

# Catch statistics for beluga (*Delphinapterus leucas*) harvested from the Eastern High Arctic - Baffin Bay and Cumberland Sound populations from 1977-2020

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CATCH STATISTICS FOR BELUGA (*DELPHINAPTERUS LEUCAS*) HARVESTED  
FROM THE EASTERN HIGH ARCTIC – BAFFIN BAY AND CUMBERLAND SOUND  
POPULATIONS FROM 1977-2020

by

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## TABLE OF CONTENTS

LIST OF TABLES.....	iv
LIST OF FIGURES .....	v
ABSTRACT.....	vi
RÉSUMÉ .....	vii
INTRODUCTION .....	1
METHODS AND RESULTS .....	3
RAW CATCH STATISTICS .....	3
STRUCK AND LOSS.....	3
HUNTING SEASONS.....	4
BELUGA TRADE RECORDS .....	4
CONCLUSION .....	4
ACKNOWLEDGEMENTS .....	6
REFERENCES .....	7

## LIST OF TABLES

Table 1. Reported landed catches for communities in the Canadian Arctic that hunt from the Eastern High Arctic – Baffin Bay and Cumberland Sound beluga populations. No regulatory quota is in effect for communities in Canada that harvest beluga whales from the Eastern High Arctic – Baffin Bay population. A harvest quota of 41 beluga whales per year is in place for the Cumberland Sound beluga population. Nr indicates not reported.....	8
Table 2. Reported landed catches for communities in the Canadian Arctic that hunt from the Eastern High Arctic – Baffin Bay and Cumberland Sound beluga populations corrected for struck and lost animals. Harvests from the Eastern High Arctic – Baffin Bay population were multiplied by 1.41 (Innes and Stewart 2002), while Cumberland Sound harvests were multiplied by 1.36 (Watt et al. 2020) to account for beluga whales struck and lost. Nr indicates not reported..	10
Table 3. Beluga harvests from the Eastern High Arctic – Baffin Bay and Cumberland Sound populations with month of harvest reported to DFO Resource Management.....	12
Table 4. Month of beluga harvest from the Eastern High Arctic – Baffin Bay and Cumberland Sound populations reported within kits from the collaborative sampling program between DFO Science and Hunters and Trappers Organizations/Associations. ....	13
Table 5. Reported trade records for muktuk from beluga whales hunted from the Eastern High Arctic – Baffin Bay and Cumberland Sound populations .....	14

## LIST OF FIGURES

Figure 1. Map of the summer (dark) and winter (light) distribution for the Eastern High Arctic – Baffin Bay (blue) and Cumberland Sound beluga (green) populations .....	15
Figure 2. Reports of landed beluga from 1977-2020 from the Cumberland Sound and Eastern High Arctic – Baffin Bay populations .....	16
Figure 3. Percentage of monthly harvests for the Cumberland Sound and Eastern High Arctic – Baffin Bay beluga populations from harvests reported to DFO Resource Management and those collected as part of the collaborative sampling program for communities in Nunavut, Canada ..	17
Figure 4. Percentage of monthly harvests for the Cumberland Sound and Eastern High Arctic – Baffin Bay beluga populations from trade records .....	18

## ABSTRACT

Watt, C.A. 2021. Catch Statistics for beluga (*Delphinapterus leucas*) harvested from the Eastern High Arctic – Baffin Bay and Cumberland Sound populations from 1977-2020. Can. Tech. Rep. Fish. Aquat. Sci. 3444: vii + 18 p.

Catch statistics from 1977-2020 for 12 Canadian communities that hunt belugas from the Eastern High Arctic - Baffin Bay beluga population and one community that hunts from the Cumberland Sound beluga population are summarized. Struck and loss corrections of 0.41 and 0.36 are applied to the Eastern High Arctic - Baffin Bay and Cumberland Sound beluga catches respectively, to estimate total whales removed from the populations each year. Seasonal harvests are also summarized based on reported harvests and data from an ongoing, collaborative sampling program between Hunters and Trappers Associations and Organizations in Nunavut, and Fisheries and Oceans Canada (DFO) Science. The majority of beluga whales in both populations are harvested in the summer months (July-September). These results can be used for data modelling purposes and thereby provide more reliable estimates for sustainable hunt management advice.



## RÉSUMÉ

Watt, C.A. 2021. Catch Statistics for beluga (*Delphinapterus leucas*) harvested from the Eastern High Arctic – Baffin Bay and Cumberland Sound populations from 1977-2020. Can. Tech. Rep. Fish. Aquat. Sci. 3444: vii + 18 p.

