

Subsistence harvest of bowhead whales (*Balaena mysticetus*) by Alaskan Eskimos during 2005

¹Robert S. Suydam, ¹John C. George, ¹Cyd Hanns and ²Gay Sheffield

¹ Department of Wildlife Management, North Slope Borough, Box 69, Barrow, AK 99723 USA

² Alaska Department of Fish and Game, 1300 College Rd., Fairbanks, AK 99701 USA

Contact email: robert.suydam@north-slope.org

ABSTRACT

In 2005, 68 bowhead whales (*Balaena mysticetus*) were struck during the Alaskan subsistence hunt resulting in 55 animals landed. The efficiency (# landed / # struck) of the hunt was 81%, which is similar to the average efficiency over the past 10 years (1995-2004: mean = 79%, standard deviation = 8%). Twenty-five of the landed whales were males, 28 were females and the sex of two animals was not determined. Of the females, eight were presumably mature (>13.4m in length). Four were pregnant; although only sex and length were recorded for three of the fetuses. The three fetuses were all females and their lengths were 273 cm, 277 cm, and 450 cm. A fifth female may also have been pregnant (based on the presence of a large corpus luteum on one of the ovaries), although we were not able to examine her uterus for confirmation. A hunting captain examined a sixth mature female that was not pregnant. The other two sexually mature females were not examined closely.

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 AEWK 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 2005 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, Kaktovik, and those taken during November in Savoonga. Biologists also collected specimens and detailed morphometric data.

RESULTS AND DISCUSSION

In 2005, 68 whales were struck during the Alaskan subsistence hunt. The total number of whales landed ($n = 55$) in 2005 was greater than the average number of whales landed (per year) over the last 10 years (1995-2004: mean = 40.6 whales, standard deviation = 5.0).

Two whales were landed during the winter. The winter (January) harvest at Gambell and Savoonga, 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 eight villages (Barrow, Gambell, Little Diomed, Point Hope, Savoonga, Wainwright, and Wales) landed 33 whales during the spring migration (Table 1). The earliest whale in spring was taken at St. Lawrence Island (Gambell) on 11 April. 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. At Barrow, 16 whales were taken between 28 April and 23 May. As in other years, whales taken late in spring at Barrow tended to be larger (Suydam et al., 2004).

Environmental conditions, including adequate ice conditions, during the spring allowed most hunting communities in the Bering and Chukchi seas to harvest whales. Only Kivalina was not able to strike any whales. Typically, some spring hunts in the Bering and Chukchi seas communities fail due to poor weather and hazardous or difficult sea ice conditions (Suydam and George, 2004).

Twenty whales were landed during autumn migration by three villages (Barrow, Kaktovik, and Nuiqsut; Table 1). Kaktovik hunters filled their quota of three whales during the first two weeks of September, during periods of good weather. Nuiqsut landed only one whale in 2005. High winds and anthropogenic disturbance, primarily barging, made it very difficult for Nuiqsut hunters to strike any whales. At Barrow, the autumn hunt occurred during a brief period (5 days; see Table 1) of good weather during the first week of October when thirteen whales were taken.

Of the 13 whales that were struck and lost in 2005, one had an excellent chance of survival, three had a fair chance, seven had a poor chance of survival, and two whales likely died. Estimates of survival are based on the hunting Captain's assessment (Table 2). The efficiency of the hunt ($\#$ landed / $\#$ struck) in 2005 was 81%, which is similar to the average efficiency over the past 10 years (1995-2004: mean = 79%, standard deviation = 8%).

Twenty-five (47%) of the 55 landed whales of known sex (sex was not determined for two whales) were males. The longest male was 15.7 m and the shortest was 7.3 m. Based on length of >13 m, seven males were presumably mature (O'Hara et al. 2002). Confirmation of reproductive status is pending results of histological and hormonal analyses of some of those whales.

Twenty-eight (53%) of the landed whales of known sex were females. The longest female was 17.4 m in length and the shortest was 6.7 m. Eight (29%) of the 28 females landed in 2005 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 8 mature females) were pregnant; although only sex and length were recorded for three of the fetuses. The three fetuses were all females and their lengths were 273 cm, 277 cm, and 450 cm. A fifth female may also have been pregnant. It was not possible to examine her uterus but she had a large corpus luteum on one of the ovaries. She was not lactating. A hunting captain examined a sixth mature female that was not pregnant. The other two sexually mature females were not examined closely. glad you mentioned this!

