avoiding the long, arduous hearing procedure of the MMPA and ESA, the regulations needed to protect the bowhead whale could be implemented quickly. However, such rapid implementation ran the risk of abrogating the civil rights of Eskimos since they would be excluded from the decision making process.

Fortunately the circumstance of a special meeting of the IWC in December 1977, to reconsider the status of North Pacific sperm whales, gave the United States an opportunity to reopen the issue of the hunt for bowhead whales. Eskimo participation was obtained in developing a management proposal for submission to the IWC. The plan allowed a limited hunt with quotas on numbers struck as well as on numbers landed and promised to increase significantly the level of research undertaken. Regulations for the hunt were to be implemented and enforced through the Whaling Convention Act.

On reviewing the U.S. proposal, the IWC’s Scientific Committee reiterated its findings that on biological grounds the hunt should not be allowed but recognized that the IWC might wish to consider subsistence or cultural needs which were beyond its expertise. The IWC did consider these other aspects of the problem and finally agreed to remove the ban and to allow a take in 1978 of 12 whales landed or 18 struck, whichever occurred first.

This decision by the IWC established in 1978 the most ambitious U.S. research program ever devoted to a single species of large cetacean. As indicated by the following papers, dramatic results have already emanated from this effort. However, a far more encouraging aspect of the research program has been the willing participation by Eskimos in all of its phases. Such participation and cooperation must necessarily be the keynotes of any successful effort to balance the legitimate needs of both the Eskimo people and the bowhead whale.

### Literature Cited


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### Historical Shore-Based Catch of Bowhead Whales in the Bering, Chukchi, and Beaufort Seas

WILLMAN M. MARQUETTE and JOHN R. BOCKSTOCE

#### Introduction

The Eskimos of northwestern Alaska have hunted the bowhead whale, *Balaena mysticetus*, since about A.D. 800, and there is archaeological evidence to suggest that the practice developed about 1,000 years earlier on St. Lawrence Island and the Siberian coast near the Bering Strait (Bockstoce, 1977; Fig. 1, 2). Whaling during an 8-week spring hunt and during a 4- to 8-week autumn hunt at some villages provided the Eskimos with perhaps one-half of their winter food supply, until the 19th century, bowheads and Eskimos existed as co-inhabitants of a presumably stable ecosystem (Dunbar, 1953; Bockstoce, 1976).

In 1848, however, an event occurred that destroyed that stability. In that year a Yankee whaler, Captain Thomas Roys of Sag Harbor, N.Y., discovered the rich bowhead whaling grounds north of the Bering Strait. Not only were the whales plentiful, but he found the bowheads to be slow, docile, and, most important, they had such a thick layer of blubber and great quantity of whalebone (baleen) that an average sized whale yielded 11,923 liters (100 barrels) of oil and 681 kg (1,500 pounds) of baleen (Bockstoce, 1980).

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Word of Captain Roys’ success spread quickly, and in 1852 more than 200 ships were operating in the Bering Strait region. The ice and weather took a terrible toll of ships and men, but the profits were worth the risk. The whalers continued to press farther north into the
Chukchi Sea, and eventually made their way into the Beaufort Sea where in 1889 they discovered the bowhead's feeding ground near the Mackenzie River Delta and Amundsen Gulf, Northwest Territories, Canada (Fig. 3).

It was baleen that eventually caused the near extinction of the western Arctic stock. After 1880 the demand for baleen grew as manufacturers increasingly came to value the flexible, resilient whalebone for use as corset stays, skirt hoops, and in umbrellas. At the beginning of this century the price of baleen rose to more than $5/454 g (1 pound), making an adult bowhead worth more than $10,000. The baleen was so valuable that the plates from an exceptionally large bowhead could pay all expenses of an Arctic cruise.

Although whaling vessels had systematically sailed the Bering and Chukchi Seas for 30 years, the Arctic Eskimos did not come into any significant contact with the whalers until after 1880 (Bockstoce, 1978). By that decade the increasing scarcity of the whales motivated the Pacific Steam Whaling Company of San Francisco, Calif., and other operators to establish shore-based stations along the Alaskan coast. This enabled the whalers to hunt bowheads in the early spring far in advance of the whaling fleet as the whales swam through open leads in the ice on their way to summer feeding grounds in the eastern Beaufort Sea. The venture was immediately successful and for a few years the number of whales killed increased, but this was short-lived (Bockstoce, 1978; Table 1, C-79).

