monodontid and mysticete whales. *In Arctic whaling. Proceedings of the International Symposium Arctic Whaling, February 1983. University of Groningen, The Netherlands, Works of the Arctic Centre* 8, pp. 65-78.
- and R. R. Reeves 1981. Catch history and cumulative catch estimates of initial population size of cetaceans in the eastern Canadian Arctic. *Rep. int. Whal. Commn* 31: 645-682.
- and R. R. Reeves 1982. Factors affecting abundance of bowhead whales *Balaena mysticetus* in the Eastern Arctic of North America, 1915-1980. *Biol. Conserv.* 22: 59-78.
- and R. R. Reeves 1988. Records of killer whales in the western North Atlantic, with emphasis on eastern Canadian waters. *Rit Fiskideildar* 11: 161-193.
- Munn, H. T. No date. Tales of the Eskimo. Being impressions of a strenuous, indomitable, and cheerful little people. W. and R. Chambers, London, 196 pp.
- Newman, M. A. and D. Cavanagh 1986. Narwhal. *In* D. Haley (Ed.), *Marine mammals of eastern North Pacific and arctic waters*, 2nd ed. Pacific Search Press, Seattle, pp. 158-166.
- Peterson, R. L. 1966. *The mammals of eastern Canada.* Oxford University Press, Toronto, 465 pp.
- Reeves, R. R. and E. Mitchell 1985. Shore-based bowhead whaling in the eastern Beaufort Sea and Amundsen Gulf. *Rep. int. Whal. Commn* 35: 387-404.
- and E. Mitchell 1987a. Catch history, former abundance, and distribution of white whales in Hudson Strait and Ungava Bay. *Naturaliste Can.* 114: 1-65.
- and E. Mitchell 1987b. History of white whale (*Delphinapterus leucas*) exploitation in eastern Hudson Bay and James Bay. *Can. Spec. Publ. Fish. Aquat. Sci.* 95: 1-45.
- and E. Mitchell 1987c. Distribution and migration, exploitation, and former abundance of white whales (*Delphinapterus leucas*) in Baffin Bay and adjacent waters. *Can. Spec. Publ. Fish. Aquat. Sci.* 99: 1-34.
- and E. Mitchell 1988. Killer whale sightings and takes by American pelagic whalers in the North Atlantic. *Rit Fiskideildar* 11: 7-23.
- Reeves, R., E. Mitchell, A. Mansfield and M. McLaughlin 1983. Distribution and migration of the bowhead whale, *Balaena mysticetus*, in the eastern North American Arctic. *Arctic* 36: 5-64.
- Rowland, J. T. 1963. *North to adventure.* W. W. Norton and Co., New York, 240 pp.
- Schwartz, F. 1977. Land use in the Makkovik region. *In* C. Brice-Bennett (Ed.), *Our footprints are everywhere. Inuit land use and occupancy in Labrador.* Labrador Inuit Association, Nain, Labrador, pp. 239-278.
- Sergeant, D. E. 1968. Whales. *In* C. S. Beals (Ed.), *Science, history and Hudson Bay, Vol. 1.* Department of Energy, Mines and Resources, Ottawa, pp. 388-396.
- 1973. Biology of white whales (*Delphinapterus leucas*) in western Hudson Bay. *J. Fish. Res. Bd Can.* 30: 1065-1090.
- 1986. Sea mammals. *In* I. P. Martini (Ed.), *Canadian inland seas.* Elsevier Science Publishers, Amsterdam, pp. 327-340.
- and P. F. Brodie 1969. Body size in white whales, *Delphinapterus leucas*. *J. Fish. Res. Bd Can.* 26: 2561-2580.
- Small, G. L. 1971. *The blue whale.* Columbia University Press, New York, 248 pp.
- Smith, C. E. 1922. *From the deep of the sea. Being the diary of the late Charles Edward Smith.* A. and C. Black, London, 288 pp.
- Smith, T. G., M. H. Hammill, D. W. Doidge, T. Cartier and G. A. Sleno 1979. Marine mammal studies in southeastern Baffin Island. *Can. Manuscript Rep. Fish. Aquat. Sci.* 1552: 1-70.
- and D. Taylor 1977. Notes on marine mammal, fox and polar bear harvests in the Northwest Territories 1940 to 1972. *Fish. Mar. Serv. Tech. Rep.* 694: 1-37.
- Soper, J. D. 1944. The mammals of southern Baffin Island, Northwest Territories, Canada. *J. Mamm.* 25: 221-254.
- Southwell, T. 1885. Notes on the seal and whale fishery of 1884. *Zoologist, ser. 3,* 9(99): 81-88.
- Steltner, H., S. Steltner and D. E. Sergeant 1984. Killer whales, *Orcinus orca*, prey on narwhals, *Monodon monoceros*: An eyewitness account. *Can. Field-Nat.* 98: 458-462.
- S. and H. Steltner 1983. Øjensvidneskildring af organiseret spækhuggerangreb på en narhvalflokk. *Thule, Hainang* 10: 271-275.
- S. and H. Steltner 1984. Aarluppasuit ataatsimooortut qilalukkanut qernertarpassuarnut saassusinerannik isiginnittip oqaluttuaa. *Thule, Hainang* 3-4: 63-68.
- Sutherland, P. C. 1852. *Journal of a voyage in Baffin's Bay and Barrow Straits, in the years 1850-1851, performed by H. M. ships "Lady Franklin" and "Sophia", under the command of Mr. William*

