



## FINAL REPORT

# OF THE INUIT BOWHEAD KNOWLEDGE STUDY

NUNAVUT, CANADA



MARCH, 2000

### By Inuit Study Participants from:

Arctic Bay, Arviat, Cape Dorset, Chesterfield Inlet,  
Clyde River, Coral Harbour, Grise Fiord,  
Hall Beach, Igloolik, Iqaluit, Kimmirut, Kugaaruk,  
Pangnirtung, Pond Inlet, Qikiqtarjuaq, Rankin Inlet,  
Repulse Bay, and Whale Cove

### Principal Researchers:

Keith Hay (Study Coordinator) and

Members of the Inuit Bowhead Knowledge Study Committee:

David Aglukark (Chairperson), David Igutsaq,  
Joannie Ikkidluak, Meeka Mike



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Nunavut Wildlife Management Board  
PO Box 1379  
Iqaluit, Nunavut  
X0A 0H0

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March, 2000



# Table of Contents

I LIST OF TABLES AND FIGURES .....	i
II DEDICATION .....	ii
III ABSTRACT .....	iii
1 INTRODUCTION .....	1
1.1 RATIONALE AND BACKGROUND FOR THE STUDY .....	1
1.2 TRADITIONAL ECOLOGICAL KNOWLEDGE AND SCIENCE .....	1
2 METHODOLOGY .....	3
2.1 PLANNING AND DESIGN .....	3
2.2 THE STUDY AREA .....	4
2.3 INTERVIEW TECHNIQUES AND THE QUESTIONNAIRE .....	4
2.4 METHODS OF DATA ANALYSIS .....	6
3 RESULTS AND DISCUSSION .....	9
3.1 INUIT KNOWLEDGE OF POPULATION ECOLOGY OF BOWHEADS .....	9
3.1.1 Trends in Abundance .....	9
i) Depletion of bowheads by commercial whalers .....	9
ii) Voluntary cessation of Inuit harvesting .....	10
iii) Long-term population increase: first-hand observations .....	10
iv) Long-term population increase: first- and second-hand observations in combination .....	14
v) Recent, annual population increase: first-hand observations .....	15
vi) Present-day abundance: first-hand observations .....	16
vii) Abundance/population increase: second-hand information .....	18
viii) Assumption of population increase due to cessation of whaling .....	19
ix) Abundance/population increase: unsubstantiated statements .....	20
x) Decrease of population .....	20
xi) Stability of bowhead numbers .....	20

# TABLE OF CONTENTS

---

xii) <i>Population changes: no information</i> .....	21
xiii) <i>Abundance near other communities: second-hand information</i> .....	21
3.1.2 <i>Distribution and Migration</i> .....	22
i) <i>General observations</i> .....	22
ii) <i>Stock identity/site fidelity</i> .....	26
iii) <i>Changes in distribution and migration patterns</i> .....	27
iv) <i>Seasonal distribution and migration</i> .....	28
3.1.3 <i>Recent Changes in Group Size</i> .....	30
3.1.4 <i>Occurrence of Bowhead Calves</i> .....	30
i) <i>Observations of calves and juveniles</i> .....	30
ii) <i>The presence of calves and population increase</i> .....	33
3.1.5 <i>Ecology and Behaviour</i> .....	33
i) <i>Killer whales and bowheads</i> .....	33
ii) <i>Sea ice and bowheads</i> .....	38
iii) <i>Tides, currents, and bowhead feeding ecology</i> .....	38
iv) <i>Impacts of environmental disturbance on bowheads</i> .....	40
v) <i>Bowheads as a hazard to small-boat traffic</i> .....	42
vi) <i>Aggressive behaviour and different types of bowheads</i> .....	44
vii) <i>Strandings, net-entanglements, and ice-entrapments</i> .....	48
viii) <i>Bowheads and species other than killer whales</i> .....	50
3.2 <i>CULTURAL AND TRADITIONAL IMPORTANCE OF BOWHEADS TO INUIT</i> .....	50
3.2.1 <i>Inuit Values and Beliefs Regarding Wildlife</i> .....	50
3.2.2 <i>The Value of the Bowhead Whale to Ancestral Inuit</i> .....	51
3.2.3 <i>Whaling</i> .....	52
i) <i>Ancestral (pre-commercial) Inuit whaling</i> .....	52
ii) <i>Commercial whaling</i> .....	54
iii) <i>Post-commercial Inuit whaling: specific hunts and techniques</i> .....	55
3.2.4 <i>The Bowhead Whale and Inuit Society, Today and Tomorrow</i> .....	55
i) <i>Concern about losing Inuit knowledge of the bowhead</i> .....	55
ii) <i>The importance of resuming the bowhead whale hunt</i> .....	56
<i>The bowhead hunt: a vital element of Inuit culture</i> .....	56
<i>Wishes of the Elders</i> .....	56
<i>Modern day utility of the bowhead</i> .....	57
<i>Nutritive value, edibility, and taste</i> .....	57
iii) <i>Dissent or ambivalence with respect to resuming the bowhead hunt</i> .....	58



