

ALASKA BELUGA WHALE COMMITTEE  
REPORT 99-4

# **Harvest Report: Statewide Summary for Western Alaska Beluga Stocks, 1994-1998**

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Assisted by

The many Alaska Beluga Whale Committee representatives, harvest monitors, and hunters who provided data for this report.

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## **SUMMARY**

Four stocks of beluga whales are hunted by Alaska Native hunters in western and northern Alaska. These include the Bristol Bay, eastern Bering Sea, eastern Chukchi Sea, and Beaufort Sea stocks. Since 1987, the Alaska Beluga Whale Committee has monitored the harvests by Alaska Native hunters of belugas from these stocks. During this 12 year period, the total landed harvest for the four stocks combined has ranged from a low of 141 in 1995 to a high of 398 in 1989, with an overall 12-year average of 258 per year. Average annual harvests were about 15% lower for the 5-year period from 1994-1998 (235/yr) than they were during 1987-1993 (275/yr). For individual stocks the average annual landed harvests for 1994-1998 were: Beaufort Sea – 46; Chukchi Sea – 64; eastern Bering Sea – 112; and Bristol Bay – 11. Landed harvests relative to stock size were: 0.1% for the Beaufort Sea (not including belugas harvested from the Beaufort Sea stock by Canadian hunters); 1.7% for the eastern Chukchi Sea; 0.6% for the eastern Bering Sea; and 1.0% for Bristol Bay. For each of the four management stocks, the total kill during this 5-year period was also less than 2% of the estimated stock size. Information on the number of belugas struck but not landed were not generally available prior to 1994. Since then these data have been steadily improving. Although still not complete, the existing data suggest that about 15% of the total belugas killed are struck but not retrieved. Loss rate is highest for belugas hunted from the ice over deep water, and effectively zero for belugas caught in nets. The success of beluga harvest monitoring in Alaska is due to the cooperation of beluga hunters from more than 40 small coastal communities who report their harvests to the Alaska Beluga Whale Committee. Without their assistance, this report would not be possible.

## **INTRODUCTION**

Beluga whales are an important subsistence resource for coastal residents of Alaska. They appear seasonally near villages and hunting camps from Cook Inlet to the Beaufort Sea where they are hunted with rifles and harpoons, or are caught in nets. Meat and muktuk (or maktaaq, skin and blubber) are consumed locally, or are shared with friends and relatives in other communities.

Belugas in Alaska are found in five summering concentrations, including Cook Inlet, Bristol Bay, eastern Bering Sea (Norton Sound/Yukon Delta), eastern Chukchi Sea (Kotzebue Sound and Kasegaluk Lagoon), and the eastern Beaufort Sea. These groups have been considered as provisional management stocks and previous harvests have been evaluated in terms of their impact on these provisional stocks (Seaman et al. 1988, Lowry et al. 1989, Frost and Suydam 1995). More recently, analysis of mitochondrial DNA has supported treatment of these summering concentrations as separate management stocks (O'Corry-Crowe et al. 1997). Belugas are also sometimes present and harvested in Kuskokwim Bay. Kuskokwim Bay belugas have not been assigned to a provisional stock.

Prior to 1988, information on the harvest of belugas in Alaska was obtained primarily by personnel of the Alaska Department of Fish and Game on an opportunistic basis. Harvest data were published for 1977-1979 (Seaman and Burns 1981), 1980-1983 (Burns and Seaman 1988), and 1984-1986 (Lowry et al. 1989). Commencing in 1988, the Alaska Beluga Whale Committee began to compile and report harvest data on a more complete and regular basis (Frost and Suydam 1995).

In this paper, we present harvest data collected by the ABWC for the period 1995-1998. Data are presented for the four management stocks that occur in western and northern Alaska. Information about harvest from the Beaufort Sea stock does not include data from Canadian hunters in the Mackenzie estuary. Harvest data for Cook Inlet, which is not a part of the ABWC, are not included.

## **METHODS**

Harvest data were obtained from a variety of sources, as follows:

The ABWC held its annual meetings in Fairbanks on 15-16 November 1994, 30 November-1 December 1995, 5-6 December 1996, 20-21 November 1997, and 16-17 November 1998. At those meetings, each hunter representative reported on the harvest for his village (Table 1). In addition, at least twice each year harvest questionnaires were mailed to the IRA Council offices and to several hunters in most beluga hunting villages. These hunters were individuals who have assisted the ABWC with harvest information in the past and who are known to be reliable. The questionnaires asked for the number of belugas landed and struck/lost by season, as well as for other information about the type and location of hunt.

