Subsistence harvest of bowhead whales (*Balaena mysticetus*) by Alaskan Eskimos during 2004

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ABSTRACT

In 2004, 43 bowhead whales (*Balaena mysticetus*) were struck during the Alaskan subsistence hunt resulting in 36 animals landed. The efficiency (# landed / # struck) of the hunt was 84%, which is higher than the average efficiency over the past 10 years (mean =78%, standard deviation =8%). Thirteen of the landed whales were males, 22 were females and the sex of one animal was not determined. Of the females, seven were presumably mature (>13.4m in length); however, only four were examined closely. Two were pregnant, one with an 11 cm fetus and the other with 409 cm fetus. The other two sexually mature females were not pregnant.

KEYWORDS: ARCTIC; *BALAENA MYSTICETUS*; BOWHEAD WHALE; STATISTICS; WHALING-ABORIGINAL

INTRODUCTION

Harvesting of bowhead whales (*Balaena mysticetus*) provides important subsistence needs for several northern and western Alaskan Eskimo communities. The Alaska Eskimo Whaling Commission (AEWC) locally manages the harvest through an agreement with the National Oceanic and Atmospheric Administration (NOAA). The level of allowable harvest is determined under a quota system in compliance with the International Whaling Commission (IWC 1980; Gambell 1982). The quota is based on the nutritional and cultural needs of Alaskan Eskimos as well as on estimates of the size and growth of the Bering-Chukchi-Beaufort seas stock of bowhead whales (Donovan, 1982; Braund, 1992).

The subsistence hunt typically takes place in spring and autumn as whales migrate between the Bering and Beaufort seas. Hunters on St. Lawrence Island may take whales during the winter. These hunts are subjected to considerable environmental interference from weather (wind speed and direction, fog, and temperature), stability of landfast ice, and sea ice concentration. The success of the hunt is greatly affected by these factors and shows considerable variation by year and location.

Since 1981, the North Slope Borough Department of Wildlife Management has gathered basic data on landed whales in several communities, especially Barrow, and assisted the AEWC in compiling statistics on landed whales from outlying villages (Albert, 1988). The purposes of this paper are to document: (1) the number, location (village), and dates of landed and struck-and-lost bowhead whales in 2004 in Alaska, (2) the estimated fate of struck and lost bowhead whales, (3) basic morphometric data and the sex composition of the harvest, and (4) the hunting efficiency of the harvest.

METHODS

Harvest data such as sex, length, dates, and fate of struck and lost whales for all whaling villages were obtained from the AEWC. Biologists recorded similar information for most whales taken at Barrow and Kaktovik, and also collected specimens and detailed morphometric data.

RESULTS AND DISCUSSION

In 2004, 43 whales were struck during the Alaskan subsistence hunt. The total number of whales landed (n=36) in 2004 was less than the average number of whales landed (per year) over the last 10 years (mean = 40.0 whales, standard deviation = 5.3).

One whale was landed during the winter. This winter (January) harvest at Gambell, though previously considered unusual, has become a more common practice, especially since 1990 (Suydam and George, 2004). George Noongwook (pers. comm. 19 June 2002) of Savoonga noted:

> "We never used to see this many whales [in winter] 20 years ago, this started about 10 years ago when we began seeing them in winter. We are starting to hunt again here at the village for the first time since the 1878 starvation of the Kukuliq people [at the old village site]."

Hunters from four villages (Barrow, Gambell, Point Hope, and Wainwright) landed 14 whales during the spring migration (Table 1). The earliest whale in spring was taken at St. Lawrence Island (Gambell), which is fairly typical. Gambell and Savoonga are the southernmost whaling communities and have access to bowheads as they begin leaving the Bering Sea moving north and east to summering areas in the Beaufort Sea. No whales were taken at Savoonga during spring 2004; they reported that weather conditions essentially prevented hunting. At Barrow, six whales were taken between 23 April and 4 June. Barrow had difficult weather and unsafe ice conditions limiting successful hunting through much of the spring. Typically, whales are harvested within 10 km of Barrow during the spring. In 2004, however, the last two whales landed in the spring were harvested up to 50 km northeast of Barrow. As in other seasons, whales taken late in spring at Barrow tended to be larger (Suydam et al., 2004).

Four communities, Savoonga, Kivalina, Wales, and Little Diomede, which usually hunt in the spring, did not strike any whales. As in the previous two years, hunts in these communities failed due to poor weather and hazardous or difficult sea ice conditions (Suydam et al., 2004).

Twenty-one whales were landed during autumn migration by three villages (Barrow, Kaktovik, and Nuiqsut; Table 1). Kaktovik and Nuiqsut hunters filled their quota during the first two weeks of September, during periods of good weather. Kaktovik and Nuiqsut each landed three whales. At Barrow, the hunt began in mid-September and continued into late October. Nine whales were taken between 18 and 26 September. Following that, high winds precluded hunting for almost four weeks until 21 to 23 October when six whales were landed.