# TABLE OF CONTENTS

---

3.2.5 Traditional Inuit Customs and Legends relating to Bowhead Hunting .....	59
3.3 INUIT HUNTS OF BOWHEADS AFTER 1915 .....	60
3.4 MANAGEMENT AND POSSIBLE FUTURE RATES OF HARVESTING OF BOWHEAD WHALES .....	63
4 SUMMARY AND CONCLUSIONS .....	65
4.1 INUIT KNOWLEDGE OF POPULATION ECOLOGY OF BOWHEADS .....	65
4.2 CULTURAL AND TRADITIONAL IMPORTANCE OF BOWHEADS TO INUIT .....	73
4.3 INUIT HUNTS OF BOWHEADS AFTER 1915 .....	74
4.4 MANAGEMENT AND POSSIBLE FUTURE RATES OF HARVESTING OF BOWHEAD WHALES .....	74
5 LITERATURE CITED .....	75
6 ACKNOWLEDGEMENTS .....	77
7 APPENDICES .....	79
Appendix I Statistical Summary of Individual Interviews and Workshops .....	79
Appendix II Schedule of Workshops: Communities, Dates, and Participants .....	80
Appendix III The Inuit Seasons: Example for High Arctic .....	81
Appendix IV Questionnaire Used for Individual Interviews .....	82
Appendix V Agenda for Workshops .....	86
Appendix VI Consent Form for Individual Interviews .....	87
Appendix VII Footnote Sources Pertinent to Section 3: Results and Discussion .....	88





# I L I S T O F T A B L E S A N D F I G U R E S

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Table 1. Summary of Inuit hunts of bowhead whales from about 1917 to 1975 in Nunavut, as revealed by informants in this Study, but not in the compilation of Mitchell and Reeves (1982). .....61

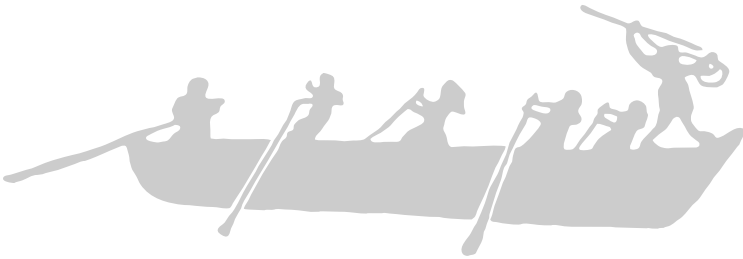
Figure 1. Map of the Study Area in the eastern Canadian Arctic. ....5

Maps of distribution and migration of bowheads (six maps in a pocket on the inside back cover)





The Final Report of the Inuit Bowhead Knowledge Study is dedicated to our ancestors and elders, whose knowledge, wisdom, and spirit continue to guide and inform us. This report is also dedicated to the memory of the elders who participated in this Study and have since passed away.



As mandated by the Nunavut Land Claims Agreement of 1993, Inuit knowledge of bowhead whales in Nunavut, Canada was collected by means of 257 individual interviews with 252 Inuit hunters and elders in 18 communities during 1995 and 1996. During 1996 and 1997, follow-up workshops were held in eight of these communities where bowheads appear to be most numerous and seasonally predictable in their occurrence. The interviews and workshops were tape-recorded and were of an informal and semi-directive nature, with trained community interviewers and workshop facilitators employing questionnaires or an agenda consisting of open-ended questions or specific topics. We sought information from interviewees and workshop participants on bowhead whale distribution and migrations, changes in frequency of sightings and distribution since about 1915, behaviour and ecology, and the cultural and traditional importance of the bowhead whale to Inuit. Information on Inuit hunting and Euro-American commercial whaling of bowheads was also collected.

We analysed the transcripts of 175 translated interviews and the eight workshops to produce a compendium of informants' quotations pertaining to 1) Population Ecology of Bowheads and 2) Cultural and Traditional Importance of Bowheads to Inuit. Quotations or parts thereof were then catalogued within a detailed topical framework comprising these two main topics. This topical framework of quotations formed the basis for further analysis and the structure of this report.

Inuit testimony indicated that the number of bowhead whales seasonally occurring in the marine waters of Nunavut has increased significantly in recent decades, generally since the 1950s, 1960s, or 1970s, with the reported years and extent of increase varying among communities and among different informants from the same community. Informants documented the cultural and traditional importance of bowhead whales and whaling for the Inuit of Nunavut, and many argued on cultural and societal grounds for the renewal and re-vitalization of the bowhead hunt.

