

## SUBSISTENCE HARVEST OF BOWHEAD WHALE BY ALASKAN ESKIMOS DURING 1999

John C. George<sup>1</sup>, Robert S. Suydam<sup>1</sup>, T.M. O'Hara<sup>1</sup> and Gay Sheffield<sup>2</sup>

<sup>1</sup>Department of Wildlife Management, North Slope Borough, Box 69, Barrow, 99723 USA

<sup>2</sup>Alaska Department of Fish and Game, Fairbanks, AK

### ABSTRACT

A total of 47 whales was struck during the 1999 hunt resulting in 42 animals landed for an efficiency rate of 89%. The 1999 hunting efficiency rate is the highest ever recorded. Whale 99B6, 12.6 m in length, is the shortest pregnant harvested animal yet examined. Based on new data from 1993 to present, the average length of the five smallest pregnant whales examined is 13.7 m. The 4 cm ("crown-rump" length) fetus from whale 99B7 is the smallest bowhead fetus recovered to date (to our knowledge). Since 1980, 29% of the mature females (for which we have records)  $\geq 14.2$  m were pregnant. Based on new information using  $\geq 1.7$  m for the length at sexual maturity, suggests 27% of the mature females were pregnant.

### INTRODUCTION

Bowhead whales (*Balaena mysticetus*) provide an important subsistence resource for several arctic Alaskan Eskimo communities. The harvest is locally managed through an agreement between the Alaska Eskimo Whaling Commission (AEWC) and 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 and estimates of the size and growth of the bowhead whale population (Donovan, 1982; Braund, 1992).

Since 1981, the North Slope Borough Department of Wildlife Management has gathered basic data on landed whales in several communities and assisted the AEWC in compiling statistics on landed whales from outlying villages (Albert, 1988). The purposes of this paper are to: (1) document the number, location (village), and dates of landed, and struck-and-lost bowhead whales in 1999 in Alaska, (2) document the estimated fate of struck and lost bowhead whales, (3) present basic morphometric data and the sex composition of the harvest, and (4) examine 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 whales taken at Barrow and Kaktovik, and also collected specimens and detailed morphometric data.

### RESULTS AND DISCUSSION

A total of 47 whales was struck during the 1999 hunt resulting in 42 animals landed for an efficiency rate of 89%. The average number of whales landed (per year) over the last 10 years was 38.3. The 1999 hunting efficiency rate is the highest ever recorded (Figure 1). The number of whales struck in 1999 is similar to the number struck in 1998 (n=54 strikes) but is less than the number struck in 1997 (n=66 strikes). Eight (31%) of the 25 females landed in 1999 were  $\geq 14.2$  m in length and possibly sexually mature. The length at sexual maturity is based on a large sample of mature females (harvested from 1978-1993) analyzed by Tarpley and Hillmann (1998). However, note that whale 99B6 was pregnant but only 12.6 m in length and is the shortest pregnant harvested animal yet examined. Based on new data from 1993 to present, the average length of the five smallest pregnant whales examined is 13.7 m. [The estimated length at maturity for bowheads, based on

postmortem examination of landed whales, is generally greater than that determination via aerial photogrammetry, possibly due to the animal stretching when hauled ashore (Koski *et al.*, 1993).] Of the mature landed in 1999, three were pregnant (all at Barrow) and a fourth (99B16) was considered post-parturiant and was lactating. The 4 cm (“crown-rump” length) fetus recovered from whale 99B7 is the smallest bowhead fetus recovered (to our knowledge). It is likely that fetuses of this size are undetected even with biologists present (it requires a thorough intensive search), but particularly in villages where hunters do the examinations; thus many pregnancies are not documented (Figure 2). Since 1980, 29% of the landed mature females (for which we have records)  $\geq 14.2$ m were pregnant. Using  $\geq 13.7$  m for the length at sexual maturity, suggests 27% of the mature females were pregnant.