During the 1880's the whalemen found it more and more difficult to catch bowheads, and in response they began to press eastward past Point Barrow in pursuit of the migrating whales. For a short time in the 1880's the numbers of whales captured increased as steam powered vessels succeeded the slower and less maneuverable sailing ships. By the early 1900's, however, the number of whales taken again declined, for the population was now severely reduced. Their scarcity drove the price of baleen higher and higher, ultimately causing the industry to collapse in 1909 when spring steel began taking an increasing share of the market as a cheaper substitute for baleen.

Throughout the period of commercial exploitation Eskimos continued to take the bowhead for cultural and subsistence needs. After commercial whaling ceased, the Eskimo harvest continued at a relatively constant low level for 60 years. Beginning in 1970, however, Eskimo whaling effort steadily increased, as well as the number of whales taken; furthermore, the number of whales that had been struck but lost also greatly increased (Marquette, 1979).

Because of growing concern for the survival of this now rare and endangered species, the International Whaling Commission (IWC) in 1978 imposed an annual quota on the numbers of whales that could be landed or struck. Scientific determination of the status of this stock is hampered, however, by a paucity of data on the past catch of bowheads by whalers. The objective of this paper, therefore, is to provide a compilation of all known data on the historical catch of bowhead whales during shore-based operations along the coasts of the Bering, Chuk-
chi, and Beaufort Seas. Analysis of the data and interrelated factors will be accomplished in a future report. Pelagic catch data, needed to complement an analysis of total take, are presented in a preliminary paper by Bockstoce (1980).

Figure 3. — Shore-based bowhead whaling sites on the Canadian coast.
Table 1.—Unpublished sources of data on whaling effort and the catch of bowhead whales by shore-based whalers in the western Arctic.

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<td>C. J. Morgan (Institute for Environmental Studies, University of Washington FM-12, Seattle, WA 98196.</td>
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<td>C. D. Foote. (Geography Department, McGill University, Montreal, Que. Can. Pers. commun. to D. W. Rice, 2 November 1864, and records in Archives, Rasmussen Library, University of Alaska, Fairbanks).</td>
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<td>Edson. Pers. commun. to Board of Missions, 1 July 1896. Episcopal Church Historical Society, Austin, Tex.</td>
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Evolution of Shore-Based Whaling

Shore-based bowhead whaling in the United States (State of Alaska) can be conveniently subdivided into three chronological phases of activity: aboriginal (before 1885), commercial (1885-1909), and subsistence (1910 to present). Similar phases of whaling activity also occurred along the shores of northwestern Canada and the Chukchi Peninsula of the Union of Soviet Socialist Republics (U.S.S.R.). However, because of the better documentation on shore-based whaling, only the Alaskan chronology is discussed in this paper.

Aboriginal Phase

Prior to making contact with the commercial whalers in the 1880’s, Alaskan Eskimos hunted the bowhead using only primitive handcrafted equipment. Harpoons rigged with seal-skin floats were used to slow the whale in its flight. When the exhausted animal could no longer flee, the hunters cautiously approached it and, after severing its tail tendons to prevent the whale from submerging, its chest cavity was repeatedly pierced with lances until it bled to death. Because the Yankee whalers were at first extremely wary of both the ice and Eskimos in the Arctic, records of contacts made between the two groups during this period provide scant information on the yearly catch of bowheads by the Eskimos.

Commercial Phase

In northwestern Alaska it was the establishment of shore-based whaling stations during the 1880’s that marked the end of aboriginal whaling and the beginning of a commercial phase. Each station consisted of a building or native hut that housed a skeleton crew of Yankee whalers and their whaling equipment. Originally, one whaler was in charge of each boat, and he was assisted by five to seven Eskimos hired as crew members. As shore-based whaling prospered some stations employed all-Eskimo crews to man additional boats. Although the natives still needed whales for food, the baleen provided a saleable commodity. In both practices the result was the same: They received money or staple foods and manufactured goods in payment and, after the whaling station’s crews had stripped the whales of their baleen, the carcasses were usually given to the Eskimos for food.