Les statistiques sur les prises de 1977 à 2020 de 12 collectivités canadiennes qui chassent des bélugas de la population de bélugas de l'est de l'Arctique - baie de Baffin et d'une collectivité qui chasse des bélugas de la baie de Cumberland sont résumées. Des corrections de 0,41 et 0,36 sont appliquées aux prises de bélugas de l'est de l'Arctique - baie de Baffin et de la baie de Cumberland respectivement, afin d'estimer le nombre total de baleines retirées des populations chaque année. Les prises saisonnières sont également résumées en fonction des prises déclarées et des données provenant d'un programme d'échantillonnage continu et collaboratif entre les associations et les organisations de chasseurs et de trappeurs du Nunavut et les Sciences de Pêches et Océans Canada (MPO). La majorité des bélugas des deux populations sont récoltés pendant les mois d'été (juillet-septembre). Ces résultats peuvent être utilisés à des fins de modélisation des données et ainsi fournir des estimations plus fiables pour les conseils de gestion de la chasse durable.

## INTRODUCTION

Belugas are part of the annual subsistence hunt in Nunavut, Canada. In order to ensure hunting is sustainable, it is important to understand the history of removals by humans. Fisheries and Oceans Canada (DFO), the regulating body for fisheries in Canada, collects reported harvests from Hunters and Trappers Organizations/Associations (HTOs and HTAs) in communities across the Canadian Arctic. The Cumberland Sound beluga population, which overwinters just outside of Cumberland Sound and spends summers within Cumberland Sound (Richard and Stewart 2009), and the Eastern High Arctic – Baffin Bay population which overwinters in Baffin Bay and spends summer near Somerset and Devon Islands are both hunted by communities in Nunavut, Canada (Figure 1).

The Cumberland Sound beluga population has a history of commercial whaling (see Stewart [2018] for details). Due to a declining demand for products from beluga, the commercial harvest in Cumberland Sound ended in 1960, and a moratorium on commercial hunting of beluga in Canada has been in effect since 1973 (Stewart 2018). A subsistence hunt by the community of Pangnirtung, Nunavut has been regulated since the 1980s and the current quota is 41 beluga per year (Richard and Pike 1993). In 2017, the Cumberland Sound beluga population was listed as Threatened under the Species at Risk Act (SARA) and in 2020 the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed the Cumberland Sound beluga population as Endangered (COSEWIC 2021).

Currently beluga whales from the Eastern High Arctic – Baffin Bay population are hunted by Inuit in both Canada and Greenland. The Canada-Greenland Joint Commission on Conservation and Management of Narwhal and Beluga (JCNB) and the North Atlantic Marine Mammal Commission (NAMMCO), with the participation of DFO Science, recommend sustainable harvest levels for beluga, but quotas are not in place in Canada. This population is not listed under SARA, and has been assessed as Special Concern under COSEWIC (COSEWIC 2004).

This report includes harvest data obtained from DFO Resource Management to provide a catch table for beluga hunted in communities in Canada. Communities that harvest beluga from the Eastern High Arctic – Baffin Bay population include Arctic Bay, Clyde River, Gjoa Haven, Grise Fiord, Sanirajak, Igloolik, Kugaaruk, Kugluktuk, Pond Inlet, Qikiqtarjuaq, Resolute Bay, and Taloyoak, Nunavut, Canada. Pangnirtung, Nunavut is the only community considered to hunt beluga from the Cumberland Sound beluga population.

An ongoing sample collection program run collaboratively by DFO Science, HTOs, HTAs, and hunters across Nunavut has been collecting beluga kits from harvested animals since the early 1980s. Harvest statistics from this voluntary program are provided with varying levels of information and may or may not include the date the sampled whale was harvested. Along with the total number of hunted animals, it is useful to know when the harvest occurred to help with sustainable management and provide insight into the timing of migration and summer aggregation. Seasonal harvest data within this report is a compilation of harvest dates from DFO Resource Management and information collected through the sampling program.

## **METHODS AND RESULTS**

### **RAW CATCH STATISTICS**

The number of beluga whales landed from the Eastern Arctic – Baffin Bay and Cumberland Sound beluga populations is information provided by DFO Resource Management (Table 1, Figure 2). Reporting is voluntary for communities that harvest from the Eastern High Arctic – Baffin Bay population, and is required for Cumberland Sound beluga, which has a regulatory quota. Due to a lack of voluntary reporting, there are several data points that could not be quantified for the Eastern High Arctic – Baffin Bay harvest by individual communities (Table 1). It was assumed that the full quota was taken when harvests in the community of Pangnirtung (Cumberland Sound beluga population) were not reported (Table 1).