- Penny, in search of the missing crews of H. M. ships Erebus and Terror: with a narrative of sledge excursions on the ice of Wellington Channel; and observations on the natural history and physical features of the countries and frozen seas visited. Longman, Brown, Green, and Longmans, London, Vol. 1, 506 pp.; Vol. 2, 363 pp.
- Sverdrup, O. 1904. New land. Four years in the arctic regions, Vol. 1. Longmans, Green, and Co., London, 496 pp.
- Tanner, J. T. 1975. The stability and the intrinsic growth rates of prey and predator populations. *Ecology* 56: 855–867.
- Taylor, R. J. F. 1957. An unusual record of three species of whale being restricted to pools in Antarctic sea-ice. *Proc. Zool. Soc. London* 129 (3): 325–331.
- Townsend, C. W. 1907. Along the Labrador coast. Dana Estes and Company, Boston, 289 pp.
- Tremblay, A. 1921. Cruise of the Minnie Maud. Arctic Seas and Hudson Bay, 1910–11 and 1912–13. Compiled and translated by A. B. Reader. Arctic Exchange and Publishing Ltd., Quebec, Canada, 573 pp.
- Weiz, S. and A. S. Packard 1866. List of vertebrates observed at Okak, Labrador. *Proc. Boston Soc. Nat. Hist.* 10: 264–277.

#### UNPUBLISHED REFERENCES

- Andrews* 1865–66. Logbook of the bark *Andrews* of New Bedford, Timothy C. Packard, Master, 1 April 1865 – 25 September 1866. Houghton Library, Harvard University, Cambridge, Massachusetts, U.S.A.
- Andrews* 1867. Logbook of the bark *Andrews* of New Bedford, Timothy C. Packard, Master, 20 May – 31 December. (Shipwrecked). Houghton Library, Harvard University, Cambridge, Massachusetts, U.S.A.
- Boles, B. K. 1980. Offshore Labrador biological studies, 1979. Data report listing sightings of cetaceans in the Labrador Sea. Unpubl. rep. by Atlantic Biological Services Ltd., St. John's, Newfoundland, for Total Eastcan Exploration Ltd., Calgary, Alberta, 10 pp. + map.
- Brice-Bennett, C. 1980. An overview of the occurrence of cetaceans along the northern Labrador coast. Unpubl. rep. under contract no. OTT 78–111, Department of Indian Affairs and Northern Development, Ottawa, 34 pp. + appendices.
- 1983(?). An overview of the occurrence of cetaceans along the northern Labrador coast. 1978. OLABS Program (Offshore Labrador Biological Studies). Report, 48 pp.
- Brodie, P.F. 1967. The biology of the beluga *Delphinapterus leucas* Pallas of Cumberland Sound, Baffin Island. M.Sc. thesis in Marine Science, McGill University, Montreal, 66 pp.
- Diana* 1899. Logbook of the *Diana*, Dundee to Davis Strait, 24 April – 4 October, William Adams, Jr., Master. Public Archives of Canada.
- 1900. Journal kept by James Bannerman on the *Diana*, Dundee to Davis Strait, 23 April – 12 November, William Adams, Jr., Master. Public Archives of Canada.
- 1902. Journal kept by William Skinner on the *Diana*, Dundee to Davis Strait, 10 April – 3 November, William Adams, Jr., Master. Public Archives of Canada.
- 1903. Logbook of the *Diana*, Dundee to Davis Strait, 19 April – 15 November, William Adams, Jr., Master. Public Archives of Canada.
- Duvall, A. J. and C. O. Handley, Jr. 1946. Report of a wildlife reconnaissance of the eastern Canadian Arctic. Spec. Rep. U.S. Fish Wildl. Serv., U.S. Dept. Interior. Copy in library of Canadian Wildlife Service, Eastern Region.
- Eclipse* 1893. Logbook of the *Eclipse*, Dundee to Davis Strait, 19 March – 30 October, William F. Milne, Master. Public Archives of Canada.
- 1894. Logbook of the *Eclipse*, Dundee to Davis Strait, 20 March – 6 October, William F. Milne, Master. Public Archives of Canada.
- 1896. Logbook of the *Eclipse*, Dundee to Davis Strait, 3 April – 9 November, William F. Milne, Master. Public Archives of Canada.
- 1897. Logbook of the *Eclipse*, Dundee to Davis Strait, 15 April – 18 November, William F. Milne, Master. Public Archives of Canada.
- 1899. Logbook of the *Eclipse*, Dundee to Davis Strait, 28 April – 14 November, William F. Milne, Master. Public Archives of Canada.
- Erme* 1913. Logbook of the *Erme*, Sabellum Company trader, London to Baffin Island, 25 March – 3 November. Stefansson Collection, Dartmouth College Library, Hanover, New Hampshire, U.S.A.
- Esquimaux* 1885. Logbook of the *Esquimaux*, Dundee to Davis Strait, 29 January – 18 October, William F. Milne, Master. Public Archives of Canada.
- 1887. Logbook of the *Esquimaux*, Dundee to Davis Strait, 10 February – 6 November, William F. Milne, Master. Public Archives of Canada.
- 1888. Logbook of the *Esquimaux*, Dundee to Davis Strait, 22 May – 1 November, William F. Milne, Master. Public Archives of Canada.
- 1891. Journal kept by William Stenhouse on the *Esquimaux*, St. John's (Newfoundland) to Davis Strait, 27 April – 24 October, Jeffrey Phillips, Master. Public Archives of Canada.
- 1899. Journal kept by A. Barclay Walker on the *Esquimaux*, St. John's (Newfoundland) to Davis Strait, 10 May – 11 October, Harry D. MacKay, Master. Public Archives of Canada.
- Koski, W. R. and R. A. Davis 1979. Distribution of marine mammals in northwest Baffin Bay and adja-