During the commercial phase the natives began to obtain darting and shoulder guns in trade from the whalers. These implements were developed by American whalemen especially for quickly killing bowheads before they would escape among the protective ice floes. The darting gun was a small, smooth-bore weapon with a detachable harpoon fixed to the end of a wood shaft. It enabled the harpooner to shoot a small bomb into the whale at the instant he harpooned the animal. The bomb was designed to explode a few seconds later, deep inside the whale, causing instant death or injury sufficient to restrict its flight. The shoulder gun, usually of brass and weighing about 12 kg (27 pounds), fired a similar bomb through the air and was accurate to about 15 m (50 feet). It allowed the gunner to dispatch a wounded, potentially dangerous whale from a safe distance.

Subsistence Phase

Collapse of the whaling industry early in the 20th century ushered in the third phase in the history of shore-based whaling—a return to whaling as a subsistence activity. The Eskimos did not, however, return to the use of primitive whaling weapons that had been utilized during aboriginal times. Instead, they continued to use the darting and shoulder guns which greatly increased their hunting efficiency.

The subsistence phase, which began in 1910 and continues today, is separated into two periods marked by different levels of hunting effort and catch. From 1910 to 1969, whaling was characterized by a relatively low but steady level of activity. During 1970-77, however, a rapid increase occurred in hunting effort and in the numbers of whales taken and struck but lost (Marquette, 1979).

Sources of Data

Data on shore-based whaling in the Bering, Chukchi, and Beaufort Seas during the 19th and 20th centuries have been compiled by the authors for approximately a decade. Much of the information was obtained from unpublished sources (Table 1). Conflicting data occasionally were encountered, but these were resolved by selecting information from the source we judged most reliable. Also, some data which earlier were thought to be correct, when reported by Marquette (1979), required revision. Although the data presented are as complete as possible based upon information available to date, important gaps still exist in our records and we would appreciate comments from persons having additional information.

Eskimos traditionally have not kept a written record of their catches; at Barrow, however, the famous whaler and trader Charles Brower compiled a record of whales that he took from 1886 until the 1920’s (Brower, 1942; Table 1, C-3). Brower’s son David continued to record the catch from 1928 to 1960 (Sonnenfeld, 1960; Maher and Wilimovsky, 1963). At Point Hope early catch data from 1890 to 1948 were assembled and published by Foote (Table 1, C-16). The remaining data used in this paper came from published and unpublished accounts by explorers, scientists, schoolteachers, nurses, adventurers, magazines, newspapers, church records, whalers’ journals and logbooks, and personal communications with Eskimos and scientists who have visited whaling villages.

Recording of Data

Data on shore-based whaling along the coasts of the Bering, Chukchi, and Beaufort Seas is reported by country and includes the United States (State of Alaska, Fig. 1), U.S.S.R. (Fig. 2), and Canada (Fig. 3). Information on strandings of bowheads throughout these areas also have been included.

Information reported in this paper on shore whaling in Alaska includes yearly
Statistics by village on: Numbers of whales landed, killed but lost, and struck but lost; numbers of crews whaling; and data sources (Table 2). In a few instances the yearly catch for some villages was reported as "a few," "some," or "several" whales had been caught, or that the natives had "a lot of baleen." To utilize this type of information it was necessary to use a figure representing an average amount for accounts of this type. Mayokok (1950) reported that in about 1915 there were "several" crews at Wales; Durham (1979) recorded an account of six crews at that village in about 1916. Allen (1978), neglecting to state how many whales had been caught, reported that "quite a lot" of whalebone had been taken at Point Hope in 1906; the logbook from the whaling vessel William Baylies (Table 1, C-23) recorded that nine whales had been taken there that year. Finally, Fraker et al. (1978) arbitrarily selected the amount of five to be used for all accounts of "several" bowhead whales reported as being sighted. Using these examples it was assumed that a quantity of five represented a reasonable amount to use in such cases; these estimated numbers are given in parentheses in the catch tables to separate them from the known catch.

Information on the numbers of crews whaling at all Alaskan villages has been compiled in an attempt to obtain some insight into the total effort expended annually by Eskimos for hunting bowhead whales (Table 2, Fig. 4). In most instances, the figures given represent a minimum number of crews because the total sum of active crews at a given village is seldom found in the literature. Occasionally it was possible to establish a specific number of crews whaling at some villages because the names of captains (crew leaders) that had successfully taken whales during a particular year were reported.

Additionally, information was collected on whales that had been struck but lost and those killed and lost. Numbers of individuals struck and lost have an as yet unquantified effect on estimates of mortality. Also, past reports on the bowhead catch frequently omitted those that had been killed but lost for various reasons. Since these incidents are important elements of total mortality, they have been recorded.

