

SUBSISTENCE HARVEST OF BOWHEAD WHALES BY ALASKAN ESKIMOS DURING 2001

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ABSTRACT

A total of 75 bowhead whales was struck during the 2001 Alaskan subsistence hunt resulting in 49 animals landed. The efficiency (# landed/# struck) of the hunt was 65.3%, which is less than the average efficiency over the past 10 years (76.5%, standard deviation=8.36%). Thirty of the landed whales were males and 19 were females (38.8%). Of the 19 females, two were presumably mature (≥ 14.2 m in length) but neither of these was closely examined to determine if they were pregnant. Since 1980, 27% of the landed females ≥ 14.2 m in length were pregnant, although this value is likely an underestimate because not all females were examined closely for small fetuses.

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 takes place in spring and fall as whales migrate between the Bering and Beaufort seas. 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 highly 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 2001 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

A total of 75 whales was struck during the 2001 hunt resulting in 49 animals landed. Hunters landed 33 of the whales during the spring migration from five villages (Barrow, Gambell, Point Hope, Savoonga, and Wainwright) and 16 during fall migration or in winter by 5 villages (Barrow, Kaktovik, Nuiqsut, Gambell, and Savoonga; Table 1). The total number of whales landed ($n=49$) in 2001 was greater than the average number of whales landed (per year) over the last 10 years (mean = 38.8 whales, standard deviation = 5.51). Of those whales that were struck but lost in 2001, five had a poor chance of survival, three had a fair chance of survival and the fate was unknown for the other 18 (based on the hunting

Captain's assessment of survival; Table 2). The efficiency of the hunt (# landed/# struck) in 2001 was 65.3%, less than the average over the past 10 years (76.5%, standard deviation = 8.36%). Difficult hunting conditions due to persistent ice-choked leads may have contributed to a poorer than average hunting efficiency in 2001 (George et al. 2002).

Thirty (61.2%) of the 49 landed whales were males; the longest was 15.4 m and the shortest was 8.1 m. Based on length, five of the males were likely mature (>13 m) and another three were likely pubescent (>12.5 m but < 13 m; O'Hara et al. in review) although their actual status will be determined histologically. A 15.3 m male taken at Barrow had the largest testes measured to date. The combined mass of the testes was approximately 281 kg (excluding the epididymides, their combined mass was approximately 90 kg).

Nineteen of the 49 landed whales were females (38.8%). The longest female was 17.1 m and the shortest was 8.0 m. Only two (11%) of the 18 females landed in 2001 were ≥ 14.2 m in length and possibly sexually mature. This length at sexual maturity (14.2 m) is based on examinations of 54 females (harvested from 1978-1993) of which 31 were mature (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). Two additional females harvested in 2001 were between 12.6 m and 14.2 m in length and as of yet it is unknown whether they were sexually mature. Their ovaries were collected and are awaiting detailed examination. 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 (C. George and T. O'Hara, unpublished data). None of the sexually mature females (length >14.2 m) landed in 2001 was examined closely enough to determine if they were pregnant. Since 1980, 27% of the females ≥ 14.2 m were pregnant, although this value is likely an underestimate because not all females landed in all villages were closely examined for small fetuses. In Barrow, most landed females are examined closely for pregnancy and 40.5% of females ≥ 14.2 m were pregnant. The estimated number of mature females pregnant in Barrow might be high because of hunting practices. Hunters typically avoid large females early in the spring hunting season at Barrow and these earlier migrating females are not typically pregnant. For various reasons, hunters are more inclined to take large females late in the spring and these females are often pregnant. The true pregnancy rate is likely between the 27% and 40.5%.