- cent waters, May–October 1978. Unpubl. rep. by LGL Ltd., Environmental Research Associates, Toronto, for Petro-Canada, Calgary, Alberta, 305 pp.
- Koski, W. R. and R. A. Davis 1980. Studies of the late summer distribution and fall migration of marine mammals in NW Baffin Bay and E Lancaster Sound, 1979. Unpubl. rep. by LGL Environmental Research Associates Ltd., Toronto, for Petro-Canada Explorations Inc., Calgary, Alberta, 214 pp.
- MacLaren Atlantic Limited. 1977a. Report on aerial surveys 77-2, 77-3, 77-4 studies of seabirds and marine mammals in Davis Strait, Hudson Strait and Ungava Bay for Imperial Oil Ltd., Aquitaine Co. of Canada Ltd. and Canada Cities Services Ltd., Arctic Petroleum Operators Association Project No. 134 and 138. Unpubl. rep. by MacLaren Atlantic Ltd., Dartmouth, Nova Scotia, 5 sections.
- 1977b. Report on primary data collected for the 1977 Davis Strait Biological Programme and analysed prior to December, 1977 for Imperial Oil Ltd., Aquitaine Co. of Canada Ltd. and Canada Cities Services Ltd., Arctic Petroleum Operators Association Project 138. Unpubl. rep. by MacLaren Atlantic Ltd., Dartmouth-Fredericton-Moncton, 37 tables + 4 notes.
- 1978a. Report on biological studies, offshore cruises 77-2 and 77-3, April–June, 1977 in the Davis Strait for Imperial Oil Ltd., Aquitaine Co. of Canada Ltd. and Canada Cities Services Ltd., Arctic Petroleum Operator's Project No. 134. Unpubl. rep. by MacLaren Atlantic Limited, Dartmouth, Nova Scotia, 4 sections + Appendix [separate volume, containing 55 data tables].
- 1978b. Report on biological studies, offshore cruise 77-4 through 77-7, July–December, 1977 in the Davis Strait for Imperial Oil Ltd., Aquitaine Co. of Canada Ltd. and Canadian Cities Services Ltd., Arctic Petroleum Operator's Project No. 138. Unpubl. rep. by MacLaren Atlantic Limited, Dartmouth, Nova Scotia, 4 sections.
- MacLaren Marex Inc. 1979a. Report on aerial surveys of birds and marine mammals in the southern Davis Strait between April and December, 1978 for Esso Resources Canada Ltd., Aquitaine Co. of Canada Ltd. and Canada Cities Services Ltd., Arctic Petroleum Operators Association Project No. 146, Vol. 3, Marine mammals. MacLaren Marex Inc., St. John's – Dartmouth – Fredericton, 4 sections.
- 1979b. Report on feeding studies of marine mammals and birds from the southern Davis Strait region for Esso Resources Canada Ltd. and Canada Cities Services Ltd., Arctic Petroleum Operators Association Project No. 146. Unpubl. rep. by MacLaren Marex Inc., Dartmouth, Nova Scotia, 8 sections.
- Maud 1891. Logbook of the *Maud*, Dundee to Davis Strait, 19 March – 3 October, William F. Milne, Master. Public Archives of Canada.
- Murphy, D. 1973. Fauna survey, Baffin Island, N.W.T. Unpubl. rep. by the Government of the Northwest Territories to the National and Historic Parks Branch, Parks Canada, Indian and Northern Affairs, Ottawa, 7 pp. (mimeo)
- Polynia* 1890. Logbook of the *Polynia*, Dundee to Davis Strait, 25 May to 14 November, William F. Milne, Master. Public Archives of Canada.
- Sergeant, D. E. 1962. Marine mammals from the Atlantic coasts of Canada, 1961–62. 3 pp. (mimeo). [Draft manuscript with covering letter to Dr. J. C. Moore, Chairman, Committee on Marine Mammals, American Society of Mammalogists, 12 July 1962.] Ste-Anne-de-Bellevue, Quebec, Arctic Biological Station, File 12-1, Vol. 1.
- 1963. Sightings of marine mammals. ICNAF *NORWESTLANT* 1963. Ste-Anne-de-Bellevue, Quebec, Arctic Biological Station, File 12-6, Vol. 5. (mimeo)
- Snowdrop* 1908–09. Logbook of the *Snowdrop* of Dundee. Forsyth-Grant, trader. 23 April 1908 – September 1909. Stefansson Collection, Dartmouth College Library, Hanover, New Hampshire, U.S.A.
- Southwell Papers. Notes, correspondence, and newspaper clippings relating to cetaceans and pinnipeds and to the British and Newfoundland whaling and sealing industries, including notes for several publications by Southwell. Covers period approximately 1860–1908. 2 boxes. Scott Polar Research Institute, Cambridge, U.K. Accession no. MS635; BJ.
- Steltner, H. and S. Steltner 1980. Narwhal and killer whales on Eclipse Sound. In Memorandum No. 29 (Progress Summary for the Period July 1, 1980 to October 3, 1980), by Hermann A. Steltner, Arctic Research Establishment, Pond Inlet, N.W.T., 3 October 1980, to Mr. G. Hobson, Polar Continental Shelf Project, Department of Energy, Mines and Resources, Ottawa, pp. 34–38b.
- Stepney, P. H. R. and R. L. Wooley 1976(?). Survey of marine mammals of Lancaster Sound, October 1975. Unpubl. rep. by Renewable Resources Consulting Services Ltd, for Norlands Petroleums Limited, Calgary, 55 pp.
- Tuck, L. M. 1957. Wildlife investigations in the Cape Hay region, Lancaster Sound, 1957. Unpubl. rep. to Canadian Wildlife Service, Ottawa, 59 pp. (mimeo).
- Turner diaries. The diaries and private papers of Canon E. J. V. Turner, 1928–1946. On 2 reels of microfilm, Anglican Church of Canada, General Synod Archives, 600 Jarvis St., Toronto, Ontario. [Original material at Ipswich & East Suffolk Record Office, County Hall, Ipswich, U.K. IP4 2JS].
- Victor* 1873. Journal kept by John Edwards on the *Victor*, Dundee to Davis Strait, 7 May – 3 November, John Edwards, Master. Public Archives of Canada.
- Volunteer* 1833. Logbook of the *Volunteer* of Hull, 13 April – 14 October [incomplete], Henry Parish, Mas-