Three whales taken at Barrow in spring had body lengths < 8 m, which is atypical. They appeared to be 'short yearlings'.

ADDENDUM TO THE 2004 HARVEST

In 2004, one whale was landed at Gambell that was inadvertently not included in the 2004 harvest report to the IWC Scientific Committee (Suydam et al. 2005). This whale was 8.8 m long, female, and was landed on 31 December 2004. Including this animal in the 2004 harvest increases the efficiency of the hunt from 82% to 84%.

ACKNOWLEDGEMENTS

We thank the Alaska Eskimo Whaling Commission and local hunters for providing data on landed and struck but lost bowhead whales. We especially thank the whale hunters from Barrow, Kaktovik, and Savoonga for their support and providing us access to whales for examinations and sampling. Rita Acker, Tozen Akiyama, Benjamin Akootchook, Josh Bacon, Charles Brower, Geoff Carroll, Traci Farmer, Emily Frantz, Martha Hanns, Taqulik Hepa, Bruce Krogman, Allison Kruchkowski, Tommy Olemaun, Donald Oyagak, Brian Person, Leslie Pierce, John Reynolds, Chie Sakakibara, Inga Sidor, Jeff Schumacher, Alfred Tukle Jr., Sean Tuzroyluk, Dana Wetzel, Sandy Wise, and others assisted with data and sample collection in Barrow. Dolores Vinas, April Brower, Emily Frantz and Benny Akootchook provided logistical support. The North Slope Borough and Alaska Department and Fish and Game provided financial support. Finally we thank George Ahmaogak (former Mayor of the North Slope Borough), Edward Itta (current Mayor of the North Slope Borough), and Taqulik Hepa (Director of the North Slope Borough Department of Wildlife Management) for their encouragement and support.

REFERENCES

- Albert, T.F. 1988. The role of the North Slope Borough in arctic environmental research. *Arctic Res. of the U.S.* (2): 17-23.
- Braund, S.R. 1992. Traditional Alaska Eskimo whaling and the bowhead quota. *Arctic Research* 6(Fall):37-42.
- Donovan, G.P. (ed.). 1982. Report of the International Whaling Commission (Special Issue 4). Aboriginal Subsistence Whaling (with special reference to the Alaska and Greenland fisheries). International Whaling Commission, Cambridge. 86pp.
- Gambell, R. 1982. The bowhead whale problem and the International Whaling Commission. *Rep. int. Whal. Commn. (Special Issue 4)*:1-6.
- George, J.C., Follmann, E., Zeh, J., Suydam, R., Sousa, M., Tarpley, R, and Koski, B. 2004. Inferences from bowhead whale corpora data, age estimates, length at sexual maturity and ovulation rates. Paper SC/56/BRG8 presented to the Scientific Committee of the International Whaling Commission.
- International Whaling Commission. 1980. Report of the Special Meeting on North Pacific Sperm Whale Assessments, Cronulla, November 1977. *Rep. int. Whal. Commn. (Special Issue 2)*:1-10.

- O'Hara, T.M., George, J.C., Tarpley, R. J., Burek, K, and Suydam, R.S. 2002. Sexual maturation in male bowhead whales (*Balaena mysticetus*) of the Bering Sea stock. *Journal of Cetacean Research and Management* 4(2):143-148.
- Suydam, R.S. and J.C. George, 2004 Subsistence harvest of bowhead whales (*Balaena mysticetus*) by Alaskan Eskimos, 1974 to 2003. Paper SC/56/BRG12 presented to the Scientific Committee of the International Whaling Commission.
- Suydam, R.S., J.C. George, T. M. O'Hara, C. Hanns and G. Sheffield. 2004. Subsistence harvest of bowhead whales (*Balaena mysticetus*) by Alaskan Eskimos during 2003. Paper SC/56/BRG11 presented to the Scientific Committee of the International Whaling Commission.
- Suydam, R.S., J.C. George, C. Hanns and G. Sheffield. 2005. Subsistence harvest of bowhead whales (*Balaena mysticetus*) by Alaskan Eskimos during 2004. Paper SC/57/BRG15 presented to the Scientific Committee of the International Whaling Commission.
- Tarpley, R.J. and Hillmann, D.J. 1999. Observations on ovary morphology, fetal size and functional correlates in the bowhead whale *Balaena mysticetus*. Report to the Department of Wildlife Management, North Slope Borough, Box 69, Barrow, AK from Department of Veterinary Anatomy, College of Veterinary Medicine, Texas A&M University, College Station, TX. 276 pages.