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Table 1. Village, whale identification number, date, length and sex of bowhead whales landed by Alaskan Eskimos during the 2001 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 | 01B1 | 4/28/01 | 10.7 | F |
| | 01B2 | 5/01/01 | 9.2 | M |
| | 01B3 | 5/01/01 | 8.5 | F |
| | 01B4 | 5/01/01 | 9.2 | M |
| | 01B5 | 5/02/01 ^a | 8.1 | F |
| | 01B6 | 5/02/01 ^a | 12.5 | M |
| | 01B7 | 5/03/01 | 11.3 | M |
| | 01B8 | 5/07/01 | 10.4 | M |
| | 01B9 | 5/08/01 | 8.8 | M |
| | 01B10 | 5/10/01 | 8.1 | M |
| | 01B11 | 5/11/01 | 8.4 | M |
| | 01B12 | 5/11/01 | 9.1 | M |
| | 01B13 | 5/12/01 | 8.2 | F |
| | 01B14 | 5/13/01 | 9.4 | M |
| | 01B15 | 5/13/01 | 10.6 | M |
| | 01B16 | 5/14/01 | 8.6 | M |
| | 01B18 | 5/14/01 ^b | 14.2 | M |
| | 01B17 | 5/15/01 | 13.9 | F |
| | 01B20 | 5/16/01 | 8.3 | F |
| | 01B19 | 5/18/01 ^c | 11.9 | M |
| | 01B21 | 10/07/01 | 8.9 | M |
| | 01B22 | 10/07/01 | 8.2 | F |
| | 01B23 | 10/07/01 | 8.0 | F |
| | 01B24 | 10/08/01 | 8.3 | F |
| | 01B25 | 10/08/01 | 8.9 | M |
| | 01B26 | 10/08/01 | 12.2 | F |
| | 01B27 | 10/09/01 | 15.3 | M |
| Gambell | 01G1 | 4/18/01 | 12.5 | F |
| | 01G2 | 12/5/01 | 15.4 | M |
| Kaktovik | 01KK1 | 9/03/01 | 13.2 | F |
| | 01KK2 | 9/05/01 | 9.6 | F |
| | 01KK3 | 9/09/01 | 10.0 | M |
| | 01KK4 | 9/10/01 ^d | 10.2 | F |
| Nuiqsut | 01N1 | 9/05/01 | 12.4 | M |
| | 01N2 | 9/10/01 | 11.6 | F |
| | 01N3 | 9/22/01 | 12.6 | M |
| Point Hope | 01H1 | 4/23/01 | 8.2 | M |
| | 01H2 | 4/24/01 | 12.2 | M |
| | 01H3 | 4/24/01 | 8.2 | M |
| | 01H4 | 5/01/01 | 8.9 | F |
| Savoonga | 01S1 | 4/18/01 | 10.7 | M |
| | 01S2 | 5/03/01 | 16.5 | F |
| | 01S3 | 11/27/01 | 13.7 | M |
| Wainwright | 01WW1 | 5/01/01 | 8.5 | F |
| | 01WW2 | 5/02/01 | 8.2 | M |
| | 01WW3 | 5/05/01 | 12.9 | M |
| | 01WW4 | 5/11/01 | 9.6 | M |
| | 01WW5 | 5/15/01 | 13.6 | M |
| | 01WW6 | 5/17/01 | 17.1 | F |

^a Struck on 1 May 2001 but landed on 2 May 2001.

^b "Stinker" whale. Struck on 10 May 2001 but landed on 14 May 2001. Examined by whaling crew.

^c Struck on 17 May 2001 but landed on 18 May 2001.

^d "Stinker" whale. Struck on 7 September 2001 and landed on 10 September 2001.

Table 2. Number of landed bowhead whales and estimated fates of struck and lost whales during the 2001 subsistence harvest by Alaska Eskimos¹.

| Village | Landed | Struck & Lost | Total Struck | Estimated Fate ² |
|---------------|-----------|---------------|--------------|-----------------------------|
| Barrow | 27 | 11 | 38 | 3u,5p,3f |
| Gambell | 2 | 3 | 5 | 3u |
| Kaktovik | 4 | 0 | 4 | |
| Nuiqsut | 3 | 0 | 3 | |
| Point Hope | 4 | 9 | 13 | 9u |
| Savoonga | 3 | 0 | 3 | |
| Wainwright | 6 | 2 | 8 | 2u |
| Wales | 0 | 1 | 1 | 1u |
| Totals | 49 | 26 | 75 | 18u, 5p, 3f |

¹ Data provided by the Alaska Eskimo Whaling Commission

² Whaling captain's estimate on bowheads chance of survival: p=poor, u=unknown, f=fair.