Okoa havakhaotikakmata atokoyaovlotik Nunavutmi Nunataagotini Angigotini 1993-mi, Inuit elihimayait okoa akviit Nunavutmi, Kanata katitigivaktot emakak 257 inuknik apikhoivakmata ema okoa 252 Inuit angoniakpaktot okoalo inutokait ovanu 18 inukknini talvani 1995 ovanilo 1996-mi. Talvani 1996 ovanilo 1997-mi, naonaikhakhotik meetikpaktot eeni inukknini homi akviit takoyaolikpaktot amigaitot ovalo homi taggiomiitpatut. Okoa apikhogamik inuit ovalo meetikatigivlogit nippiliokpagait okaktot ovalo hokot piomayut inuit, ayoikhimayut apikhoikataktot inuknk ovalo meetiktitivaktot apikhoivlotik naliak inuit naonaikhakvigivlogit akviknik apikhoktait. Talvani kemilgoktavut inuit ehomayait okaotaitlo ema kanok homi takovakpat akviknik ovalo homiitpagiakhanik, ovalo homot ahinot takokhaolikpaktot ovalo amligaitot elihimayaovat 1915-mi, kanogilitpakpat ovalo amigaitigivat, ovalo elitkohikot ovalo pitkohikot atoktaovaktot akviit Inuknit. Naonaikhakviyut Inuit angoniakpaktot ovalo Kablonat maniliokhotik akvikhiokpaktot naonaikhakviyut titigaktaovlotik.

Ovagus ehivgioktavut titigait 175 numiktikhimayut onipkangit inuit ova eengoyut meetiotit kanok naonaikhaktavut okoa 1) Kaffiovat Akviit ovalo 2) Elitkohikot ovalo Pitkohikot Hivitovat Akviit Inuknot. Inuit onipkangit titigaktaovaktot naiak naliak elait onipkangit titigaktot naonaitkotikhat okoa malgok ehomagiyayuk titigaktot. Ona onipkak titigak naonaitkotaoniaktok kanok kakogo ehivgiogotikhat ovalo kanok titigakhimaniaktok.

Inuit onipkaktait tohakhaoliktot kaffit akviit takokhoavaktot taggiomi hamani Nunavut amigaikpaliyungok taya, hamani taya 1950-ni, 1960-ni, naliak 1970-ni, okoa onipkaktaovaktot okioni ovalo akviingok amigailigonakhigamik takokhaokataliktot nunani inukknit haniani. Inuit onipkangit titigaktaoyut atokpagait elitkohimigot ovalo pitkohimigut akviit atokpagait nikikhat ovalo akvikhiokpagiantini inuit Nunavutmi, ovalo inuit atoktotokagigamik akviit atogoilimaitait ovalo akvikhiokpaliyungitni inuit.







# Introduction

## 1.1 RATIONALE AND BACKGROUND FOR THE STUDY

Article 5, part 5 of the Nunavut Land Claims Agreement (NLCA) required that the Nunavut Wildlife Management Board (NWMB) carry out an Inuit Knowledge Study of bowhead whales (*arviq; arviit* – pl.) in the Nunavut Settlement Area (NSA).

Through the NLCA, Inuit have expressed an interest in resuming a limited hunt for bowheads in Nunavut. Section 5.5.2 states (in part) that ‘The NWMB shall conduct an Inuit knowledge study to record sightings, location and concentrations of bowhead whales in the Nunavut Settlement Area. The study shall be completed within five years of the date of ratification of the Agreement.’ The Inuit Bowhead Knowledge Study (IBKS) Committee set up to manage the study expanded the scope of the IBKS to include the cultural and traditional importance of bowhead hunting for Inuit, and Inuit knowledge of various aspects of bowhead ecology and behaviour in the NSA. An important part of the study is the documentation of changes and trends in relative abundance and distribution of bowheads from the end of commercial whaling (about 1915) to the present time.

Inuit knowledge of bowhead whales in the NSA was documented by means of semi-directed interviews with elders and senior hunters in 18 communities whose marine hunting areas are seasonally visited by bowhead whales. In addition, small-group workshops were held in eight of these

communities, which have reported the largest seasonal concentrations of bowhead whales.

Two interim reports of the study are available from the NWMB (NWMB 1995; Hay 1997).

## 1.2 TRADITIONAL ECOLOGICAL KNOWLEDGE AND SCIENCE

Traditional ecological knowledge (TEK) has in recent years come to be recognized as an important source of long-term and detailed data about wildlife resources and ecological processes on lands and waters used and occupied by indigenous peoples for millennia. This is especially so in

remote areas where modern scientific studies, while providing indispensable data and interpretations, are often constrained in time and space by logistical and economic considerations. As a result, TEK and modern science are increasingly being utilized in a complementary fashion which allows the advantages of both to be brought into play, at the same time allowing the shortcomings of one to be overcome by the advantages of its complement. This approach is advocated by institutions of co-management (such as the NWMB) and other agencies,

for its potential in enhancing the management of wildlife and ecological systems, in land use planning and management, and in other resource and planning activities.