Table 1. Village, whale identification number, date landed, length (meters) and sex of bowhead whales landed by Alaskan Eskimos during the 2005 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	05B1	4/28/2005	7.4	M
	05B2	4/28/2005	8.0	F
	05B3	5/4/2005	8.4	F
	05B4	5/5/2005	7.3	M
	05B5	5/6/2005	7.5	M
	05B6	5/6/2005	8.4	F
	05B7	5/7/2005	8.3	F
	05B8	5/8/2005	8.2	M
	05B9	5/8/2005	8.4	M
	05B10	5/9/2005	8.9	M
	05B11	5/9/2005	12.1	F
	05B12 ¹	5/10/2005	14.2	F
	05B13	5/10/2005	14.3	M
	05B14	5/10/2005	8.3	F
	05B15	5/19/2005	8.4	M
	05B16	5/23/2005 ²	15.7	M
	05B17	10/1/2005	8.3	M
	05B18	10/1/2005	9.2	F
	05B19	10/2/2005	11.1	M
	05B20	10/2/2005	8.6	M
	05B21	10/3/2005	8.8	F
	05B22	10/3/2005	7.4	M
	05B23	10/3/2005	8.7	F
	05B24	10/4/2005	9.5	M
	05B25	10/4/2005	13.2	F
	05B26	10/4/2005	12.2	M
	05B27	10/5/2005	8.6	M
	05B28	10/5/2005	8.0	F
	05B29	10/5/2005	9.4	F
Gambell	05G1	1/4/2005	7.6	M
	05G2	4/27/2005	13.4	M
Diomede	05D1	4/20/2005	10.1	M
Wales	05W1	4/23/2005 ³	6.7	F
Wainwright	05WW1	4/28/2005	8.5	M
	05WW2 ⁴	4/28/2005	15.7	F
	05WW3	5/10/2005	12.5	F
	05WW4	5/19/2005	13.1	F
Point Hope	05H1	4/30/2005	7.9	F
	05H2	5/5/2005 ⁵	8.2	? ⁶
	05H3	5/7/2005	7.8	F
	05H4	5/8/2005	15.2	M
	05H5	5/19/2005	17.4	F
	05H6	5/21/2005	16.5	F
	05H7	5/23/2005	15.4	M
Kaktovik	05KK1	9/3/2005	9.5	M
	05KK2	9/5/2005	8.6	F
	05KK3	9/14/2005	8.7	F
Nuiqsut	05N1	9/14/2005	13.6	F

Savoonga	05S1	1/4/2005	8.8	F
	05S2 ⁷	4/11/2005	?	? ⁶
	05S3	4/22/2005 ⁸	14	M
	05S4	4/22/2005	14.1	M
	05S5 ⁹	11/29/2005	16.5	F
	05S6 ¹⁰	11/29/2005	17.1	F
	05S7 ¹¹	11/29/2005	18	F

¹ Was likely pregnant. The uterus could not be thoroughly examined but the whale had a large corpus luteum on the right ovary.

² Struck on 22 May but landed on 23 May.

³ Struck on 20 April but landed on 23 April.

⁴ Carried a female fetus that was 450 cm long.

⁵ Struck on 4 May but landed on 5 May.

⁶ Sex was not determined.

⁷ Whale was killed and abandoned during towing because of hazardous weather and ice conditions. The whale was estimated to be 13.7 to 15.2 m long.

⁸ Struck on 20 April but landed on 22 April.

⁹ Carried a female fetus that was 273 cm long.

¹⁰ Carried a female fetus that was 277 cm long.

¹¹ Pregnant but the fetus could not be examined.

Table 2. Number of landed bowhead whales and estimated fates of whales struck and lost during the 2005 subsistence harvest by Alaska Eskimos¹.

Village	Landed	Struck & Lost	Total Struck	Estimated Fate ²
Barrow	29	7	36	1 f, 5 p, 1 d
Gambell	2	0	2	
Kaktovik	3	0	3	
Little Diomedede	1	0	1	
Nuiqsut	1	0	1	
Point Hope	7	3	10	1 e, 1 f, 1 p
Savoonga	7 ³	2	9	1 f, 1 p
Wainwright	4	1	5	1 d
Wales	1	0	1	
Totals	55	13	68	1 e, 3 f, 7 p, 2 d

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.

³ One of these whales was killed and abandoned during towing because of hazardous weather conditions.