

## Subsistence harvest of bowhead whales by Alaskan Eskimos during 2002

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### ABSTRACT

In 2002, 50 bowhead whales were struck during the Alaskan subsistence hunt resulting in 39 animals landed. Of the 39 whales, two were landed but abandoned by Barrow hunters because of dangerous ice conditions and strong ocean currents. The efficiency (# landed / # struck) of the hunt was 78%, which is similar to the average efficiency over the past 10 years (mean = 77%, standard deviation = 0.07%). Sixteen of the landed whales were males, 21 were females and the sex was not determined for the two that were landed and abandoned. Of the females, seven were presumably mature (>14.2 m in length); however, only two were examined closely. Neither was pregnant.

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

### INTRODUCTION

Harvesting of bowhead whales (*Balaena mysticetus*) provides for important subsistence needs of 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 2002 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 2002, 50 whales were struck during the Alaskan subsistence hunt resulting in 39 animals landed. Hunters from four villages (Barrow, Gambell, Savoonga, and Wainwright) landed eight whales during the spring migration (Table 1). Two of these whales were abandoned on 11 May in Barrow because of dangerous ice conditions and strong ocean currents. Length and sex were not determined for the abandoned whales. Thirty-one whales were landed during fall migration or in winter by five villages (Barrow, Kaktovik, Nuiqsut; Gambell, and Savoonga; Table 1). The total number of whales landed ( $n=39$ ) in 2002 was approximately the same as the average number of whales landed (per year) over the last 10 years (mean = 40.9 whales, standard deviation = 4.9).

Of those whales that were struck but lost in 2002, one had an excellent chance of survival, two had a fair chance of survival, one had a poor chance of survival, three died and the fate was unknown for the other four (based on the hunting Captain's assessment of survival; Table 2). The efficiency of the hunt (# landed / # struck) in 2002 was 78%, which is similar to the average efficiency over the past 10 years (mean = 77%, standard deviation = 0.07%). Difficult hunting conditions due to unstable shore fast ice and strong ocean currents contributed to the landed but abandoned and some of the struck but lost whales.

Sixteen (43%) of the 37 landed whales of known sex were males. The longest male was 14.2 m and the shortest was 7.9 m. Based on length, only one male was presumably mature ( $>13$  m; O'Hara et al. 2002). Confirmation of reproductive status is pending results of histological and hormonal analyses.

Twenty-one of the landed whales were females (57% of 37 whales of known sex). The longest female was 19.2 m, although this length is approximate. This large whale was measured in two sections because it was too large to be pulled onto the ice. The shortest female was 6.8 m. Seven (33%) and possibly nine (43%) of the 21 females landed in 2002 were sexually mature. Seven females were  $> 14.2$  m in length and the other two were  $< 14.2$  m but  $>12.2$  m. A length of 14.2 m at sexual maturity is based on examinations of 54 females harvested from 1978-1993 (Tarpley and Hillmann 1999). Additional data collected from 1993 to present showed the average length of the five smallest pregnant whales examined was 13.7 m. In 1999, a pregnant female was only 12.6 m in length; this was the shortest female harvested that was examined and determined to be pregnant (George et al. 2000). A few mature females (accompanied by calves), less than 14.2 m in length, have been seen during photogrammetry studies (see Koski et al., 1993); the smallest female was only 12.2 m in length. This difference (between photogrammetry and examination of harvested whales) in estimated length at maturity may be based on the possibility that landed whales may stretch by as much as 10% while being hauled ashore or onto the sea ice (J.C. George, unpublished data). Only two of the sexually mature females (length  $>14.2$  m) landed in 2002 were examined closely. Neither was pregnant.

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Table 1. Village, whale identification number, date, length (meters) and sex of bowhead whales landed by Alaskan Eskimos during the 2002 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. Note two whales were "landed and abandoned" at Barrow, when ice conditions became dangerous.

Village	Whale ID#	Date Landed	Length (m)	Sex
Barrow <sup>1</sup>	02B1	5/3/02	11.7	F
	02B2	5/10/02	16.7	F
	02B3	5/30/02	19.2 <sup>2</sup>	F
	02B4	9/30/02	8.6	F
	02B5	10/1/02	8.5 <sup>2</sup>	F
	02B6	10/3/02	9.0	M
	02B7	10/3/02	8.0	M
	02B8	10/3/02	6.8	F
	02B9	10/10/02	7.5	F
	02B10	10/10/02	9.5	M
	02B11	10/15/02	8.1	F
	02B12	10/15/02	7.9	M
	02B13	10/15/02	9.6	M
	02B14	10/18/02	8.5	F
	02B15	10/18/02	8.8	M
	02B16	10/19/02	8.3	M
	02B17	10/19/02	9.3	F
	02B18	10/19/02	7.3	F
	02B19	10/19/02	9.4	M
	02B20	10/19/02	12.3	M
	02B21 <sup>3</sup>	10/22/02	10.0	F
	02B22 <sup>3</sup>	10/25/02	8.1	F
Gambell	02G1	4/10/02	10.7	M
	02G2	12/5/02	16.2	F
Kaktovik	02KK1	9/8/02	12.0	F
	02KK2	9/11/02	9.0	M
	02KK3	9/13/02	14.0 <sup>2</sup>	F
Nuiqsut	02N1	9/5/02	8.8	M
	02N2	9/12/02	11.8	M
	02N3	9/13/02	8.5	M
	02N4	9/15/02	14.2	M
Savoonga	02S1	4/9/02	8.5	M
	02S2	12/7/02	15.8	F
	02S3	12/11/02	16.2	F
	02S4	12/14/02	16.0	F
	02S5	12/14/02	13.2	F
Wainwright	02WWW1	5/8/02	16.5	F

<sup>1</sup> Two additional whales were landed and abandoned at Barrow on 11 May due to dangerous ice and sea conditions. These whales were not given identification numbers.

<sup>2</sup> Approximate measurement, whales measured in several pieces.

<sup>3</sup> Caught at Barrow by a captain from Pt. Hope; whale products were subsequently shipped to Pt. Hope.

Table 2. Number of landed bowhead whales and estimated fates of struck and lost whales during the 2002 subsistence harvest by Alaska Eskimos<sup>1</sup>.

Village	Landed	Struck & Lost	Total Struck	Estimated Fate <sup>2</sup>
Barrow	24 <sup>3</sup>	5	29	1p, 1u, 1f, 2d
Gambell	2	1	3	1u
Kaktovik	3	1	4	1u
Nuiqsut	4	1	5	1u
Point Hope	0 <sup>4</sup>	0	0	
Savoonga	5	1	6	1e
Wainwright	1	2	3	1d, 1f
Wales	0	0	0	
Totals	39	11	50	1p, 4u, 2f, 3d, 1e

<sup>1</sup> Data provided by the Alaska Eskimo Whaling Commission

<sup>2</sup> Whaling captain's estimate on bowheads chance of survival: p=poor, u=unknown, f=fair, d=died, e=excellent.

<sup>3</sup> Two whales were landed, and then abandoned due to dangerous ice and sea conditions on 11 May.

<sup>4</sup> Two whales were caught in Barrow by Pt. Hope captains. These whales were assigned Barrow identification numbers. (See Table 1. e.g.; 02B21)