Information reported on shore-based whaling by Eskimos in the U.S.S.R. and Canada has been limited to the yearly catch of whales by village and data sources because of sparse data found on the other aspects of whaling. Bowhead strandings in the Bering, Chukchi, and Beaufort Seas, including those found dead and beached, floating at sea, or frozen into the ice, are reported as they represent one aspect of total mortality within the population. This category includes whales that may have died as a result of whaling activities, e.g., those struck but lost. Although the fate of whales that have been struck but not retrieved is unknown, we do know that some individuals recover after being struck (Cook, 1926; Bodfish, 1936; Albert et al., 1980).

Results and Discussion

United States

Aboriginal Phase

Because of a paucity of information on aboriginal whaling, it is difficult to determine the numbers of whales harvested by Eskimos prior to 1885 when the commercial phase began (Table 2). Simpson (1854-55), who wintered at Barrow soon after the commencement of commercial whaling in the Bering Strait region, reported that the natives there killed 17 bowheads in 1852 and 7 in 1853. Although the 1852 catch was a successful harvest, 1853 was considered an extremely poor year, verging on disaster. Ray (1885) reported that 24 bowheads were landed at Barrow in 1854. During the period 1855-78, the available data indicate that five were taken at Point Hope in 1869, five at St. Lawrence Island in 1870, and four at Icy Cape in 1872. Murdoch (1885) noted that 10 bowheads were landed at Barrow in 1881. At Point Hope, village elders related to Rainey (1947) that their ancestors sometimes took as many as 15-18 whales during the spring season. From the available data, at least 8 or 10 whales per year were taken by the Alaskan Eskimos prior to 1884. This minimal estimate cannot be compared.
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with periods after 1884 when data are probably more complete and better represent the total annual catch by all whaling villages.

**Commercial Phase**

Shore-based commercial whaling began at Point Barrow in 1885 (Brower, 1942), and many other stations were soon established along the northwest coast of Alaska. By the winter of 1897-98, for example, 13 such stations, owned and operated by white men, were strung out along the coast between Point Hope and Cape Seppings (Bertholf, 1899; Fig. 1). These shore stations thoroughly changed the character, but not the technique of Eskimo whaling. As many as 60 crews whaled at some stations in the spring (Allen, 1978), and most were made up of Eskimos from throughout northwestern Alaska. Before long, the number of crews operating had increased substantially above

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the aboriginal level (Table 2). For example, shore-based commercial whalers more than tripled the number of Eskimo crews hunting at Point Hope prior to the establishment of whaling stations (Foote and Williamson, 1966).

The increased whaling effort during the commercial phase (1885-1909) is reflected in the increased take (Fig. 5). A total of 552 whales were taken during this 25-year period, resulting in an average annual catch of 22 animals. During this period an annual harvest of 38-49 whales occurred seven times. Although data gaps in the record mean that a total catch during the period cannot be determined, it appears likely that the harvest for some years exceeded 50 whales.

Subsistence Phase

Collapse of the commercial whaling industry in 1909 ushered in the third phase of Eskimo whaling—a return to whaling as a subsistence activity. Because bowheads were now commercially of little value, the number of Eskimo crews declined to near the aboriginal level as many native whalers turned to fur trapping as their only means of trading for manufactured goods. Trapping forced the Eskimos to leave the whaling villages and to disperse inland or along the coast. By 1914 the Alaskan Eskimos had almost abandoned whale hunting (Jenness, 1957). The incentive for whaling was so weak that in 1928 Brower (Table 1, C-3) remarked laconically that, although whaling conditions were good and whales were plentiful, many were bombed and lost because the Eskimos seemed to have forgotten how to whale and showed no interest in learning again because whalebone was now hardly worth taking.

During the period 1910-69, the annual catch dropped sharply, fluctuating between 1 and 25 animals except in 1925 when 32 were taken (Fig. 5). Years with high catches were relatively infrequent, exceeding 20 whales only seven times. During this 60-year period, the available records indicate a total of 704 bowheads were taken averaging 11.7 annually.