In the Norton Sound region, the Elim-Shaktoolik-Koyuk (ESK) Marine Mammal Commission, with some financial support from the ABWC and Kawerak, hired harvest monitors to collect harvest data for these three villages, and also to collect certain measurements and samples for the ABWC. At some locations in northern Alaska (Point Lay and Point Hope), the entire beluga whale harvest was observed and sampled by harvest monitors working for the North Slope Borough Department of Wildlife Management in cooperation with local residents. The collection of Bristol Bay harvest data was coordinated by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence, in cooperation with Bristol Bay Cetuarculit

(Hunters') Committee. Information from each of these sources, especially for the number of landed belugas, was considered highly reliable.

In addition, information about harvest was obtained through interviews with local residents and from ADF&G and other biologists working along the coast. Numbers obtained through these means were sometimes estimates rather than exact counts, or may not have included all hunters or the entire hunting season. Whenever possible, counts were corroborated by contacting multiple sources for each harvest location.

In this report, we provide a range of estimated harvest for some locations. This is because hunters sometimes estimated a range of take, or because we had a firm figure for a minimum number taken but other sources indicated that additional whales may have been harvested.

We have partitioned harvest data among the four management stocks, based on our knowledge of the seasonal distribution and movements of belugas (Seaman et al. 1988, Frost and Lowry 1990). Harvests south of Bering Strait occur while belugas are in seasonal concentration areas, and are thus easily ascribed to a particular stock. The exception is Kuskokwim Bay where the occurrence of belugas is sporadic and the stock to which they belong is undetermined.

In Bering Strait and along the Chukchi Sea coast, harvest is assigned to a particular stock based on when it occurs. The Beaufort Sea stock travels through leads along the coast in spring (March-May) on its way to the eastern Beaufort Sea, and belugas harvested during this period are presumed to belong to the eastern Beaufort sea stock. Western Alaskan villages whose spring harvests are presumed to come from the Beaufort Sea stock include Diomedea, Kivalina, Point Hope, and Barrow. Whales moving westward in the fall are sometimes taken at Kaktovik, and harvests from there are also attributed to the Beaufort Sea stock.

During and after breakup of the sea ice (June to mid-August), belugas appear along the Chukchi Sea coast between Kotzebue Sound and Wainwright (Seaman et al. 1988, Frost and Lowry 1990). These belugas are thought to belong to a single eastern Chukchi Sea stock. All summer harvests in this region are assigned to this stock, including the villages/towns of Buckland, Kotzebue, Noatak, Kivalina, Point Hope, Point Lay, and Wainwright. Whales taken at Barrow in summer were initially assigned to the Chukchi Sea stock, but based on preliminary genetic analysis of seven belugas harvested during summer 1997, Barrow summer belugas have been assigned to the Beaufort sea stock for this report.

## **RESULTS**

Harvest data for 1994-1998 were obtained from 47 communities and more than 60 individuals from along the Bering, Chukchi, and Beaufort sea coasts of Alaska (Table 1). Harvest data were obtained for 8 communities that harvest from the Beaufort Sea stock, 7 from the eastern Chukchi Sea stock, 18 from the eastern Bering Sea stock, 7 in the Kuskokwim, and 9 from Bristol Bay. Reported landed harvest for the five years was lowest in 1995 (131-141) and highest in 1998 (295-297) (Table 2). Reported total kill ranged from 157-336.

Eight communities harvested from the Beaufort Sea stock of belugas during 1994-1998. Retrieved harvest in Point Hope was about 15-53 per year, and all the other communities took only a few. Almost all of these belugas were harvested from the sea ice in spring. Struck and loss information provided by hunters and harvest monitors suggested that about 60%-70% of the belugas that were struck were landed.

Belugas from the eastern Chukchi Sea stock were harvested by seven villages. Most villages harvested five or fewer belugas a year. Point Lay had a substantial harvest (31-56) in four of the five years. Point Lay hunters reported that about 8% of belugas they struck were lost (range 0% to 16%). This is likely to be an accurate estimate, since during most years belugas taken at Point Lay are hunted in very shallow water near town, and the hunt is closely monitored. Residents of Point Lay check the lagoon following the hunt and report any struck and lost belugas that wash up on the shore. Starting in 1996, Point Lay hunters established guidelines that encouraged hunters to harpoon every beluga before it was shot. Kotzebue had an unusually high harvest of 63 belugas in 1996. This was the first time in many years that belugas were present near Kotzebue in large numbers. Only three belugas were reported as struck and lost by Kotzebue hunters in 1996. This was indicated by reporters to be a minimum estimate. About 30% of the Kotzebue belugas, and all taken by Noatak hunters, were caught in nets with none lost. The harvest of 38 belugas by Wainwright in 1998 was also unusual. Such high harvests are dependent on annual variability in ice cover and in the distribution and timing of northward movements of the belugas.