Bowhead tail. Photo by Sue Cosens, Department of Fisheries and Oceans

...scientific work is basically simply an estimation, and I never totally believe scientists with their estimations. ...The scientists' estimations tend to contradict the knowledge of the Inuit – Inuit rely on wildlife for food and they deal with wildlife on a daily basis all year round – while on the other hand scientists come up here and do a 3- to 4- day study and then they do a report, and they try to convince everybody of their findings and because of that they always contradict with Inuit knowledge. This study that we are doing is to collect the Traditional

Knowledge of the Inuit [on bowhead whales] and we will also be using scientific documents. Inuit traditional knowledge has never been taken into account prior to the Land Claims Agreement. ...it has been like this simply because we didn't have our knowledge documented. But today Inuit are working together collecting these kinds of information for the future generations. If in fact we had documents to back us up, I am sure that scientists would have believed what we were saying all along. [Joannie Ikkidluak, speaking at an IBKS workshop]





# Methodology

## 2.1 PLANNING AND DESIGN

The study was guided by the Inuit Bowhead Knowledge Study Committee, formed in early 1994, which consisted of four members of the NWMB. The Committee decided that initial planning and design of the study would be carried out by a Planning Group consisting of representatives of the three Regional Wildlife Organizations of Nunavut and the IBKS Committee Chairperson.

After two meetings and several Tele-conferences in December 1994 and January 1995, this Planning Group had devised a draft questionnaire and methodology for the study (see Appendix IV for the questionnaire). This questionnaire was pre-tested with five Inuit elders in Iqaluit, resulting in a few minor changes to some questions and the methodology. The methodology and questionnaire were also improved through consultations with staff from: Central and Arctic Region of the Department of Fisheries and Oceans, the Sanikiluaq-based Hudson Bay Traditional Ecological Knowledge and Management Systems Study, and the Department of Resources, Wildlife and Economic Development of the Government of the Northwest Territories.

There are about 18 to 20 eastern arctic communities in Nunavut within seasonal bowhead range. The IBKS Committee decided that interviews would be done in ten communities during 1995: Igloodik, Hall Beach, Coral Harbour, Repulse Bay, Kimmirut, Cape Dorset, Kugaaruk (formerly Pelly Bay), Pangnirtung, Qikiqtarjuaq, and Clyde River (see Figure 1).

These communities were chosen for a number of reasons. The Committee wanted to carry out the study in a limited number of communities during 1995, the first year of the IBKS. In addition, the first six communities listed are near migration routes and/or summering range of bowhead whales comprising a possible sub-population or stock in Northern Hudson Bay and Foxe Basin, thus the study in 1995 focused on a possible sub-population/stock of bowheads. The three eastern Baffin

Island communities were selected because recent scientific studies and observations by Inuit indicate that a considerable number of whales migrate through and/or summer in the coastal waters of eastern Baffin Island. Kugaaruk, within the Kitikmeot administrative region of Nunavut, was also selected for the first year of the IBKS, having reported an unusual occurrence of summering bowheads in the early to mid-1990s.

The Hunters and Trappers Organization (HTO) in each

community was asked to select a community interviewer (in 1995) or a guide (in 1996), and to provide a list of up to 20 elders and hunters (informants or respondents) who were knowledgeable about bowhead whales and past whaling activities.

In February 1995, ten community interviewers assembled in Iqaluit for a two-day training workshop during which they were familiarized with the questionnaire and methodology for the study. The workshop was facilitated by the Study Coordinator, the IBKS Chairperson, and one other Committee member. After the workshop, community interviewers returned to their home communities and began interviewing the elders



Inuit Bowhead Knowledge Study Workshop, Coral Harbour, February 1996. Photo by Keith Hay

and hunters recommended by the HTO, according to the protocol and guidelines established at the workshop. IBKS Committee Members and the Study Coordinator visited particular communities (excluding Repulse Bay) in early to mid March, 1995, in order to guide and assist interviewers during the first few interviews in each community.



Inuit Bowhead Knowledge Study Workshop, Oikiqtarjuaq, May 1996. Photo by Keith Hay

## 2.2 THE STUDY AREA

The Study Area for the Inuit Bowhead Knowledge Study comprises most of the central and eastern marine waters of Nunavut (Figure 1). All Nunavut communities whose marine-use areas are usually visited seasonally by bowhead whales of the tentative Hudson Bay/ Foxe Basin and/or Baffin Bay/Davis Strait stocks are included in the study. For purposes of data analysis and conclusions, the 18 participating communities were assigned to one of four regions which may reflect bowhead stock or population units: Foxe Basin, Hudson Strait, Hudson Bay, and Baffin Bay (see section 2.4).