ter. Microfilm copy examined; obtained from Hull Museums, Hull, U.K.  
 Williamson, H. A. 1964. Population movement and the food gathering economy of northern Labrador. M.A. thesis, Department of Geography, McGill University, Montreal.  
 Wood, T. J. 1974. Wildlife in the vicinity of Baffin Is-

land National Park: An assessment of the impact of Inuit hunting and other factors on wildlife populations in southeastern Baffin Island. Unpubl. rep. to Canadian Wildlife Service, Fredericton, New Brunswick, 35 pp. + 13 appendices + 4 maps (mimeo).

## APPENDIX 1: Tables

TABLE 1  
 Records of killer whales in the Lancaster Sound Region.

Record No.	Locality	Date	Number of Whales	Remarks	Source
1	74°31'N, 88°20'W, near Prince Leopold Island	22 August 1850	2		Sutherland 1852, vol. I, pp. 288, 326
2	"To the southward of Pond's Bay" [Pond Inlet]	mid 1800s (before 1866)	"A school"	"Swordfish", patrolling floe edge; supposedly chasing bowheads in cracks.	Smith 1922, pp. 37-38
3	Near Bylot Island	21 July 1871	"A number"	<i>Erik of Dundee</i> .	Lubbock 1937, p. 399
4	Prince Regent Inlet, near Fury Beach	7-8 August 1873	"Several", "shoals"	Chased by crew of <i>Arctic</i> .	Markham 1875, pp. 246-247
5	Near Cape Lieber, Grinnell Land, Hall Basin, 81°35'N	5 August 1881	1	"Sword-fish" seen with a herd of white whales.	Greely 1886, vol. I, p. 75; vol. II, p. 359
6	S side Pond Inlet	8 September 1885	Some	"Pursuing" narwhals, which were "numerous". "Grampus".	<i>Esquimaux</i> 1885 MS
7	Near Fury Beach, E coast Somerset Island	5 August 1890	"Some"	During white whale drive. "Gramphis".	<i>Polymia</i> 1890 MS
8	In Pond Inlet and 15 naut. miles N of Cape Adair	29 July, 1, 3 August 1891	"A good many"	"Gramphis".	<i>Maud</i> 1891 MS
9	Near Cape Graham	21 August 1891	"A grate many"	Reported by Inuit who came on board ship this date.	<i>Esquimaux</i> 1891 MS
10	Off Cape Macculloch	19 August 1899	"A school"	"Grampus".	<i>Diana</i> 1899 MS
11	Off Cape Macculloch, NE Baffin Island	24 August 1899	+	"The Captain informs me that these [bowhead] whales are hemmed into the ice outside us by sword fish."	<i>Esquimaux</i> 1899 MS
12	In Pond Inlet	4 September 1899	"Two large droves"	Narwhals also "very numerous". "Gramphis".	<i>Eclipse</i> 1899 MS
13	Near Guy's Bight, mouth of Pond Inlet	18 July 1900	"A number"	"Sword Fish".	<i>Diana</i> 1900 MS
14	NE Baffin Island, along land floe while steaming toward Pond Inlet	24 July 1902	"A few"	"Grampus".	<i>Diana</i> 1902 MS
15	Pond Inlet floe edge	14 July 1903	Some	Many narwhals also in vicinity. "Grampus".	<i>Diana</i> 1903 MS

Table 1 (continued)