Beginning in 1970, however, the catch increased drastically (Fig. 5). From 1970 through 1977 a total of 259 bowheads, an annual average of 32.4 whales, were landed. This 8-year take alone consisted of 37 percent of the total taken during the previous 60 years. Since 1970, whaling effort during the spring season at Barrow has increased by more than 50 percent over the level during the 1960’s, and a similar increase has occurred at St. Lawrence Island (Marquette, 1979; Table 1, C-80). A significant increase in effort has been recorded for the villages of Point Hope and Kivalina. In addition, there has been a marked increase in the number of crews hunting during the autumn at Kaktovik and Nuiqsut in recent years (Table 2). Beginning in 1978 the hunt has been on an annual quota basis established by the IWC; therefore, our study of the Alaskan catch concludes with the harvest for 1977.

U.S.S.R.

Whaling Villages

Little information is available on the locations where bowhead whales were taken by the Siberian Eskimos. Villages located on the Chukchi Peninsula (Fig. 2) are favorably situated for hunting bowheads during the spring and autumn migrations (Braham et al., 1980; Cook, 1926). However, because the animals move beyond the area accessible to small whaling boats during the spring, the main whaling season is in the autumn (Tomilin, 1957). Tomilin (1957) stated that southbound migrating bowheads occasionally enter bays and inlets along the coast. In December 1933, for example, 2 bowheads were observed in Plover Bay and 10 were sighted in Tkachen Bay. Hunters at the village of Naukan in Bering Strait informed Tomilin that three to four times more whales were seen during the autumn than in the spring.

Eskimo hunters considered Mys Chaplina (also called Indian Point), across the Strait of Anadyr from St. Lawrence Island, to be the most productive place for whaling along the Chukchi Peninsula as it projects far out into the sea. Moreover, many large polynyas form there during ice covered periods. Tomilin (1957) also stated that natives residing along the north coast of the Chukchi Peninsula between Mys Dezhneva (also called East Cape) and Mys Serdtse-Kamen’ seldom saw bowheads in the spring, but whaled primarily during the autumn; the catch was, however, poorer than that of Siberian Eskimos whaling in the Bering Strait. Zenkovich (1934) visited villages from Bukhta Provideniya (Providence Bay) to Mys Dezhneva in 1933.
and reported finding hand harpoons with grenades (bombs) in native homes at Sireniki, Naukan, Dezhnevo, and Uelen (also called Whalen). In a later publication Zenkovich (1954) listed Chaplino as an important whaling village and stated that whaling also occurred at a few other (unnamed) locations. Sleptsov (1955) named Uelen, Sireniki, and Naukan as the principal whaling villages on the Chukchi Peninsula.

### Whaling Activities

The catch of bowhead whales by Siberian Eskimos is poorly documented (Table 3). Tomilin (1957) noted that hunters at the villages of Netakenshkhin and Enurmin caught only six whales between 1924 and 1932. He further stated that hunters along the northeast coast of the Chukchi Peninsula (presumably prior to 1955) took up to 10 whales annually using primitive methods. Zenkovich (1934) stated that up to 10 bowheads were killed annually at villages from Bukhta Provideniya to Mys Dezhneva. According to Sleptsov (1955), 10-20 bowheads were taken annually at Uelen, Sireniki, and Naukan. Geller (1957) noted that whalers at the village of Naukan caught whale calves weighing up to 10,160 kg (10 long tons), and that “many” bowheads occurred in Mechingmen-skaya Guba (Mecigmen Bay) and were hunted by Eskimos using high powered rifles and firing up to 1,000 bullets during a single all-day hunt. Geller also stated that the local inhabitants avoided hunting humpback, *Megaptera novaeangliae*, and gray, *Eschrichtius robustus* whales because they were too dangerous to pursue in small boats. Although Zimushko (1969) reported that bowheads were rarely taken by Siberian Eskimos, Ivashin et al. (1972) stated that during the more successful years they took up to 10 bowhead whales annually; unfortunately, no further details were given, such as time of year (presumably in autumn) or location.