On average, the largest beluga whale harvest occurred from the Eastern Bering Sea stock (Norton Sound and the Yukon Delta). For the five years 1994-1998, landed harvest averaged 103-112 belugas. Eighteen communities successfully hunted from this stock in at least one of the five years. Of these 18, five (Elim, Hooper Bay, Saint Michael, Shaktoolik, and Stebbins) usually accounted for more than 60% of the catch and they each landed 10 or more belugas per year (Table 2). Six of the villages harvested fewer than 4 belugas per year.

Almost no struck and lost information was available for southern Norton Sound (Yukon delta) villages. For Kotlik, the ABWC delegate reported that in most years no belugas were struck and lost because hunters harpoon before they shoot. Estimated retrieval in Hooper Bay was about 65%-75% of the total kill. Struck and lost information was more available for Norton Sound communities, especially for 1996-1997. For five communities with regular reporting of both harvest and struck and lost information (Koyuk, Saint Michael, Shaktoolik, Stebbins, and Unalakleet), retrieval was generally about 70%-80% of total estimated kill.

Harvest reports were intermittent for the Kuskokwim delta region, but it is clear from the data we received that few belugas were taken in most years. Of the seven communities for which we obtained data, only three reported any harvest at all during 1994-1998.

Harvest reporting was excellent for the Bristol Bay region. Harvests were generally low, averaging only 11 landed belugas (range 6-18) per year for all of Bristol Bay during 1994-1998. Dillingham normally had the highest annual harvest.

## DISCUSSION

The ABWC has been collecting harvest data for 12 years, since 1987 (Frost and Suydam, 1995; this report). Data for this 12-year period are generally more complete and include many more villages than data that were available prior to 1987 (Seaman and Burns 1982, Lowry et al. 1989). Since 1987, the ABWC has seen consistent improvements in the quality of the harvest data. Harvest reports were obtained from 44 communities in 1997 and 1998, compared to 19 in 1987.

In the early years, many harvest reports were of an approximate number of belugas or of a range of belugas taken. It was sometimes unclear whether the reported harvest represented both spring and fall hunts, or only the most recent harvest. Rarely was it known whether the belugas were taken by net or by shooting. Now, for most villages data are reported separately for spring, summer and fall harvests, and for belugas taken by net and by shooting. Comments frequently accompany the data about unusual occurrences, what the belugas were eating, or general abundance.

Coverage has been good and quite complete for all communities hunting from both the Beaufort and Chukchi sea stocks from the earliest days of the ABWC. This is in large part because the North Slope Borough Department of Wildlife Management's regular involvement in harvest monitoring in their region, excellent harvest monitors in this area, and because ADF&G biologists have a long-term history of working with beluga hunters in this region.

The quality and regularity of harvest data for the eastern Bering Sea stock has improved considerably since initial formation of the ABWC, particularly during the last four years. When Frost and Suydam (1995) summarized harvest data for the eastern Bering Sea stock, there were no harvest reports at all for an average of 36% of the eastern Bering Sea communities in any one year (Table 3). During 1995-1998, data were missing from less than 20% of the communities in any year. At least one of the underreported villages (Brevig Mission) rarely takes belugas. Coverage has been poorest for the Yukon delta. For the 12-year period, data for individual villages were missing 45% of the time in this region. This contrasts markedly with Norton Sound, where data were missing only 19% of the time. Since 1995, there have been fewer missing data for communities in both regions: only 7% in Norton Sound and 33% for the Yukon delta.

Harvest reports have been intermittent for the Kuskokwim. In part, this reflects the intermittent occurrence of belugas in the area and consequently the infrequent hunting of belugas. According to local residents, belugas were common in the lower Kuskokwim earlier this century, but stopped using the area in the 1940's (Frost and Lowry 1990). During April-August 1988, frequent sightings of up to several hundred belugas were made in Kuskokwim Bay for the first time in many years (Frost and Lowry 1990). We also received reports of harvests by several communities that year (Table 3). Since then, there have been infrequent reports of both sightings and harvests. Of the 15 Kuskokwim villages listed in Table 3, nine have responded to ABWC

questionnaires saying that belugas are rarely seen and seldom, if ever, hunted. Therefore, less effort has been devoted to obtaining harvest information from this region.