Record No.	Locality	Date	Number of Whales	Remarks	Source
16	Near Yeoman Island, Admiralty Inlet	Unknown	+	Killed a bowhead.	D. Ipirq personal communication, 5 September 1984
17	Eclipse Sound	August 1912	10	2 "large", 8 "small"; pursuing narwhals.	Tremblay 1921, p. 29
18	Pond Inlet floe edge	July 1922	"A herd"		Munn no date, p. 195
19	Pond Inlet	19 June 1924	"A school"		Degerbøl and Freuchen 1935, p. 263
20	Pond Inlet	21 July 1924	5	Two pods reported in Milne Inlet during the same time.	Degerbøl and Freuchen 1935, p. 263
21	Pond Inlet	3 August 1933	?	"All kinds of seals coming along shore to-day, probably driven in by Killer Whales."	HBC Archives, Pond Inlet post journal, B.465/a/13, fo. 11
22	Pond Inlet	October 1935	?	"See seal near rock & then two more so realise there must be 'killers' about."	Turner diaries
23	Adams Sound, Admiralty Inlet	14 August 1938	?	Presence of harp seals attributed to killer whales.	HBC Archives, Arctic Bay post journal, B.381/a/3, fo. 26[a]
24	Strathcona Sound, Admiralty Inlet	24 August 1940	?	Inuit "found a dying Narwhal"; its "back was broken and it must have been done by a Killer Whale".	HBC Archives, Arctic Bay post journal, B.381/a/6, fo. 16
25	Pond Inlet	27 August 1941	1	Appeared in the vicinity, "driving the seals in-shore". Killer whales seen here "very seldom".	HBC Archives, Unclassified Documents, 1927-1957, Bay 4, Shelf 207, Extracts from Pond Inlet journals
26	Pond Inlet	8 September 1941	1	"Another killer whale appeared in the vicinity, driving the seals inshore." "Stayed around for about three hours."	HBC Archives, Unclassified Documents, 1927-1957, Bay 4, Shelf 207, Extracts from Pond Inlet journals
27	Near Pond Inlet	14 August 1942	+	"Killers' around during day & a few waves of seals come by..."	Turner diaries
28	Near Pond Inlet	15 August 1942	+		Turner diaries
29	Near Pond Inlet	19 September 1942	?	"Killers' are responsible for the Narwhal coming by also some seals."	Turner diaries
30	Moffet Inlet, S Admiralty Inlet	19-20 August 1943	ca 20	Terrorizing seals.	Turner diaries
31	Pond Inlet	21 August 1944	+		Turner diaries
32	Pond Inlet	1 September 1944	+		Turner diaries
33	In Lancaster Sound near Dundas Harbour, Devon Island	September 1945	1[+?]	Killed a narwhal, according to RCMP.	Duvall and Handley 1946 MS, p. 30
34	W side Admiralty Inlet, S of Kakiak Point	October 1949	+	Attacked narwhals.	D. Ipirq pers. comm., 5 September 1984
35	Pond Inlet	1954	3		RCMP Game Report, Pond Inlet, 14 July 1955

Table 1 (continued)

Record No.	Locality	Date	Number of Whales	Remarks	Source
36	Eclipse Sound	26-27 July 1955	+	Not seen; presence inferred from behaviour of seals.	Ellis 1957, p. 5
37	Pond Inlet	1956	+		RCMP Game Report, Pond Inlet, 25 July 1957
38	Pond Inlet	1957	+	Killer whales in Inlet "at least once".	RCMP Game Report, Pond Inlet, 24 July 1958
39	Navy Board Inlet	22 August 1957	"A school"		Tuck 1957 MS, p. 39
40	Along S shore of Bylot Island, Pond Inlet	1958	1 group	Moving west.	RCMP Game Report, Pond Inlet, 28 July 1959
41	Pond Inlet	Fall 1959	+		RCMP Game Report, Pond Inlet, 20 July 1960
42	Pond Inlet	Summer 1960	+	"Passed through Eclipse Sound at least once".	RCMP Game Report, Pond Inlet, 4 August 1961
43	Pond Inlet	1961	+	Passed through "at least once".	RCMP Game Report, Pond Inlet, 14 August 1962
44	Pond Inlet	1962	+	Passed through area at least twice.	RCMP Game Report, Pond Inlet, 5 August 1963
45	Grise Fiord	1962	1	"Infrequent visitors"; not hunted.	RCMP Game Report, Grise Fiord, 9 July 1963
46	78°18'N, 73°22'W, Smith Sound	10 September 1962	1(+1?)	"One Killer one possibly Pilot Whale together at base of iceberg."	J. Chapman, CCGS <i>Labrador</i> , Dept of Transport, Dartmouth, N.S. (AWSR)
47	Grise Fiord	1963	+	Behaviour of seals taken to indicate killer whales in the area — twice.	RCMP Game Report, Grise Fiord, 3 July 1964
48	Pond Inlet	1963	2 "schools"		RCMP Game Report, Pond Inlet, 30 June 1964
49	Navy Board Inlet	1964	+		RCMP Game Report, Pond Inlet, 8 July 1965
50	Middle of Lancaster sound, N of Navy Board Inlet	1-5 October 1975	2		Stepney and Wooley 1976(?) MS, fig. 4
51	Mouth of Lancaster Sound, near SE corner of Devon Island	22 August 1978	2		Koski and Davis 1979 MS, pp. 120-121
52	N side of Lancaster Sound, opposite Navy Board Inlet	21 September 1978	2		Koski and Davis 1979 MS, pp. 120-121
53	72°36'28"N, 74°54'52"W; at sea near Pond Inlet	17 August 1978	8+	Seen from M. V. <i>Theron</i> ; 2 were adult males.	R. Wallace, Petro-Canada (AWSR); Koski and Davis 1979 MS, p. 120
54	N end of Navy Board Inlet	23 September 1979	15	Chasing 400-500 narwhals and many harp seals.	C. Stirling, Canadian Hydrographic Service, in Koski and Davis 1980 MS, p. 126
55	Eclipse Sound	30 August 1980	"Several tens"	Included 30-40 large animals; preying on narwhals.	Steltner <i>et al.</i> 1984
56	NE coast of Bylot Island	2 July 1983	2(+?)		W. Hansen <i>in litt.</i> , 1 April 1987

Table 1 (continued)

Record No.	Locality	Date	Number of Whales	Remarks	Source
57	Koluktoo Bay, Eclipse Sound, Tremblay Sound	August 1985	9-12	Preying on narwhals.	Newman and Cavanagh 1986, p. 164; R. R. Campbell <i>in litt.</i> , 21 Oct. 1986; Fig. 3
58	Pond Inlet floe edge	8 August 1986	1		Seen by Ham Kadloo and Rita Redner, reported by Chris Latchem pers. comm.