## 2.3 INTERVIEW TECHNIQUES AND THE QUESTIONNAIRE

The IBKS Planning Group decided that one-on-one (individual) interviews would be conducted during the first year of the study (1995), although it was recognized that there are alternate approaches to collection of traditional knowledge information, e.g., the small-group interview or workshop, as used by the Hudson Bay Program's Traditional Ecological Knowledge and Management Systems Study (McDonald *et al.* 1997). During 1996, the final set of individual interviews was conducted in communities in the High Arctic (Pond Inlet, Arctic Bay, and Grise Fiord) and in South Kivalliq (Rankin Inlet, Chesterfield Inlet, Whale Cove, and Arviat). A few additional interviews were held in 1996 in Repulse Bay and Coral Harbour, in association with the workshops held in these communities. A total of 257 individual interviews (with 252 different informants) was carried out in 1995 and 1996 in 18 communities (Appendix I). Five of the informants from Repulse Bay who were interviewed in 1996 (in association with the Repulse Bay workshop) had previously been interviewed in 1995 (one in Kugaaruk and the remainder in Repulse Bay).

In 1996, the interview methodology was the same as that used for the individual interviews conducted in 1995, but with two differences: the questionnaire was modified slightly from that used in 1995, with some questions being simplified and clarified, and one experienced, trained interviewer (always accompanied by a local guide) conducted all interviews in 1996, as opposed to having separate interviewers for each community in 1995. This latter change was necessitated by the variability in quality

and degree of detail of the interviews carried out by the ten interviewers employed during 1995, and resulted in a higher degree of consistency in the methodology and comparability among communities for the 1996 set of interviews. The interviewer employed in 1996 had been one of the ten interviewers employed in 1995.

During March and April 1995, 177 interviews were conducted in the ten selected communities (Appendix I). The number of interviews ranged from 15 to 21 per community, except for Coral Harbour where only two interviews were conducted. Including the five test interviews in Iqaluit, the 182 interviews had an average duration of 45 minutes, varying from 15 minutes to 2 hours. In 1996, 75 interviews were conducted in the High Arctic and Kivalliq regions (Appendix I). The interviews in Pond Inlet and Rankin Inlet were video-taped for archival purposes.

The 257 tape-recorded individual interviews (including the five in Iqaluit) were conducted on a one-on-one basis in a semi-directed manner, whereby the informants were asked open-ended questions and were encouraged to speak freely about their experiences and knowledge concerning bowhead whales and whaling. Each informant was asked at

**Figure 1.** (on the next page) Map of the Study Area in the eastern Canadian Arctic, showing how communities which participated in interviews and workshops were grouped into one of four regions for the purpose of data analysis (BB – Baffin Bay, FB – Foxe Basin, HS – Hudson Strait, HB – Hudson Bay). These groupings as shown on the map do not indicate seasonal distribution of bowhead whales, but may reflect population or sub-population groupings of bowheads which occur in the marine waters of their constituent communities. Kugaaruk (Pelly Bay) was grouped with the Baffin Bay communities for bowhead population analyses, while this community was grouped with Hudson Bay for cultural analyses. Kugaaruk may host summering bowhead whales of the Baffin Bay/Davis Strait stock (see Maps 1 to 6, Section 3.1.2. iv) while its cultural affinities are with the community of Repulse Bay in northern Hudson Bay.