#### ACKNOWLEDGEMENTS

We thank the Alaska Eskimo Whaling Commission for providing data on bowhead whales harvested in villages other than Barrow. We especially thank the whale hunters from Barrow for their support and providing us access to whales for examinations and sampling. Benjamin Akootchook, Perry Anashugak, Karen Brewster, Charles D. N. Brower, Bill Ellison, Robert Elsner, Julie George, Mia Grifalconi, Taqulik Hepa, Matt Irinaga, Dave Koester, Tania Lewis, Dale Lott, Tami Mau, Dave Norton, Tim Obritschkewitsch, Dave Ramey, Robert Scott, Jan Straley, Victoria Woshrer, Geoff York assisted with data and sample collection in Barrow.

#### 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., Suydam, R.S., Philo, L.M., Albert, T.F., Zeh, I.E. and Carron, G.M. 1995. Report of the spring 1993 census of bowhead whales, *Balaena mysticetus*, off Point Barrow, Alaska with observations on the 1993 subsistence hunt of bowhead whales by Alaska Eskimos. *Rep. Int. Whal. Commn.* 45:371-386.
- 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.
- Koski, W.R., Davis, R.A., Miller, G. W., and Withrow, D.E. 1993. Reproduction. In *The Bowhead Whale*. Edited by I.J. Bums, I. J. Montague, and C.I. Cowles.. Allen Press, Lawrence, Kansas. ~. 239-269.
- Suydam, R., George, J.C., O'Hara, T. M., and Albert, T.F. 1997. Efficiency of the subsistence harvest of bowhead whales by Alaskan Eskimos 1973 to 1996, with observations on the 1995, 1996 and spring 1997 subsistence harvests. Paper SC/49/AS19 presented to the International Whaling Commission Scientific Committee.
- Tarpley, R.J. and Hillmann, D.J. 1998. 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

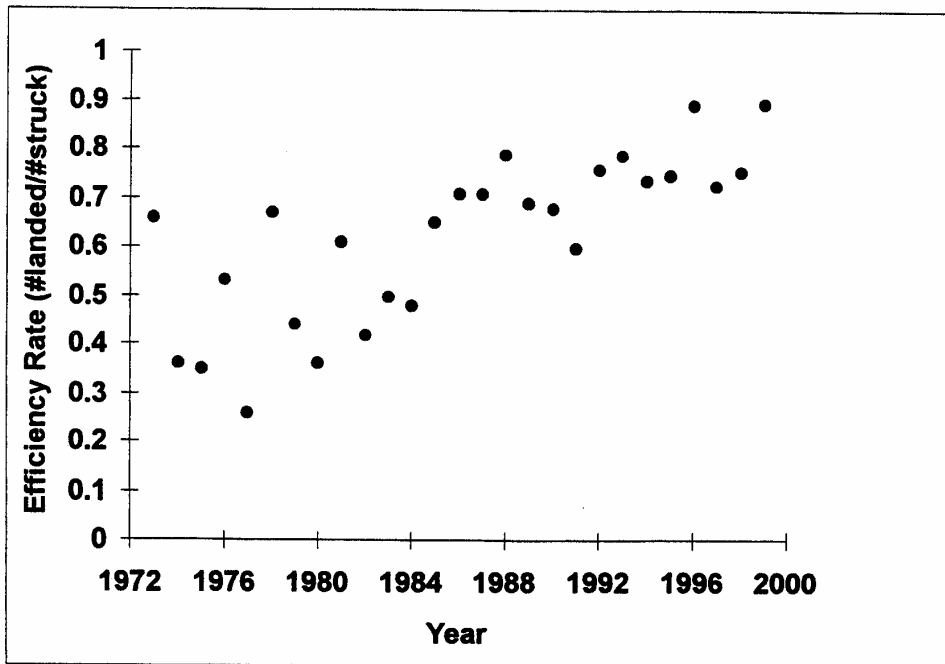


Figure 1. Efficiency rate (#landed/#struck) for the hunt of bowhead whales by Alaskan Eskimos.