ADF&G's Division of Subsistence, in cooperation with Bristol Bay Cetuarcutulit Committee, began to monitor the beluga harvest in Bristol Bay in 1994. Since then, there has been complete reporting for all villages in all years. The landed Bristol Bay beluga harvest is not large, and averages only 11 belugas a year. The harvest in Nushagak Bay remains close to the historical average. In the Kvichak, the harvest is considerably lower than it once was, at least in part because of the reduced use of dog teams. With the passage of time, there are fewer and fewer skilled and willing harvesters of belugas in the Bristol Bay region (Molly Chythlook, pers. commun.).

The aspect of beluga harvest data that we understand the least is the number of belugas that are struck and lost. During 1994-1998, some struck and lost information was available for 32 hunting communities, or about 71% of those reporting. Although incomplete, this a considerable improvement over 1987-1994, when Suydam and Frost (1995) reported no struck and lost statistics at all. This was in part because hunters were reluctant to provide this information. Recently, whether or not the number of struck and lost animals is included in harvest reports, there is increased awareness of this issue. Senior hunters are encouraging young and new hunters to be careful how and where they hunt so as to minimize hunting-related loss. Some communities are encouraging the practice of harpooning animals before shooting, and others are discussing hunter guidelines that would encourage hunting in shallow water where belugas are more easily retrieved.

Overall, the statewide average annual landed harvest of belugas during 1994-1998 was about 15% lower than it had been for the previous seven years, although the difference was not significant (235 compared to 275) (Table 4). There is large annual variation in the harvest from each management stock, due to a combination of factors including availability of belugas, weather, and activities of the hunters.

When the harvests for each stock are compared to estimates of stock sizes, it would appear that belugas from each of these four management stocks are being harvested at a sustainable level (Table 5). For all stocks, the average estimated total kill for 1994-1998 was less than 2% of the estimated stock size. Harvest data for the Beaufort Sea stock do not include belugas harvested by Canadian beluga hunters in the Mackenzie estuary. For 1990-1994, years for which Inuvialuit hunters reported their harvest statistics at ABWC meetings, the average landed harvest was 113 (87-141). When added to the Alaskan take, the total landed harvest from the Beaufort Sea stock is still less than 1%. A comparison of landed harvests during 1987-1993 and 1994-1998 suggests no major changes in the rate of harvesting over the last 12 years.

## **ACKNOWLEDGMENTS**

The beluga hunters of Alaska and hunter delegates to the Alaska Beluga Whale Committee contributed the harvest data presented in this report. Without their cooperation and assistance, it

would not be possible to compile accurate harvest information and to obtain samples necessary for biological investigations of belugas in Alaska. Many have answered questionnaires and taken the time to report information about belugas in their area. Their assistance is much appreciated and has been essential to the success of the harvest monitoring program. This study was funded in part by NOAA grants NA37FX0267, NA47FX0498, and NA57FX0368 to the Alaska Beluga Whale Committee and was supported by in kind contributions of the Alaska Department of Fish and Game and the North Slope Borough. Kawerak, Inc. and the Elim-Shaktoolik-Koyuk Marine Mammal Commission have contributed through the hiring of Natural Resource Specialists to collect harvest data and samples, and by providing additional travel funds for some hunter representatives to attend annual meetings and workshops.

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Table 1. Village representatives who presented harvest data for beluga whales at annual ABWC meetings, 1994-1998.

Community	ABWC Representative(s)
Alakanuk	Paul Phillip, Sr.
Aleknagik	Molly Chythlook
Barrow	Robert Suydam, Harry Brower, Jr.
Buckland	Nathan Hadley, Sr., Lester Hadley
Clark's Point	Molly Chythlook
Dillingham	Molly Chythlook
Elim	Charles Saccheus
Emmonak	Andrew Kelly, Sr., Ted Hamilton
Hooper Bay	Raphael Murran
Igiugig	Molly Chythlook
Iliamna	Molly Chythlook
Kaktovik	Robert Suydam, Harry Brower, Jr.
Kivalina	Jerry R. Norton, Sr.
Kotlik	Pius Akaran, Clement Matthias
Kotzebue	Ross Schaeffer, Willie Goodwin
Koyuk	Frank Kavairlook, Richard Nassuk
Levelock	Molly Chythlook, Peter Apokedak, Tony Tallekpalek, Alex Tallekpalek
Manokotak	Moses Toyukak
Naknek	Molly Chythlook
Noatak	Vernon Adams, Thurston Booth, Wendell Booth, Sr.
Nuiqsut	Robert Suydam, Harry Brower, Jr.
Point Hope	Elijah Rock, Sr., Earl Kingik
Point Lay	Danny Piko, Jr.
Saint Michael	Pius Washington, Milton Chemuk
Scammon Bay	Clifford Kaganak, Sr., Frances Charlie
Shaktoolik	Lewis Nakarak, William Takak, Edgar Jackson
Stebbins	Pius Washington, Allen Atchak, Sr.
Togiak	Molly Chythlook
Unalakleet	Paul S. Katchatag, William Koutchak
Wainwright	Robert Suydam, Harry Brower, Jr.