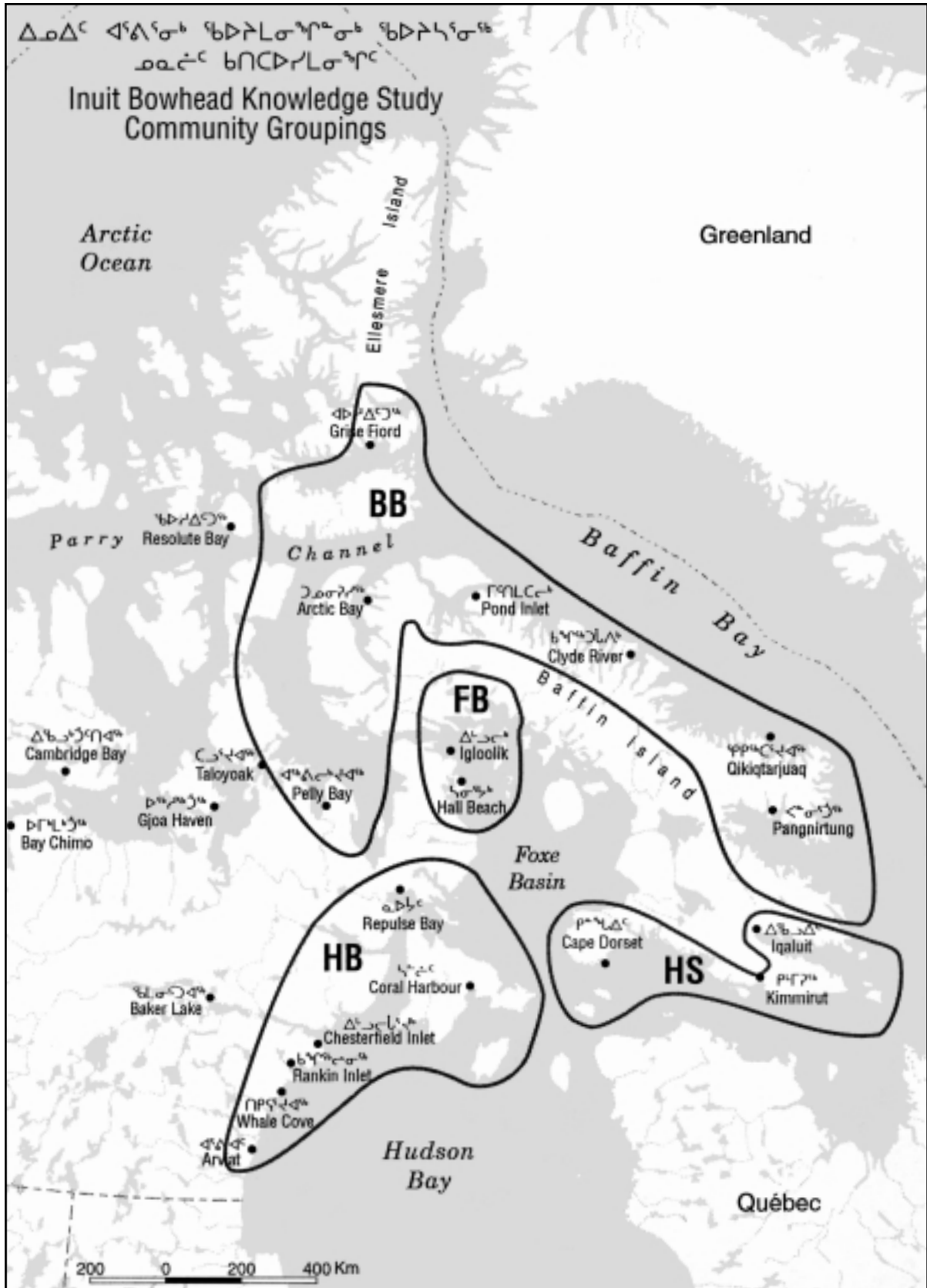


Figure 1



the beginning of the interview whether or not he/she wanted his/her identity to be confidential, and signed a consent form to that effect (Appendix VI). Each informant indicated on regional maps (1:2,000,000) the locations of past whaling activities and the seasonal distribution and migrations of bowhead whales in recent years, according to his/her knowledge, observations and experience.

The main topics investigated by means of the Questionnaire were:

- Inuit whaling before Qallunaat\* whalers arrived
- Commercial (Qallunaat) whaling
- Inuit whaling after the Qallunaat whalers departed
- Location, migration routes, and behaviour of bowheads during:
  - ukiuiq (winter)
  - upirngassaaq (early spring)
  - upirngaaq (spring)
  - aujaq (summer)
  - ukiassaaq (early fall)
  - ukiaq (fall)
- Presence of calves, immatures, and adults
- Changes in numbers, distribution, and group size of bowheads over time
- Annual variations in occurrence, seasonality, numbers, and distribution
- Killer whales and bowheads
- Effect of lunar/tidal cycles on bowheads
- Effects of human-caused disturbance on bowheads
- Cultural and traditional importance of the bowhead to Inuit

The Questionnaire used in the study (during 1996) is presented in Appendix IV. Inuit, especially elders, will place their testimony and information within the time framework of the Inuit seasons, which are defined on the basis of environmental conditions and which vary (in terms of calendar months) from community to community, year to year, etc. The six Inuit seasons used in this Study are defined and related to calendar months in Appendix III (Stewart *et al.* 1995). The example given in Appendix III is for the High Arctic communities of Igloodik, Hall Beach, Arctic Bay, and Grise Fiord. The English equivalents (e.g., early spring, fall, etc.) provided beside the Inuktitut names for the seasons have no relevance to the Inuktitut epistemology and are provided for convenience or reference only.

In 1996 and 1997, the IBKS held small group workshops in eight communities (Appendix II), one year after individual interviews had

been done, in order to assess and verify the information and map data that had been collected. The number of workshop participants varied from three to eight, and was usually six or seven. These two-day long, tape-recorded workshops were facilitated by one or two IBKS Committee members and the Study Coordinator. The HTO-selected participants (most of whom had been interviewed in their community about one year prior to the workshop) had an opportunity to discuss and verify the maps showing distribution and migrations of whales, which were a product of the individual interviews conducted in these communities one year earlier. The workshops also allowed participants to contribute their knowledge and experiences regarding bowhead whales and whaling, following an agenda which was the Study's 1996 questionnaire in a revised form (see Appendix V). Appendix II provides details for the workshops, such as community, dates, names of participants and the interpreter. The workshop held in Igloodik included participants from both Igloodik and Hall Beach. The IBKS workshop methodology was similar to that employed by Huntington (1998) in his study of TEK of beluga whales in Alaska. The workshops held in Igloodik and Pangnirtung were video-taped for archival purposes (Appendix II).