TABLE 2

Records of killer whales along the east coast of Baffin Island north of Cumberland Sound.

Record No.	Locality	Date	Number of Whales	Remarks	Source
59	"Middle ice", near Baffin Island, probably ca Scott's Inlet	Late summer or early fall 1857	"A great number"	<i>Emma</i> of Hull.	Barron 1970, p. 85; Lubbock 1937, p. 368
60	Off Agnes' Monument, NE Baffin Island	11 August 1873	"A good many"		<i>Victor</i> 1873 MS
61	Off Cape Adair, NE Baffin Island	8 September 1887	2-3	"Grampus".	<i>Esquimaux</i> 1887 MS
62	Eglinton Harbour, NE Baffin Island	15 September 1888	Some	"Narwhals appear to be persecuted by Grampus."	<i>Esquimaux</i> 1888 MS
63	Off Clyde River	19-20 July 1896	"Numerous"	"Grampus".	<i>Eclipse</i> 1896 MS
64	70°47'N, 68°18'W, floe edge off Eglinton Fiord	26 July 1897	"A number"	"Grampus".	<i>Eclipse</i> 1897 MS
65	"In the offing" of Dexterity Fiord, NE Baffin Island	3 September 1903	Some	"Grampus".	<i>Diana</i> 1903 MS
66	Clyde Inlet, Cape Hewett and Cape Christian areas	Fall 1963	Several	Large. "Eskimos do not bother to hunt them."	RCMP Game Report, Cape Christian, 6 July 1964
67	69°51'N, 65°05'W, E of Cape Aston	8 September 1974	2	Open water, heading S. Seen from CCGS <i>Louis S. St. Laurent</i> .	Van Humbeck and Fawcett (AWSR)

TABLE 3

Records of killer whales in Cumberland Sound and along the southeast coast of Baffin Island.

Record No.	Locality	Date	Number of Whales	Remarks	Source
68	63°00'N, 63°21'W	6 September 1865	Some		<i>Andrews</i> 1865-1866 MS
69	Off the Kikastan Islands ["the Kickertons"], Cumberland Sound	3-4 August 1866	Some	On bowhead whaling grounds.	<i>Andrews</i> 1865-1866 MS
70	Mouth of Cumberland Sound, generally near Blacklead Island	14-17 August and 9, 13, 16 September 1867	Some	On bowhead whaling grounds.	<i>Andrews</i> 1867 MS
71	Near Kikastan Islands and Pangnirtung, Cumberland Sound	18, 22 August 1867	Some	Lowered boats to chase those seen 22 August while vessel anchored in Pangnirtung harbor.	<i>Andrews</i> 1867 MS

Table 3 (continued)

Record No.	Locality	Date	Number of Whales	Remarks	Source
72	Clearwater Fiord, Cumberland Sound	September [?] 1913	+	Attack by "Grampus" on white whales observed.	Erme 1913 MS
73	Upper Frobisher Bay	22 September 1934	?	Scarcity of seals attributed to supposed presence of killer whales.	HBC Archives, Frobisher Bay post journal, B.411/a/5, fo. 16
74	Cumberland Sound	Summer 1952	+	"Several small packs."	RCMP Game Report, Pangnirtung, 30 June 1953
75	Pangnirtung Fiord, Cumberland Sound	Fall 1953	5		RCMP Game Report, Pangnirtung, 24 September 1954
76	Cape Mercy	Prior to 1954	+		RCMP Game Report, Pangnirtung, 24 September 1954
77	Pangnirtung Fiord, Cumberland Sound	Spring 1954	5		RCMP Game Report, Pangnirtung, 30 June 1955
78	Clearwater Fiord, Cumberland Sound	Fall 1956	"A large herd"	Killed a bowhead, also killed "over fifty White Whales in a single attack".	RCMP Game Report, Pangnirtung, 21 August 1957
79	Pangnirtung district, Cumberland Sound	1957	"Few"		RCMP Game Report, Pangnirtung, 18 August 1958
80	Pangnirtung district, Cumberland Sound	Early spring, 1958 or 1959	Several		RCMP Game Report, Pangnirtung, 7 July 1959
81	Pangnirtung district, Cumberland Sound	Summer 1959	"Several"		RCMP Game Report, Pangnirtung, 14 July 1960
82	Pangnirtung district, Cumberland Sound	Summer 1960	"Several"		RCMP Game Report, Pangnirtung, 30 June 1961
83	Pangnirtung Fiord, Cumberland Sound	Summer 1961	Many	Chasing narwhals.	RCMP Game Report, Pangnirtung, 30 June 1962
84	Pangnirtung Fiord, Cumberland Sound	Summer 1962	"Fairly large numbers"	Supposedly chased narwhals into Pangnirtung Fiord.	RCMP Game Report, Pangnirtung, 27 June 1963
85	Pangnirtung Fiord, Cumberland Sound	1963	2 "packs"	Supposedly chased narwhals into Pangnirtung Fiord.	RCMP Game Report, Pangnirtung, 17 July 1964
86	Pangnirtung Fiord, Cumberland Sound	1964	24	"It is believed that these whales claim a good number of narwhale and seal."	RCMP Game Report, Pangnirtung, 25 July 1965
87	Pangnirtung Fiord, Cumberland Sound	Summer 1965	+	Seen daily for a 3-week period.	RCMP Game Report, Pangnirtung, 2 July 1966
88	Cumberland Sound	June-September 1966	20(+)	20 seen in one day.	RCMP Game Report, Pangnirtung, 10 July 1967
89	Off NE corner of Brevoort Island	23 August 1966	1	Seen from research vessel <i>Calanus</i> ; identified as a female by A. W. Mansfield on the basis of dorsal fin size and shape.	A. W. Mansfield, field notes; logbook of <i>Calanus</i> , cruise in Cumberland Sound of 18 July-16 September 1966
90	Frobisher Bay	1967	+	"Unusually large number of killer whales around" — given as explanation of low numbers of white whales taken.	RCMP Game Report, Frobisher Bay, 29 August 1968
91	Entrance to Clearwater Fiord, Cumberland Sound	Summer 1969	4	"Shot by local Eskimos... from a 42ft. boat."	RCMP Game Report, Pangnirtung, 28 August 1970
92	Several parts of Cumberland Sound	Summer 1969	"Small groups"		Smith and Taylor 1977, p. 13