Table 2. Harvest information by village for western Alaskan beluga whale stocks, 1994-1998. Totals for each stock show only the high end of estimated harvest ranges. (nd means no data are available)

	Landed					Stuck & Lost					Total				
	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
<b>Beaufort Sea stock</b>															
Barrow	5	0	2	8	1	nd	0	4	8-12	nd	5	0	6	16-20	1
Diomede	0	nd	0	1	4	nd	nd	nd	nd	1	0	nd	0	1	5
Kaktovik	0	1	0	2	0	0	nd	0	nd	0	0	1	0	2	0
Kivalina	3	3	2	0	0	1	0	4	0	0	4	3	6	0	0
Kotzebue	0	0	5	0	0	0	0	nd	0	0	0	0	5	0	0
Nuiqsut	nd	0	0	0	1	nd	0	0	0	0	0	0	0	0	1
Wales	1	nd	nd	nd	1	nd	nd	nd	nd	nd	1	nd	nd	nd	1
Point Hope	<u>53</u>	<u>~40</u>	<u>15</u>	<u>32</u>	<u>52</u>	<u>17</u>	<u>-</u>	<u>10</u>	<u>18</u>	<u>5</u>	<u>70</u>	<u>~40</u>	<u>25</u>	<u>50</u>	<u>57</u>
<b>TOTAL</b>	<b>62</b>	<b>44</b>	<b>24</b>	<b>43</b>	<b>59</b>	<b>18</b>	<b>0</b>	<b>18</b>	<b>30</b>	<b>6</b>	<b>80</b>	<b>44</b>	<b>42</b>	<b>73</b>	<b>65</b>
<b>Chukchi Sea stock</b>															
Buckland	0	1	5	1	1	0	0	0	1	0	0	1	5	2	1
Deering	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0
Kivalina (summer)	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Kotzebue/Sisualik	7	4	63	5	0	nd	nd	3+	nd	0	7	4	66+	5	0
Noatak	0	0	5	2	4	0	0	0	0	2	0	0	5	2	6
Point Lay	56	31	41	3	48	3	6	7	0	3	59	37	48	3	51
Wainwright	<u>0</u>	<u>0</u>	<u>0</u>	<u>4</u>	<u>38</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>nd</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>6</u>	<u>38</u>
<b>TOTAL</b>	<b>63</b>	<b>36</b>	<b>116</b>	<b>16</b>	<b>91</b>	<b>3</b>	<b>6</b>	<b>10</b>	<b>3</b>	<b>5</b>	<b>66</b>	<b>42</b>	<b>126</b>	<b>19</b>	<b>96</b>
<b>Eastern Bering Sea stock</b>															
Alakanuk	5-10	nd	nd	7	14	many	nd	nd	0	3	5-10+	nd	nd	7	17
Brevig Mission	nd	nd	1	nd	0	nd	nd	nd	nd	0	nd	nd	1	nd	0
Chevak	nd	nd	0	0	0	nd	nd	nd	nd	0	nd	nd	0	0	0
Elim	4-5	10	27	21	13	nd	0	0	0	2	4-5	10	27	21	15
Emmonak	20+	nd	nd	10-20	20+	nd	nd	nd	nd	nd	20+	nd	nd	10-20	20+
Golovin	1	0	0	1	3-4	nd	nd	0	nd	0	1	0	0	1	3-4

Table 2. Continued.