Fetus from Whale 99B6

13 cm



4 cm

Fetus from Whale 99B7

Figure 2. Early gestational fetuses, 13cm and 4 cm in length (“crown-rump length”), were recovered from whales 99B6 and 99B7 respectively. The 4 cm fetus from whale 99B7 is the smallest fetus recovered from a bowhead whale to our knowledge.

Table 1. Number of landed bowhead whales and estimated fates of struck and lost whales during die 1999 subsistence harvest by Alaska Eskimos.<sup>1</sup>

<b>Village</b>	<b>Landed</b>	<b>Struck &amp; Lost</b>	<b>Total Struck</b>	<b>Estimated Fate<sup>2</sup></b>
Little Diomede	1	0	1	
Gambell	1	0	1	
Savoonga	3	0	3	
Kivalina	0	0	0	
Wales	0	0	0	
Point Hope	2	0	2	
Wainwright	5	1	6	p(1)
Barrow	24	4	28	d(1), p(3)
Nuiqsut	3	0	3	
Kaktovik	3	0	3	
<b>Totals</b>	<b>42</b>	<b>5</b>	<b>47</b>	<b>d(1), p(4)</b>

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

<sup>2</sup> Whaling captain's estimated chance of survival: d=died, p=poor.

Table 2. Basic data for bowhead whales landed by Alaska Eskimos during 1999<sup>1</sup>.

Village	Date Landed	Whale Number	Whale Length (m)	Sex
Gambell	27-Apr	99G1	14.6	F
Little Diomedede	4-May	99D1	8.6	M
Savoonga	23-Apr	99S1	15.0	F
	2-May	99S2	16.3	F
	25-Nov	99S3	15.2	M
Point Hope	17-May	99H1	8.7	F
	17-May	99H2	8.5	F
Wainwright	30-Apr	99WW1	7.1	F
	5-May	99WW2	9.3	F
	8-May	99WW3	14.0	M
	7-May	99WW4	14.5	F
	9-Jun	99WW5	17.9	F
Barrow	28-Apr	99B1	10.4	F
	2-May	99B2	8.2	F
	2-May	99B3	7.75	F
	5-May	99B4	7.9	F
	5-May	99B5	9.0	M
	6-May	99B6	12.6 <sup>2</sup>	F
	8-May	99B7	15.4 <sup>3</sup>	F
	9-May	99B8	10.95	M
	9-May	99B9	9.3	M
	9-May	99B10	9.4	F
	10-May <sup>4</sup>	99B11	12.8 <sup>5</sup>	F
	13-May	99B12	9.2	F
	16-May	99B13	14.1	M
	17-May	99B14	14.15	M
	17-May	99B15	14.6 <sup>5</sup>	M
	21-May <sup>4</sup>	99B16	14.8 <sup>6</sup>	F
	22-May	99B17	14.9 <sup>7</sup>	M
	23-May <sup>4</sup>	99B18	13.0 <sup>8</sup>	F
	9-Oct	99B19	8.05	F
	10-Oct	99B20	9.0	F
	10-Oct	99B21	10.5	M
	12-Oct	99B22	9.7	F
	13-Oct	99B23	10.9	M
	13-Oct	99B24	8.8	M
Kaktovik	11-Sep	99KK1	7.7	F
	12-Sep	99KK2	12.9	M
	16-Sep	99KK3	8.3	M
Nuiqsut	16-Sep	99N1	12.2	M
	18-Sep	99N2	15.2	M
	28-Sep	99N3	15.2	F

<sup>1</sup> We examined the whales in Barrow. Whales landed in other villages were examined by the hunters and those data were provided by the Alaska Eskimo Whaling Commission.

<sup>2</sup> Pregnant with 13 cm fetus.

<sup>3</sup> Pregnant with 4 cm fetus.

<sup>4</sup> Whale was struck the day before but landed on the date indicated.

<sup>5</sup> Approximate measurement; length obtained from whaling captain who measured with length of rope..

<sup>6</sup> Post-parturient; uterus involuting, vagina slightly torn, 13 cm corpus lutea, lactating.

<sup>7</sup> Approximate measurement; whale measured in water.

<sup>8</sup> Pregnant with 399 cm fetus.