### **STRUCK AND LOSS**

Not all animals that are injured or shot are recovered and accounted for in the harvest statistics. As a result, a struck and loss rate is calculated to estimate the proportion of whales that are killed, but not landed. Innes and Stewart (2002) estimated a struck and loss adjustment factor of 0.41 whales per whale landed which accounts for whales struck and lost and not reported in Baffin Bay. Actual loss rates could be higher due to some hunts resulting in several wounded animals that may eventually die from their wounds (Orr and Richard 1985); however, this rate was applied to all landed catches from the Eastern High Arctic – Baffin Bay beluga population (Table 2). There is limited information on struck and lost animals in Cumberland Sound; however, a population dynamics model estimated a struck and loss adjustment factor of 0.36 for

Cumberland Sound beluga (Watt et al. 2020). This rate was applied to all harvests from the community of Pangnirtung (Table 2).

## **HUNTING SEASONS**

Beluga harvests reported to DFO Resource Management only occasionally include information on the date the whale was harvested (Table 3). The date of harvest is requested on the sample sheet provided through the collaborative sampling program administered by DFO Science, HTOs, and HTAs. Harvest date is more commonly provided through the collaborative sampling program sample sheet than in the reported harvest records (Table 4). Combining information from the two sources provides dates for 305 harvested whales from the Eastern High Arctic – Baffin Bay population, and 324 whales from the Cumberland Sound beluga population. Using these totals, the percentage of whales taken by month (April-January) is provided in Figure 3.

## **BELUGA TRADE RECORDS**

Trade records from DFO Resource Management provide the month of muktuk (beluga skin and blubber) trade by communities that harvest from the Eastern High Arctic – Baffin Bay and Cumberland Sound beluga populations (Table 5, Figure 4).

## **CONCLUSION**

Over the past five decades the largest hunts for beluga from the Eastern High Arctic – Baffin Bay population have been from the community of Igloodik. Annual landings of beluga whales have remained stable in the Cumberland Sound beluga population over the last 30 years due to the implemented quota, while landings from the Eastern High Arctic – Baffin Bay population have fluctuated over time. However, there are many years where communities have not reported their harvest and it would be

useful to confirm if communities are not reporting because they have not harvested any beluga or if they have chosen not to partake in voluntary reporting. Accurate harvest statistics would ensure the long term sustainability of this population, for which little information on population dynamics and life-history characteristics is known.

Understanding the seasonal catch statistics for beluga whales can help with sustainable management and provide insight into the timing of migration and summer aggregation. Although harvest records with dates are sparse, combining information from multiple sources suggests that most whales from the Eastern High Arctic – Baffin Bay population are taken in August and September, while those from the Cumberland Sound population are typically harvested in July. A July harvest by the community of Pangnirtung is supported by hunters who state that the beluga pass the community on the first spring tide in early July (pers. comm. Watt). Trade records, which are even more sparse, generally support a summer harvest (June-September) of both beluga populations; however, this data should be interpreted with caution since muktuk could be traded frozen after the whales have been harvested.

Catch statistics gathered for both populations should be considered the most up to date and best information from Canada. However, in some instances, catch statistics are subject to change in the future as more accurate harvest information may be reported years later. Although future updates are anticipated, this summary of beluga hunt statistics can be used for data modelling to estimate sustainable hunt management advice.

## **ACKNOWLEDGEMENTS**

Thanks to the hunters in the communities across Canada for reporting their hunts, and to Jeremiah Young and Josh Humphries for providing the harvest statistics. Thanks to J. Ryman, C. Bartel, and J. Hudson for review of an early draft of this report.

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Table 1. Reported landed catches for communities in the Canadian Arctic that hunt from the Eastern High Arctic – Baffin Bay and Cumberland Sound beluga populations. No regulatory quota is in effect for communities in Canada that harvest beluga whales from the Eastern High Arctic – Baffin Bay population. A harvest quota of 41 beluga whales per year is in place for the Cumberland Sound beluga population. Nr indicates not reported.