Additional data on the early years of whaling by Siberian Eskimos has been provided by American authors. Information obtained from American whaling vessel logsheets and other whaling publications include that Eskimos inhabiting settlements at Zaliv Lavrentiya (St. Lawrence Bay), Mys Chaplina, Markov Bukhta (Marcus Bay), Plover Bay, Laguna Imtuk (also called John Howland Bay), Mys Achchen, and Mys Beringa (Cape Bering) hunted bowhead whales from May through October during early commercial whaling. Cook (1926), providing firsthand information, stated that Eskimos from Mys Dezhneva to Mys Chaplina on the west side of the Bering Strait, were very good hunters and, as the whales passed through the Strait in the spring and autumn, many were taken. Furthermore, he wrote that every settlement from Mys Dezhneva to John Howland Bay, a distance of about 232 km (125 n.m.), was outfitted with boats and whaling gear obtained in trade with Yankee commercial whalers. Stefansson (1913) noted that a good many (number unspecified) bowheads were killed in the

### Table 3.—Number of bowheads landed by shore-based whalers at sites on the Chukchi Peninsula, U.S.S.R.

<table>
<thead>
<tr>
<th>Year</th>
<th>Site</th>
<th>Year</th>
<th>Site</th>
<th>Year</th>
<th>Site</th>
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<th>Site</th>
<th>Year</th>
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<td>1934</td>
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<td>1889</td>
<td>1897</td>
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<td>1898</td>
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</table>

1 For several, few, or some reported, an estimated value of five was used as an average (see text and text footnote 1). These estimated values are given in parentheses.
2 Estimated from baleen obtained in trade from natives.

spring by Siberian Eskimos at Mys Chaplina, Plover Bay, and at Mys Dezhnova. Foote (1966) wrote that Eskimos from at least one (unspecified) village on the Chukchi Peninsula were still hunting bowheads during the mid-1960's.

**Catch Data**

Insufficient data preclude a reliable estimate of the number of bowheads taken annually by Siberian Eskimos relative to the three major periods (aboriginal, commercial, and subsistence) of hunting. However, a rough estimate of the minimum annual harvest by decade is useful. From 1849 to 1859 the minimum annual take was 1.8 (Table 4). During the period 1860-1940, however, where the number of sample years was 38, no difference in catch by decade was noted (annual mean of 4.1). Apparently the annual take of bowhead whales did not vary greatly between the period when commercial whaling took place compared with the postcommercial or subsistence phase. Eight bowheads landed from 1972 to 1977 (annual mean of 1.3) were taken by means of U.S.S.R. gray whale catcher boats (Table 1, C-74). Siberian Eskimos have not hunted bowheads using traditional means since 1969 when chartered whaling vessels began to be used for taking gray whales to reduce the number of individuals struck but lost (Ivashin and Mineev, 1978; Zimushko and Ivashin, 1980).

Catch data for Siberian Eskimos are admittedly scarce, but the available information suggests that a relatively low harvest took place, perhaps 3-6 whales annually (Table 3). Since our findings indicate a lower annual catch than the approximately 10 whales reportedly taken annually in the Soviet literature, it appears that some significant records may be missing.

Whaling effort by Siberian Eskimos cannot be evaluated because of insufficient data. In 1887 and two in 1907) or that the catch data are underreported. Because the number of whales harvested each year can vary greatly even with near equal effort (Marquette, 1976, 1978, 1979; Braham et al., 1979; Table 1, C-80), comparisons of effort and catch are meaningless without more reliable documentation.

**Canada**

**Whaling Activity and Catch**

During the 19th century and first years of the 20th century, Eskimos in the western Canadian Arctic area hunted bowheads at Warren Point, Cape Bathurst, Langton Bay, and Franklin Bay (Maguire, 1857; Anderson, 1926, 1946; Fig. 3). After 1909, when baleen lost its commercial value, Eskimos continued to hunt bowheads only sporadically and occasionally may have killed one as late as the 1920's (Anderson, 1946; Fraker, 1977; Table 1, C-57). Regrettably, so few data have been found that a meaningful analysis of the Canadian Eskimo harvest in this area is impossible. Information located to date merely shows that from 1869 to 1922, six bowheads were taken by Eskimos along the Canadian coast of the Beaufort Sea (Table 5).

**Strandings**

Known bowhead strandings along the coasts of the Bering, Chukchi, and Beaufort Seas are listed in Table 6. These deaths may have resulted from any one or a combination of the following causes: 1) Natural mortality; 2) whales killed at sea by commercial whaling vessels and cast adrift after being stripped of their baleen; 3) whales that were struck but lost; or 4) accidental deaths, including entrapment in the ice. Strandings have been recorded.
separately from the catch because it cannot be determined when death occurred or if the whales died as a result of whaling activities. Only a small number of strandings have been reported. This was probably more a result of a lack of interest in reporting such events rather than an actual indication of mortality other than catch data.

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