Table 3 (continued)

Record No.	Locality	Date	Number of Whales	Remarks	Source
93	Mouth of Pangnirtung Fiord	August 1971	2		Wood 1974 MS
94	York Sound, Frobisher Bay	10 August 1972	+	Attacked and killed a bowhead.	Mitchell and Reeves 1982
95	Frobisher Bay	August 1975	5	Attacked a bowhead.	Mitchell and Reeves 1982
96	64°10'N, 63°W, off mouth of Cumberland Sound	13 October 1976	3	One male. Seen from CCGS <i>John A. MacDonald</i> .	Larry B. Solar (AWSR)
97	Head of Kingnait Fiord, Cumberland Sound	August 1977	11	Described as 2 pods.	MacLaren Atlantic Ltd 1977 MSa, p. 4-16, fig. 4-13
98	63°26'N, 63°05'W, near Cornelius Grinnel Bay	21 August 1977	3-4		MacLaren Atlantic Ltd 1978 MSb, fig. 4-118, Appendix table 16
99	Head of Cumberland Sound	26 September 1977	14	Trapped in salt-water lake; killed by Inuit; included a 3.55-m calf	MacLaren Atlantic Ltd 1977 MSa, p. 4-16, fig. 4-13; Mitchell 1979; Davis <i>et al.</i> 1980
100	62°30'N, 63°W, off mouth of Frobisher Bay	18 October 1977	2		MacLaren Atlantic Ltd 1978 MSb, fig. 4-126, appendix table 45
101	63°00'N, 60°04'W, ca 150 km E of S tip of Brevoort Island	7 September 1978	3		MacLaren Marex Inc. 1979 MSa, table 5-8-6, fig. 4-69
102	Cumberland Sound	1 September 1979	1		R. W. McArter, Atmospheric Environment Service (AWSR)

TABLE 4

Records of killer whales in Hudson Strait, Hudson Bay and Foxe Basin.

Record No.	Locality	Date	Number of Whales	Remarks	Source
103	Off Resolution Island, mouth of Hudson Strait	14-15 July 1865	"Shoal"		Andrews 1865-1866 MS
104	Off Port Burwell	August 1903	+		Halkett 1905, p. 86
105	Erik Cove, S shore of W Hudson Strait	August 1911	2	Chasing white whales.	Rowland 1963, p. 215
106	Between Cape Dorset and Salisbury Island	Early fall 1928	1	Reported by Native walrus hunters.	Soper 1944, p. 251
107	Philpot Bay	Early July 1930	1		Soper 1944, p. 251
108	Cape Dorset	10 July 1935	1	"A small Grampus was seen... unable to get a shot."	HBC Archives, Cape Dorset post journal, B.397/a/5, fo. 8
109	Just N of Hantzsch River, ca 2 naut. miles from shore, central E coast of Foxe Basin	1938-40	2		Manning 1943, p. 57
110	Cape Dorset	29 September 1940	?	"There must be killer whales outside to drive so many white whales into our harbour."	HBC Archives, Cape Dorset post journal, B.397/a/10, fo. 45

Table 4 (continued)

Record No.	Locality	Date	Number of Whales	Remarks	Source
111	Fury and Hecla Strait	1947	1	Drifted ashore dead.	Extracts from A. Stevenson's Report on Relief Expedition to Eastern Arctic 1947 by "SS North Pioneer," in Public Archives of Canada, RG85, vol. 1084, file 401-2, pt 1
112	Steensby Inlet, N Foxe Basin	Winter 1956	2	Female and young, trapped in ice; killed by hunters in late December	Blackadar 1964
113	White Strait, N Hudson Strait	October 1960	"Several"		RCMP Game Report, Lake Harbour, 5 July 1961
114	60°32'N, 69°28'W, Payne Bay	13 August 1962	1		R. D. Currie, from Peterhead "Eskimo" (AWSR)
115	Near Whale Cove	17 August 1964	ca 20		D. E. Sergeant trip report, 8 Sept. 1964, ABS files
116	E of Cape Dorset, Hudson Strait	1 July 1966	?	Large number of narwhals present, thought to have been chased inshore by killer whales.	RCMP Game Report, Cape Dorset, 10 July 1966; Higgins 1968, p. 153
117	Off Port Burwell	22 July 1976	1	Open water.	R. N. Fawcett and C. Guimont, Atmospheric Environment Service (AWSR)
118	Mouth of Hudson Strait, 61°14'N, 63°48'W	13 September 1977	1	Open water.	MacLaren Atlantic Ltd 1978 MSb, fig. 4-123 & appendix table 31
119	58°21'N, 67°10'W, E side of Ungava Bay	25 September 1977	2	Large.	R. Greendale, Department of Fisheries and Oceans (AWSR)
120	Near Inouedjouac (Port Harrison)	1977	1(+)	One found dead on an islet; others sighted in unspecified year.	Sergeant 1986; R. Chenier pers. comm., 13 March 1987
121	Prince River, 10 naut. miles from Baker Lake	August 1978	1	Large male; shot. Reported as 2 animals by Davis <i>et al.</i> (1980).	Kayuryuk and Innakatsik 1982
122	Near Churchill, W Hudson Bay	Summer 1980	1	Seen by tourists and reported to Father Volant; "high-finned whale". White whales reportedly disappeared from area at this time.	Pierre Richard pers. comm., 26 October 1987
123	Repulse Bay	mid-August 1981	2	Seen and reported by local Inuit. Two killer whales also reported in this area at beginning of August.	Pierre Richard pers. comm., 26 October 1987
124	Repulse Bay, near settlement	1983	1	Seen and reported by Inuit.	Pierre Richard pers. comm., 26 October 1987