Year	Eastern High Arctic - Baffin Bay Population													Cumberland Sound Population
	Arctic Bay	Clyde River	Gjoa Haven	Grise Fiord	Sanirajak	Igloolik	Kugaaruk	Kugluktuk	Pond Inlet	Qikiqtarjuaq	Resolute Bay	Taloyoak	Total	Pangnirtung
1977	0	0	nr	11	18	15	nr	nr	0	0	17	nr	61	178
1978	0	0	nr	15	9	18	4	nr	0	0	2	nr	48	85
1979	31	0	nr	12	7	28	0	0	2	nr	6	nr	86	70
1980	0	0	nr	16	nr	nr	0	0	0	1	nr	nr	17	43
1981	0	0	nr	47	5	70	0	0	0	nr	8	nr	130	45
1982	2	0	nr	6	15	70	0	0	0	0	8	nr	101	40
1983	0	1	nr	6	nr	65	0	0	1	nr	18	nr	91	44
1984	13	0	nr	21	21	55	0	0	0	0	13	nr	123	40
1985	1	0	nr	6	1	25	0	1	0	0	14	nr	48	44
1986	0	1	nr	0	18	50	0	0	0	0	6	nr	75	26
1987	0	0	nr	25	12	7	0	0	9	1	0	nr	54	40
1988	4	13	nr	25	3	14	nr	nr	3	2	27	nr	91	46
1989	3	0	nr	8	11	8	nr	nr	1	0	21	nr	52	42
1990	0	0	nr	0	11	21	nr	nr	1	0	14	nr	47	36
1991	20	0	nr	25	0	0	nr	nr	0	0	9	nr	54	31
1992	4	0	nr	17	7	100	nr	nr	2	0	4	nr	134	35
1993	2	0	nr	10	1	20	nr	nr	1	0	11	nr	45	15
1994	9	0	nr	3	18	25	nr	nr	2	7	18	nr	82	35
1995	0	0	0	0	nr	7	0	0	0	0	27	37	71	31
1996	1	0	0	1	2	12	0	1	1	0	11	15	44	41
1997	1	0	0	2	8	10	0	nr	0	0	20	nr	41	47
1998	2	0	nr	40	0	0	nr	0	1	0	21	nr	64	35
1999	0	0	3	23	nr	nr	nr	nr	0	0	7	nr	33	50
2000	0	0	0	22	5	4	0	0	0	0	0	22	53	37
2001	0	0	0	20	8	16	0	0	0	0	0	30	74	39
2002	0	0	0	0	0	0	0	0	0	0	5	22	27	41
2003	0	0	0	17	15	23	0	0	0	1	5	20	81	46
2004	0	0	nr	8	12	nr	0	0	0	0	2	nr	22	41*
2005	0	0	0	4	2	15	0	0	0	0	13	0	34	41*
2006	5	0	26	6	0	27	0	0	2	0	31	30	127	52
2007	14	0	6	2	10	18	0	0	0	0	5	100	155	48
2008	0	0	0	10	3	17	0	0	0	0	nr	0	30	41*
2009	0	0	nr	1	nr	18	nr	0	nr	nr	6	nr	25	41*
2010	0	0	nr	1	18	74	nr	0	0	2	6	45	146	41*

2011	0	0	10	0	8	42	0	21	0	0	4	0	85	42
2012	2	0	4	11	18	15	0	0	0	0	17	0	67	41*
2013	0	0	5	0	0	0	0	0	0	nr	76	nr	81	41*
2014	0	nr	nr	3	19	nr	1	nr	nr	nr	8	nr	31	41*
2015	0	1	10	3	7	nr	0	0	0	0	4	3	28	18
2016	1	0	nr	0	3	12	0	1	1	0	3	1	22	41
2017	1	1	nr	2	nr	nr	0	0	0	nr	6	0	10	34
2018	nr	0	nr	5	nr	nr	0	0	0	0	0	nr	5	41
2019	nr	0	0	3 <sup>a</sup>	nr	9	0	1	0	9	8	nr	27	41
2020	nr	nr	nr	nr	nr	11	nr	nr	nr	nr	10	nr	21	41

\*Harvests in Pangnirtung were not reported; it is assumed the full quota was taken.

<sup>a</sup> Reported landed harvest was three harvested beluga and two beluga struck and lost

Table 2. Reported landed catches for communities in the Canadian Arctic that hunt from the Eastern High Arctic – Baffin Bay and Cumberland Sound beluga populations corrected for struck and lost animals. Harvests from the Eastern High Arctic – Baffin Bay population were multiplied by 1.41 (Innes and Stewart 2002), while Cumberland Sound harvests were multiplied by 1.36 (Watt et al. 2020) to account for beluga whales struck and lost. Nr indicates not reported.