	Landed					Stuck & Lost					Total				
	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
<b>Eastern Bering Sea stock continued</b>															
Hooper Bay	~40	5	30-35	16-17	4	nd	nd	10+	8+	3-4	~40	5	40-45	24-25	7-8
Kotlik	~15	5	2	7-8	3-4	nd	0	0	0	1-2	~15	5	2	7-8	4-6
Koyuk	8	0	4-8	6+	6	3-4	2	1	nd	?	11-12	2	5-9	6+	6+
Nome	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Saint Mary's	nd	nd	nd	5+	0	nd	nd	nd	nd	0	nd	nd	nd	5+	0
Saint Michael	1	5	12-14	8	16	1	nd	1-2	3-10	3	2	5	13-16	11-18	19
Scammon Bay	nd	nd	6	3	13	nd	nd	0	nd	7	nd	nd	6	3	20
Shaktoolik	9	6-10	4	17	16	nd	3	2	1	2	9	9-13	6	18	18
SheldonPoint	nd	nd	nd	2	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	nd
Stebbins	6	8-12	6	18-20	17	3	1	2-3	7-13	4	9	9-13	8-9	25-33	21
Unalakleet	nd	6-8	3	5	14	nd	nd	0	0	0	nd	6-8	3	5	14
White Mountain	nd	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	nd	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>nd</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>
<b>TOTAL</b>	<b>116</b>	<b>55</b>	<b>106</b>	<b>141</b>	<b>141</b>	<b>8</b>	<b>6</b>	<b>18</b>	<b>32</b>	<b>27</b>	<b>124</b>	<b>61</b>	<b>124</b>	<b>173</b>	<b>168</b>
<b>Kuskokwim</b>															
Eek	2	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	nd	nd	nd	nd
Kongiganak	0	nd	nd	0	0	0	nd	nd	0	0	0	nd	nd	0	0
Kwigillingok	0	nd	0	0	0	0	nd	0	0	0	0	nd	0	0	0
Newtok	nd	nd	nd	0	nd	nd	nd	nd	0	nd	nd	nd	nd	0	nd
Toksook Bay	nd	nd	2	0	0	nd	nd	nd	0	0	nd	nd	2	0	0
Tununak	nd	nd	nd	0	nd	nd	nd	nd	0	nd	nd	nd	nd	0	nd
Quinhagak	<u>4</u>	<u>nd</u>	<u>0</u>	<u>0</u>	<u>nd</u>	<u>1</u>	<u>nd</u>	<u>0</u>	<u>0</u>	<u>nd</u>	<u>5</u>	<u>nd</u>	<u>0</u>	<u>0</u>	<u>nd</u>
<b>TOTAL</b>	<b>6</b>	<b>nd</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>nd</b>	<b>nd</b>	<b>0</b>	<b>0</b>	<b>nd</b>	<b>7</b>	<b>nd</b>	<b>2</b>	<b>0</b>	<b>0</b>

Table 2. Continued.

	Landed					Stuck & Lost					Total				
	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
<b>Bristol Bay stock</b>															
Aleknagik	1	1	1	0	0	1	1	0	0	0	2	2	1	0	0
Clarks Point	1	0	3	2	2	0	0	0	0	0	1	0	3	2	2
Dillingham	4	1	8	4	1	0	1	0	0	0	4	2	8	4	1
Igiugig	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0
Iliamna	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0
Levelock	2	1	4	2	0	0	0	0	0	0	2	1	4	2	0
Manokotak	4	1	2	2	2	2	1	0	0	1	6	2	2	2	3
Naknek	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
Togiak	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>
<b>TOTAL</b>	<b>14</b>	<b>6</b>	<b>18</b>	<b>11</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>17</b>	<b>10</b>	<b>19</b>	<b>11</b>	<b>7</b>

Table 3. Reported landings of beluga whales taken from western Alaska stocks, 1987-1998. When the original data for a site indicated a range in landed harvest, we used the highest estimate. Data are from the Alaska Beluga Whale Committee (Frost and Suydam 1995) and this report. (nd means no data are available).