TABLE 5  
Records of killer whales along and offshore from the Labrador coast.

Record No.	Locality	Date	Number of Whales	Remarks	Source
125	Nachvak	18 November 1874	?	Seals inshore in large numbers — "they were driven up by a kind of Whales, that the Esquimaux saw at the mouth of the bay."	HBC Archives, Nachvak post journal, B.138/a/3, fo. 29d
126	57°22'N, 57°54'W	10 April 1894	5	"A few" seals in vicinity.	<i>Eclipse</i> 1894 MS
127	Between Hopedale Nain	Summer 190?	1	Seen.	Townsend 1907, p. 168
128	55°25'–56°00'N, 57°50'W	12 September 1961	1	With large concentration of balaenopterids and <i>Globicephala</i> .	Sergeant 1962MS
129	54°30'N, 57°06'W [not plotted on Figure 1]	5 August 1975	4–6		R. S. Zacharuk, Atmospheric Environment Service (AWSR)
130	60°N, 60°22'W, E of Cape Chidley	28 April 1977	2	In $\frac{5}{10}$ ice, just at edge of ice and open water. Bottlenose whales also in area.	Seen by Johnny Shoo, reported by B. Emmett (AWSR); MacLaren Atlantic Ltd 1978 MSa, p. 4–45, fig. 4–114, appendix table 21
131	53°10'N, 55°26'W [not plotted on Figure 1]	1 September 1977	5	Moving toward land.	C. Fournier, Quebec Ministry of Transport (AWSR)
132	Okak Bay, Labrador	July 1978	10	Chased 2 hunters in a speedboat.	Brice-Bennett 1980 MS, 1983(?)
133	55°30'N, 57°57'W	24 July 1979	9	Including 2 females with calves.	Boles 1980 MS, table 2
134	59°00'N, 60°05'W	13 August 1979	1		Boles 1980 MS, table 2
135	56°00'N, 58°25'W	5 September 1979	20	Heading SW, in groups of 11, 5, 4 and 1.	Boles 1980 MS, table 2
136	58°45'N, 55°20'W	18 June 1983	2[?]	Logged only as "Killer or Fin" — no details. Seen from CCGS <i>John A. MacDonald</i> .	R. W. Walker (AWSR)

TABLE 6  
Records of killer whales in central Davis Strait and off Greenland.

Record No.	Locality	Date	Number of Whales	Remarks	Source
137	~62°48'N, off SW Greenland	6 September 1833	1	"Sword fish".	<i>Volunteer</i> 1833 MS
138	64°N, 54°44'W, off Godthåb, W Greenland	22 April 1893	"A few"	Bottlenose whales also seen in vicinity. "Grampus".	<i>Eclipse</i> 1893 MS
139	N of Upernavik, W Greenland	5 August 1898	8–9	Approached steam vessel.	Sverdrup 1904, pp. 20–21
140	Near Sukkertoppen, W Greenland	6 July 1908	2	"Passed quite close to 2 sword fish killing a Finback whale".	<i>Snowdrop</i> 1908–1909 MS
141	Off SW Greenland, 63°12'N, 51°28'W	28 June 1963	1		W. E. Ricker memorandum, 1 May 1964, ABS files



Table 6 (continued)

<i>Record No.</i>	<i>Locality</i>	<i>Date</i>	<i>Number of Whales</i>	<i>Remarks</i>	<i>Source</i>
142	Off SW Greenland, 63°08'N, 51°40'W	29 July 1963	2-4		W. E. Ricker memorandum, 1 May 1964, ABS files
143	E of S Greenland, ~ 61°40'N, 35°30'W [not plotted on Figure 1]	June-July 1963	+		Sergeant 1963 MS
144	66°22'N, 55°40'W, off Egedesminde	8 October 1964	10	In open water; basis of identification not stated.	L. B. Thiele, M.S.C. ice observer (AWSR)
145	62°59'N, 59°24'W, Davis Strait	14 August 1977	15-20	Open water.	MacLaren Atlantic Ltd 1978 MSb, fig. 4-118, appendix table 16
146	62°00'N, 58°36'W, Davis Strait	1 September 1977	3-4	Open water.	MacLaren Atlantic Ltd 1978 MSb, fig. 4-118, appendix table 16
147	63°58'N, 57°57'W, Davis Strait	21 September 1977	12	Open water.	MacLaren Atlantic Ltd 1977 MSb, table 36
148	63°29'N, 59°25'W, Davis Strait	12 October 1977	2	Open water.	MacLaren Atlantic Ltd 1978 MSb, fig. 4-126, appendix table 45