## 2.4 METHODS OF DATA ANALYSIS

In 1995, five taped interviews, selected at random from each community, were translated and transcribed into English by qualified interpreter-translators. Additional tapes from 1995 were translated in 1996 and 1997. Based on the judgment of the interviewer, the 'best' 50% of the 1996 interviews have been translated and transcribed (Appendix I). All eight workshop proceedings have been translated and transcribed.

The one interview translated and transcribed for Arviat was with Jimmy Muckpah, a former resident of Pond Inlet. His interview and the accompanying mapped data have been included with the Pond Inlet interviews for documentation purposes. Therefore, Appendix I shows that there are no interviews from Arviat contributing to the Study.

Editing of the interview and workshop transcripts was generally very minor, consisting mainly of correcting spelling errors and grammatical errors, and changing punctuation to ensure clarity of meaning. The Study Coordinator's workshop notes were added to the workshop transcripts (in square brackets) where clarification or additions were needed. A concerted effort was made to map Inuit place names during the 1996 individual interviews and at all eight workshops, so that Inuit place names in the transcripts could be associated with English language equivalents (where known, as taken from the 1:2,000,000 map, 'Yukon and Northwest Territories (East Half)', Energy, Mines, and Resources Canada 1989) which are shown in the text with a separating slash after an Inuktitut place name. More specifically, in the referenced quotations used throughout this report, editing additionally took the form of eliminating repetitious and unnecessary words or phrases, and frequently paraphrasing passages (in square brackets) to ensure brevity, clarity of

\* Qallunaat (singular, Qallunaaq) is an Inuktitut word referring to people of European origin.



meaning and contextual accuracy. The use of three periods (...) to indicate deleted text is extensive. Care has been taken to ensure retention of the original meaning of every quotation. Throughout the text, Inuktitut words (except personal names) are italicized.

Using an electronic publishing software, Lotus SmarText Release 3, all translated interview and workshop text transcripts were compiled into four large documents based on geographic regions which may reflect different stocks of bowhead whales: Foxe Basin, Hudson Bay, Hudson Strait, and Baffin Bay (see Figure 1). The text transcripts from 175 individual interviews (68 percent of a total of 257 interviews carried out in 18 communities) and from the eight community workshops comprise this database. Of the 1995 interviews, 137 out of 182 have been translated and transcribed; for 1996, 38 of 75 interviews have been translated and transcribed (Appendix I).

The SmarText program, using prepared outlines, indexes, and a search function, was used to analyse these four regional text documents to produce a compendium of informants' quotations pertaining to two main subject areas: 1) population ecology of bowheads, and 2) the cultural importance of the bowhead to Inuit. This compendium (called 'Source Book of Quotations') was studied and analysed further, such that (on a regional basis) all referenced quotations were sorted and assigned to the appropriate subtopics within the main topics, Population and Culture, giving another intermediate product called 'Comprehensive Results Document'. The Final Report was based upon reading and analysis of the Comprehensive Results Document. The 'Source Book of Quotations', available only in English, is a large and detailed supporting document for this report and is available from the NWMB upon request.

Each topic or subtopic in the **Results and Discussion** section of this report comprises an analytical summary or overview based on a reading of all informants' quotations classified under that topic/subtopic in the 'Comprehensive Results Document', supported and illustrated by excerpts from a small number of these quotations (in italics). Furthermore, each topic/subtopic is footnoted to indicate which quotations from the 'Source Book of Quotations' contain information relevant to that topic/subtopic; all footnotes from the **Results and Discussion** are numbered sequentially and appear at the end of the report in Appendix VII. Entries in the 'Source Book of Quotations' are numbered by geographical area and consecutive numbers, i.e., FB1 to FB112, HS1 to HS157, HB1 to HB303, and BB1 to BB529. In the Source Book, each regional section is subdivided into 'Population' and 'Culture', although the numbering system for quotations from a particular region is sequential. Using the system of footnotes, readers who are interested in pursuing a particular topic in greater depth can consult the relevant quotations in the 'Source Book of Quotations'.

Quotations in this report and in the 'Source Book of Quotations' are referenced by quotation number, name and community code of the

informant, and source of information (/ws = community workshop, otherwise from an individual interview). **Anon. (n)** indicates an informant who wished to be anonymous (these informants were assigned an identification number, n). Community codes are as follows:

AB – Arctic Bay; AV – Arviat; CD – Cape Dorset;  
 CI – Chesterfield Inlet; CR – Clyde River;  
 CH – Coral Harbour; GF – Grise Fiord; HB – Hall Beach;  
 IG – Igloodik; IQ – Iqaluit; KM – Kimmirut; PA – Pangnirtung;  
 PB – Kugaaruk; PI – Pond Inlet; QK – Qikiqtarjuaq;  
 RI – Rankin Inlet; RB – Repulse Bay; WC – Whale Cove.