Location	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>Beaufort Sea stock</b>												
Barrow	0	0	1	0	1	0	2	5	0	2	8	1
Diomedes	10	3	6	5	3	2	1	0	nd	0	1	4
Kaktovik	0	0	0	10	0	0	0	0	1	0	2	0
Kivalina	nd	5	0	0	0	10	3	3	3	7	0	0
Nuiqsut									0	0	0	1
Point Hope	40	59	17	16	39	15	79	53	~40	15	32	52
Wales	<u>0</u>	<u>0</u>	<u>2</u>	<u>3</u>	<u>nd</u>	<u>1</u>	<u>nd</u>	<u>1</u>	<u>nd</u>	<u>nd</u>	<u>nd</u>	<u>1</u>
<b>TOTAL</b>	<b>50</b>	<b>67</b>	<b>26</b>	<b>34</b>	<b>43</b>	<b>28</b>	<b>85</b>	<b>62</b>	<b>44</b>	<b>24</b>	<b>43</b>	<b>59</b>
<b>Chukchi Sea stock</b>												
Buckland	7	17	0	31	0	4	0	0	1	5	1	1
Deering	nd	nd	nd	nd	nd	nd	nd	nd	0	2	0	0
Kivalina	0	1	0	1	1	0	0	0	0	0	1	0
Kotzebue, Noatak	2	8	37	6	7	5	6	7	4	68	7	4
Point Lay	22	40	16	62	35	24	77	56	31	41	3	48
Wainwright	<u>47</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>4</u>	<u>38</u>
<b>TOTAL</b>	<b>78</b>	<b>69</b>	<b>53</b>	<b>100</b>	<b>48</b>	<b>33</b>	<b>83</b>	<b>63</b>	<b>36</b>	<b>116</b>	<b>16</b>	<b>91</b>
<b>Eastern Bering Sea stock</b>												
Alakanuk	nd	nd	nd	14	nd	10	nd	10	nd	nd	7	14
Brevig Mission	nd	nd	nd	nd	nd	nd	nd	nd	nd	1	nd	0
Elim	nd	27	22	8	14	2	16	5	10	27	21	13
Emmonak	3	nd	1	nd	nd	12	15	20	nd	nd	20	20+
Golovin	nd	5	13	0	0	1	2	1	0	0	1	4
Hooper Bay	nd	5	nd	nd	10	nd	nd	40	5	35	17	4
Kotlik	nd	nd	nd	1	nd	9	40	15	5	2	8	4

Table 3. Continued.

Location	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Koyuk	15	54	30	45	55	3	20	8	0	8	6	6
Nome	0	0	0	0	nd	nd	nd	1	0	0	0	0
Saint Michael	nd	50	25	22	5	5	17	1	5	14	8	16
Scammon Bay	nd	nd	nd	7	15	5	nd	nd	nd	6	3	13
Shaktoolik	nd	30	15	12	17	5	12	9	10	4	17	16
Stebbins	10	30	22	20	46	7	12	6	12	6	20	17
Unalakleet	nd	35	14	12	17	3	2	nd	8	3	5	14
White Mountain	nd	1	1	0	0	0	nd	nd	0	0	1	0
Yukon, other	<u>3+</u>	<u>6+</u>	<u>12</u>	<u>27+</u>	<u>nd</u>	<u>17+</u>	<u>nd</u>	<u>nd</u>	<u>nd</u>	<u>nd</u>	<u>7+</u>	<u>nd</u>
<b>TOTAL</b>	<b>31+</b>	<b>243+</b>	<b>155+</b>	<b>168</b>	<b>179</b>	<b>79+</b>	<b>136+</b>	<b>116+</b>	<b>55+</b>	<b>106+</b>	<b>141+</b>	<b>141+</b>
<b>Kuskokwim</b>												
Chefornak	nd	nd	nd	nd	0	nd	nd	nd	nd	nd	nd	nd
Chevak	nd	nd	nd	nd	10	nd	nd	nd	nd	nd	nd	nd
Eek	nd	3	4	0	7	7	nd	2	nd	nd	nd	nd
Goodnews	nd	1	nd	0	0	nd	nd	nd	nd	nd	nd	nd
Kipnuk	nd	nd	nd	0	0	nd	nd	nd	nd	nd	nd	nd
Konginank	nd	nd	nd	0	0	nd	nd	nd	nd	nd	0	0
Kwethluk	nd	2	nd	0	2	nd	nd	nd	nd	nd	nd	nd
Kwigillingok	nd	nd	nd	0	0	nd	nd	nd	nd	0	0	0
Mekoryuk	5	nd	0	nd	0	nd	nd	0	nd	nd	nd	nd
Napakiak	nd	nd	2	0	nd	nd	nd	nd	nd	nd	nd	nd
Newtok	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0	nd
Quinhagak	nd	5	4	nd	15	8	nd	4	nd	0	0	nd
Toksook Bay	nd	nd	nd	nd	0	nd	nd	nd	nd	2	0	0
Tuntatuliak	nd	1	3	nd	nd	nd	nd	0	nd	nd	nd	nd
Tununak	<u>nd</u>	<u>1</u>	<u>nd</u>	<u>nd</u>	<u>3</u>	<u>nd</u>	<u>nd</u>	<u>nd</u>	<u>nd</u>	<u>nd</u>	<u>0</u>	<u>nd</u>
<b>TOTAL</b>	<b>5+</b>	<b>13+</b>	<b>13+</b>	<b>0+</b>	<b>37+</b>	<b>15+</b>	<b>nd</b>	<b>6+</b>	<b>nd</b>	<b>2+</b>	<b>0+</b>	<b>0+</b>

Table 3. Continued.