Year	Eastern High Arctic - Baffin Bay Population													Cumberland Sound Population
	Arctic Bay	Clyde River	Gjoa Haven	Grise Fiord	Sanirajak	Igloolik	Kugaaruk	Kugluktuk	Pond Inlet	Qikiqtarjuaq	Resolute Bay	Taloyoak	Total	Pangnirtung
1977	0	0	nr	16	25	21	nr	nr	0	0	24	nr	86	242
1978	0	0	nr	21	13	25	6	nr	0	0	3	nr	68	116
1979	44	0	nr	17	10	39	0	0	3	nr	8	nr	121	95
1980	0	0	nr	23	nr	nr	0	0	0	1	nr	nr	24	58
1981	0	0	nr	66	7	99	0	0	0	nr	11	nr	183	61
1982	3	0	nr	8	21	99	0	0	0	0	11	nr	142	54
1983	0	1	nr	8	nr	92	0	0	1	nr	25	nr	127	60
1984	18	0	nr	30	30	78	0	0	0	0	18	nr	174	54
1985	1	0	nr	8	1	35	0	1	0	0	20	nr	66	60
1986	0	1	nr	0	25	71	0	0	0	0	8	nr	105	35
1987	0	0	nr	35	17	10	0	0	13	1	0	nr	76	54
1988	6	18	nr	35	4	20	nr	nr	4	3	38	nr	128	63
1989	4	0	nr	11	16	11	nr	nr	1	0	30	nr	73	57
1990	0	0	nr	0	16	30	nr	nr	1	0	20	nr	67	49
1991	28	0	nr	35	0	0	nr	nr	0	0	13	nr	76	42
1992	6	0	nr	24	10	141	nr	nr	3	0	6	nr	190	48
1993	3	0	nr	14	1	28	nr	nr	1	0	16	nr	63	20
1994	13	0	nr	4	25	35	nr	nr	3	10	25	nr	115	48
1995	0	0	0	0	nr	10	0	0	0	0	38	52	100	42
1996	1	0	0	1	3	17	0	1	1	0	16	21	61	56
1997	1	0	0	3	11	14	0	nr	0	0	28	nr	57	64
1998	3	0	nr	56	0	0	nr	0	1	0	30	nr	90	48
1999	0	0	4	32	nr	nr	nr	nr	0	0	10	nr	46	68
2000	0	0	0	31	7	6	0	0	0	0	0	31	75	50
2001	0	0	0	28	11	23	0	0	0	0	0	42	104	53
2002	0	0	0	0	0	0	0	0	0	0	7	31	38	56
2003	0	0	0	24	21	32	0	0	0	1	7	28	113	63
2004	0	0	nr	11	17	nr	0	0	0	0	3	nr	31	56
2005	0	0	0	6	3	21	0	0	0	0	18	0	48	56
2006	7	0	37	8	0	38	0	0	3	0	44	42	179	71
2007	20	0	8	3	14	25	0	0	0	0	7	141	218	65
2008	0	0	0	14	4	24	0	0	0	0	nr	0	42	56
2009	0	0	nr	1	nr	25	nr	0	nr	nr	8	nr	34	56
2010	0	0	nr	1	25	104	nr	0	0	3	8	63	204	56

2011	0	0	14	0	11	59	0	30	0	0	6	0	120	57
2012	3	0	6	16	25	21	0	0	0	0	24	0	95	56
2013	0	0	7	0	0	0	0	0	0	nr	107	nr	114	56
2014	0	nr	nr	4	27	nr	1	nr	nr	nr	11	nr	43	56
2015	0	1	14	4	10	nr	0	0	0	0	6	4	39	24
2016	1	0	nr	0	4	17	0	1	1	0	4	1	29	56
2017	1	1	nr	3	nr	nr	0	0	0	nr	8	0	13	46
2018	nr	0	nr	7	nr	nr	0	0	0	0	0	nr	7	56
2019	nr	0	0	5	nr	13	0	1	0	13	11	nr	43	56
2020	nr	nr	nr	nr	nr	16	nr	nr	nr	nr	14	nr	30	56

Table 3. Beluga harvests from the Eastern High Arctic – Baffin Bay and Cumberland Sound populations with month of harvest reported to DFO Resource Management.