Of those whales that were struck and lost in 2004, one had a poor chance of survival, three died, and the fate was unknown for the other three (based on the hunting Captain's assessment of survival; Table 2). The efficiency of the hunt (# landed / # struck) in 2004 was 84%, which is higher than the average efficiency over the past 10 years (mean = 78%, standard deviation = 8%).

Thirteen (37%) of the 35 landed whales of known sex (sex was not determined for one whale) were males. The longest male was 15.8 m and the shortest was 6.7 m. Based on length of >13 m, two males were presumably mature (O'Hara et al. 2002). Confirmation of reproductive status is pending results of histological and hormonal analyses. The smallest male landed was a calf, with milk in its stomach. When struck, this whale was with about 10 other whales and was not obviously a calf. Hunting crews often pursue small whales because they are easier to handle than larger ones and the muktuk (skin and outer blubber) and meat is preferred.

Twenty-two of the landed whales of known sex were females (63% of 35 whales). The longest female was 18.0 m in length and the shortest was 7.6 m. Seven (32%) of the 22 females landed in 2004 were presumably sexually mature as they were > 13.4 m in length (George et al. 2004). Previously, we assumed sexual maturity at a length of 14.2 m for females based on examinations of 54 females harvested from 1978-1993 (Tarpley and Hillmann 1999). Additional data and analysis has refined this length to 13.4 m, although females shorter than this can be pregnant and females greater in length can be immature (George et al. 2004). Four of the sexually mature females (length >13.4 m) landed in 2004 were examined closely.

Two were pregnant, one with a fetus 11 cm in length and one with a male fetus 409 cm in length. Both animals were lactating and had a large corpus luteum present on an ovary. The other two large females that were examined were not pregnant.

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Table 1. Village, whale identification number, date landed, length (meters) and sex of bowhead whales landed by Alaskan Eskimos during the 2004 subsistence hunt. Note: The Alaska Eskimo Whaling Commission reports to the U.S. National Marine Fisheries Service the date a whale is struck and not the date the whale is landed, as we do here.

Village	Whale ID#	Date Landed	Length (m)	Sex
Barrow[1]	04B1	4/23/04	12.3	M
	04B2	4/26/04	10.8	M
	04B3	5/9/04	9.1	F
	04B4	5/12/04	14.2	F[1]
	04B5	5/20/04	16.8[3]	F[2]
	04B6	6/4/04	16.8[4]	U
	04B7	9/18/04	11.9	F
	04B8	9/18/04	13.6	F
	04B9	9/18/04	14.9	F
	04B10	9/22/04	7.9	M
	04B11	9/22/04	12.3	F
	04B12	9/22/04	14.2	M
	04B13	9/26/04	8.3	M
	04B14	9/26/04	8.2	F
	04B15	9/26/04	7.6	F
	04B16	10/21/04	11.2	M
	04B17	10/21/04	8.3	M
	04B18	10/22/04	10.2	F
	04B19	10/22/04	8.5	F
	04B20	10/22/04	8.2	M
	04B21	10/23/04	10.8	F
Gambell	04G1	1/14/04	12.6	F
	04G2	4/11/04	8.7	F
Kaktovik	04KK1	9/6/04	15.8	M
	04KK2	9/14/04	6.7[5]	M
	04KK3	9/14/04	8.4	F
Nuiqsut	04N1	9/5/04	13.9	F
	04N2	9/6/04	10.1	M
	04N3	9/14/04	9.8	M
Point Hope	04H1	4/20/04	8.1	F
	04H2	5/3/04	7.8	F
	04H3	5/12/04	7.9	F
Wainwright	04WW1	4/18/04	8.9	M
	04WW2	4/24/04	8.5	F
	04WW3	4/29/04	18.0	F
	04WW4	5/11/04	16.8	F

[1] Pregnant with a fetus 11cm in length
[2] Pregnant with a male fetus 409 cm in length
[3] Length is approximate because the whale was measured in the water. It was too large to be hauled onto the ice.
[4] Strong currents precluded towing the harvested animal to a suitable butchering site. Some muktuk and meat were recovered, and the whale secured to the land fast ice edge. The ice broke up and the remaining muktuk and meat could not be retrieved.
[5] This whale was a calf; milk was found in its stomach. When struck this whale was with ~10 others. The hunting crew did not realize it was a calf.

Table 2. Number of landed bowhead whales and estimated fates of whales struck and lost during the 2004 subsistence harvest by Alaska Eskimos[1].

Village	Landed	Struck & Lost	Total Struck	Estimated Fate[2]
Barrow	21	5	26	3d, 2u
Gambell	2	1	3	1p
Kaktovik	3		3	
Nuiqsut	3		3	
Point Hope	3		3	
Wainwright	4	1	5	1u
Totals	36	7	43	3d, 1p, 3u

[1] Data provided by the Alaska Eskimo Whaling Commission
[2] Whaling captain's estimate on bowheads chance of survival: d=died, p=poor, u=unknown.