Location	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>Bristol Bay stock</b>												
Aleknagek	nd	nd	nd	nd	nd	nd	nd	1	1	1	0	0
Clark's Point	1	nd	nd	4	nd	nd	nd	1	0	3	2	2
Dillingham	2	3	nd	nd	nd	nd	nd	4	1	8	4	1
Igiugig	nd	nd	nd	nd	nd	nd	nd	1	1	0	0	0
Iliamna	nd	nd	nd	nd	nd	nd	nd	1	1	0	0	0
Levelock	nd	3	6	10	10	nd	2	2	1	4	2	0
Manokotak	3	nd	nd	6	6	nd	nd	4	1	2	2	2
Naknek	nd	nd	nd	nd	nd	nd	nd	0	0	0	1	1
Togiak	<u>nd</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<b>TOTAL</b>	<b>6+</b>	<b>6+</b>	<b>6+</b>	<b>20+</b>	<b>16+</b>	<b>0+</b>	<b>2+</b>	<b>14</b>	<b>6</b>	<b>18</b>	<b>11</b>	<b>6</b>
<b>TOTAL, all</b>	<b>170</b>	<b>398</b>	<b>253</b>	<b>322</b>	<b>316</b>	<b>155</b>	<b>306</b>	<b>261</b>	<b>141</b>	<b>266</b>	<b>211</b>	<b>297</b>

Table 4. Summary of reported landings from Alaskan beluga whale stocks, 1987-1997. A “+” indicates that no harvest reports were received from some of the major hunting locations in this region and this is a minimum harvest. Data for 1987-1994 are from the Alaska Beluga Whale Committee (Frost and Suydam 1995).

Stock/Area	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	<u>1987-93</u>		<u>1994-98</u>	
													mean	SD	mean	SD
Beaufort Sea	50	67	26	34	43	28	85	62	44	24	43	59	48	21.8	46	15.2
Chukchi Sea	78	69	53	100	48	33	83	63	36	116	16	91	66	23.0	64	40.4
Eastern Bering	31+	243+	155+	168+	179+	79+	136+	116+	55+	106+	141+	141+	142	69.2	112	35.3
Kuskokwim	5+	13+	13+	0+	37+	15+	nd	6+	nd	2+	0+	nd	14	12.7	3	3.1
Bristol Bay	6+	6+	6+	20+	16+	nd	2+	14	6	18	11	6	9	7.0	11	5.2
<b>TOTAL</b>	<b>170</b>	<b>398</b>	<b>253</b>	<b>322</b>	<b>323</b>	<b>155</b>	<b>306</b>	<b>261</b>	<b>141</b>	<b>266</b>	<b>211</b>	<b>297</b>	<b>275</b>	<b>88.0</b>	<b>235</b>	<b>61.0</b>

Table 5. Estimated magnitude (% of the estimated stock size) of the harvest of beluga whales by Alaska Natives from Alaskan beluga whale stocks for the period 1994-1998.

	Stock Estimate	1987-1993		1994-1998		1994-1998	
		Landed	% of stock	Landed	% of stock	Total kill	% of stock
Beaufort Sea <sup>a</sup>	39,258 <sup>b</sup>	48 (26-85)	0.1 (0.1-0.2)	46 (24-62)	0.1 (0.1-0.2)	61 (42 - 80)	0.2 (0.1 - 0.2)
Chukchi Sea	3,710 <sup>b, c</sup>	66 (33-100)	1.8 (0.9-2.7)	64 (16-116)	1.7 (0.4-3.1)	70 (19 - 126)	1.9 (0.5 - 3.4)
E. Bering Sea	17,675 <sup>d</sup>	142 (31-243)	0.8 (0.2-1.4)	112 (55-141)	0.6 (0.3-0.8)	130 (61 - 173)	0.7 (0.4 - 1.0)
Kuskokwim	?	14 (0-37)		3 (0-6)		2 (0 - 7)	
Bristol Bay	1,107 <sup>e</sup>	9 (2-20)	0.8 (0.2-1.8)	11 (6-18)	1.0 (0.5-1.6)	13 (7-19)	1.2 (0.6 - 1.7)

<sup>a</sup> Does not include harvests by Canadian hunters when this stock is in the Mackenzie estuary.

<sup>b</sup> Hill and DeMaster 1998

<sup>c</sup> Lowry et al. 1999a

<sup>d</sup> Lowry et al. 1999b

<sup>e</sup> Lowry and Frost 1999