Population	Community	Month Harvested	# Beluga Reported
Eastern High Arctic – Baffin Bay	Arctic Bay	June	1
	Grise Fiord	August	3
	Igloolik	September	11
	Resolute Bay	July, August, September	2, 12, 10
Cumberland Sound	Pangnirtung	July	41

Table 4. Month of beluga harvest from the Eastern High Arctic – Baffin Bay and Cumberland Sound populations reported within kits from the collaborative sampling program between DFO Science and Hunters and Trappers Organizations/Associations.

Population	Community	Month Harvested	# Beluga kits with dates
Eastern High Arctic - Baffin Bay	Arctic Bay	May, June, July, August	6, 2, 1, 1
	Qikiqtarjuaq	September, October	1, 2
	Grise Fiord	May, August, September, October	1, 2, 61, 2
	Sanirajak	August, September	3, 10
	Igloodik	August, September, October	16, 49, 26
	Pond Inlet	May, June	1, 1
	Resolute Bay	August, September	27, 28
	Taloyoak	July, August	10, 16
Cumberland Sound	Pangnirtung	January, April, May, June, July, August, September, November, December	2, 1, 3, 18, 191, 56, 8, 2, 2

Table 5. Reported trade records for muktuk from beluga whales hunted from the Eastern High Arctic – Baffin Bay and Cumberland Sound populations.

Population	Community	Year	Month	Weight (kg)
Eastern High Arctic – Baffin Bay	Admiralty Inlet	1991	June	56.59
		1993	July	99.09
		1997	June	155.50
		1998	July	55.91
		2001	June	79.55
	Grise Fiord	1991	September	115.00
		2000	September	92.73
	Sanirajak	1991	September	88.64
		2000	August	100.00
	Igloolik	1992	September	164.79
		Pond Inlet	1997	June
	1998		July <sup>a</sup>	102.96
	1999		August	45.45
	2001		April	107.05
	Resolute Bay	1994 <sup>b</sup>	May	195.23
		1994 <sup>b</sup>	June	562.27
		1998	August	388.18
		1999	September	72.73
	Taloyoak	1992	September	5.05
		Cumberland Sound	Pangnirtung	1996

<sup>a</sup>Trade records indicated this trade came from Mount Herodier. It was assigned to the closest community.

<sup>b</sup>Trade records indicated this trade came from Lancaster Sound. It was assigned to the closest community.

Figure 1. Map of the summer (dark) and winter (light) distribution for the Eastern High Arctic – Baffin Bay (blue) and Cumberland Sound beluga (green) populations.

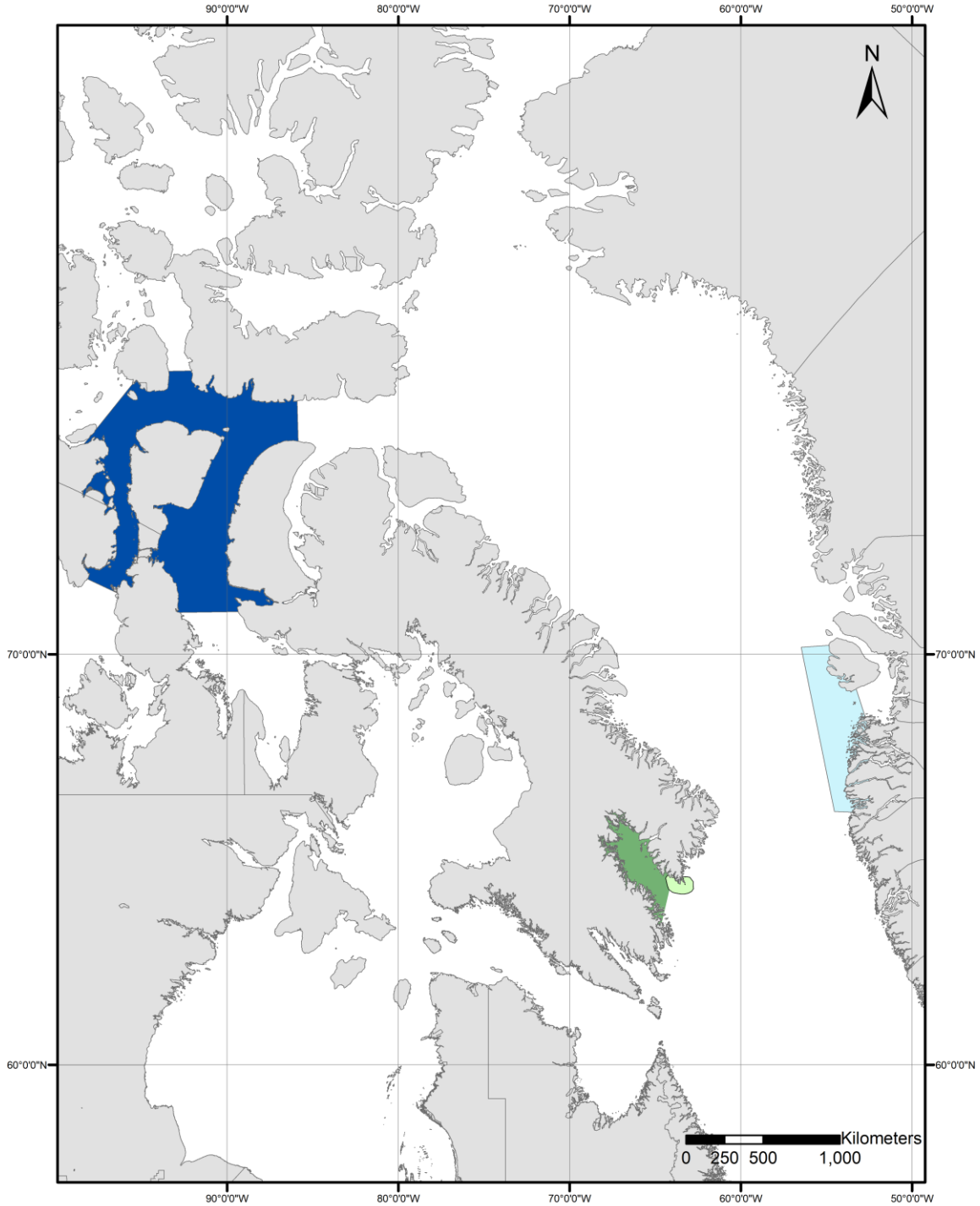




Figure 2. Reports of landed beluga from 1977-2020 from the Cumberland Sound and Eastern High Arctic – Baffin Bay populations.

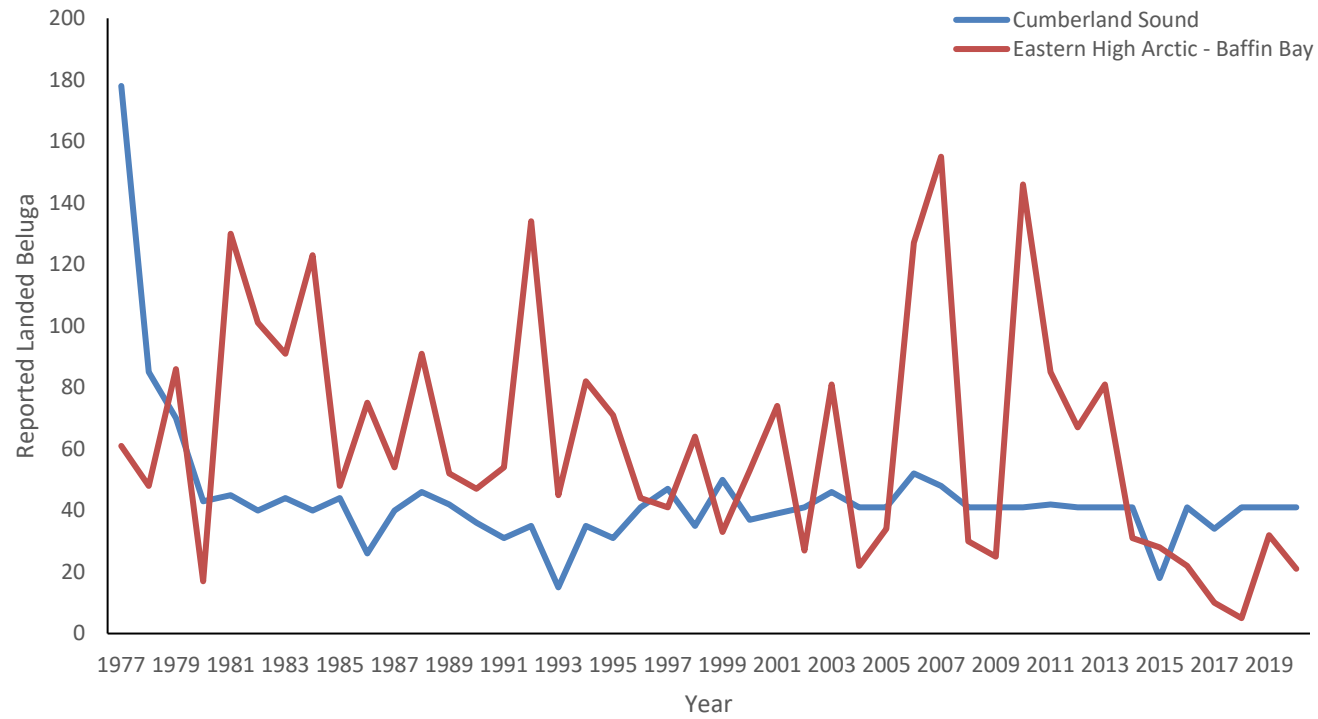


Figure 3. Percentage of monthly harvests for the Cumberland Sound and Eastern High Arctic – Baffin Bay beluga populations from harvests reported to DFO Resource Management and those collected as part of the collaborative sampling program for communities in Nunavut, Canada.

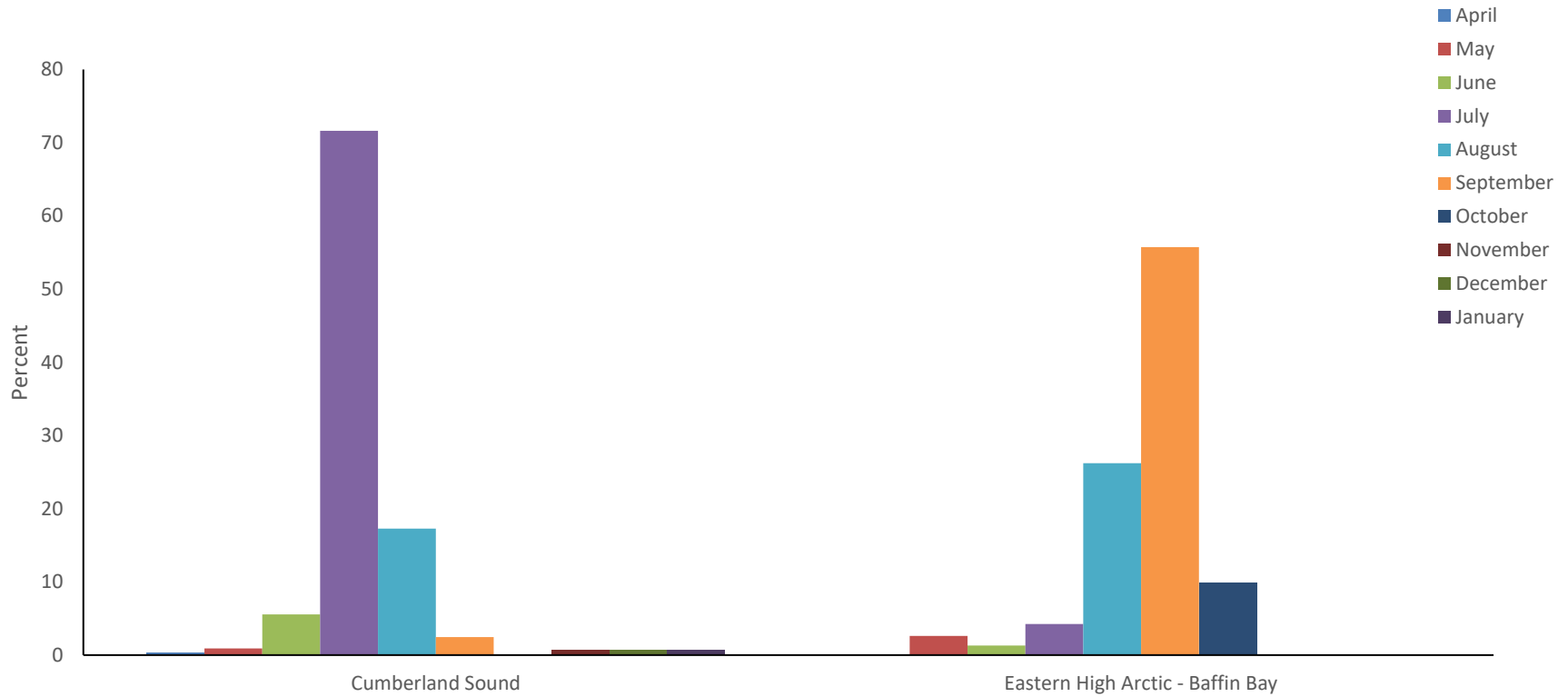


Figure 4. Percentage of monthly harvests for the Cumberland Sound and Eastern High Arctic – Baffin Bay beluga populations from trade records.