From the maps prepared during the individual interviews and as verified/corrected during the community workshops, community and total (composite) maps were prepared showing:

1. Location of Inuit whaling activities, whale bones, and whaling camps before commercial whaling.
2. Location of whaling activities, whale bones, and whaling camps during the commercial whaling period.
3. Location of Inuit whaling activities, whale bones, and whaling camps after commercial whaling.
4. Location and migration routes of bowheads during each of the six Inuktitut seasons, during recent years.

The maps presented in this report (Maps 1 to 6, section 3.1.2. iv) are composites of the individual and community maps showing distribution and migration routes of bowheads during the six Inuit seasons (see Appendix III); they combine the information of all informants in the study who had observations pertaining to the particular season. We did not incorporate into this report the Inuit maps dealing with whaling for several reasons: these maps strongly reflect whaling patterns as written and interpreted by the commercial whalers and whaling historians, and thus seem superfluous; in many instances and for some communities we have the impression that information for the three whaling eras (see 1, 2, and 3 above) may have been assigned incorrectly and that there was likely some confusion as to the distinction of the three eras; and finally, Inuit knowledge of bowhead distribution is integral to the initial perceived mandate of the IBKS, and takes precedence over the whaling information. Nonetheless, maps showing distribution of whaling during the three eras collectively reflect those displaying Inuit knowledge of seasonal bowhead distribution at the present time.

We did not attempt to quantify or statistically analyse any results in this report. Our questionnaire used open-ended questions, unlike the highly-structured consumer surveys commonly carried out and which are amenable to statistical analysis. Informant responses to our questions usually took the form of lengthy narratives or stories, from which quotations were extracted and assigned to one or more topics/subtopics in accordance with the process described above. Readers who wish to



obtain an indication of the frequencies of informants' responses, especially with regard to the 13 sub-topics under Section 3.1.1 (Trends in Abundance), may refer to Appendix VII which lists the quotation numbers relevant to each topic or subtopic.

From the text transcripts, we gathered Inuktitut words relating to bowheads and whaling, hunting, the environment, and related categories. A preliminary glossary of more than 300 words has been assembled, but its release or publication must await verification by Inuit elders. Similarly, the collection of Inuit place names (from the 1996 interviews and the eight community workshops) must be verified,

although these place names are used in this report and in the 'Source Book of Quotations'.

There is a vast historical, whaling, archival, and scientific literature dealing with bowhead whales. However, as this report is intended to be a documentary record of Inuit knowledge of bowhead whales in Nunavut, we have not attempted (with one main exception) to relate the findings of the Inuit Bowhead Knowledge Study to this literature.

Transcripts of the interviews or workshops for any community are available upon request from the NWMB, pending written approval from the HTO for that community.





# Results and Discussion

## 3.1 INUIT KNOWLEDGE OF POPULATION ECOLOGY OF BOWHEADS

### 3.1.1 Trends in Abundance

#### *i) Depletion of bowheads by commercial whalers <sup>1</sup>*

Many informants pointed out that commercial whalers had depleted the stocks of bowhead whales in the eastern Canadian Arctic by the early 1900s.

Before the advent of commercial whaling, ancestral Inuit whaling had little impact on the large bowhead populations that existed at that time:

*... before the Whalers ever came to the North – I am sure that there were lots of bowhead whales as our ancestors used to harvest bowhead whales based on the large number of bowhead whales present. ...once the Whalers came they killed off lots of bowhead whales, thus the very evident decrease in population among the bowhead whales... [Mikitok Bruce, CH] HB91*

*...I assume that, before the arrival of the commercial whalers, the bowhead whale was in great abundance. The bowhead whale population was so high before, for there are whalebones littered around the old [Inuit] sod houses, where no one today can spot a bowhead whale in that area. ...the great bowhead whale was drastically reduced in numbers, since the commercial*

*whalers arrived. [and is today still not nearly as numerous as in the time before commercial whaling] [Pauloosie Kooneeliusie, QK] BB232*

The legacy of the European and American commercial whalers has not been lost on Inuit, who wish to emphasize that Inuit were not responsible for over-harvesting:

*... I do not want the Inuit to be blamed for the depletion of the bowhead stock... ... for they did not harvest bowheads in great numbers, they may have caught a few after the Qallunaat whalers had left, but the Qallunaat whalers are responsible for the over-hunting of the bowhead... [Ben Ell, IQ] HS34*

There are eye-witness accounts of the scarcity of bowheads after the end of commercial whaling:

*...there were a lot of bowhead whales in the past. And bowhead whales decreased drastically for awhile after the Qallunaat Whalers were around. ...when I was a child there was hardly any – it may be that whalers may have been the cause of the decrease in numbers. [Emile Immariutok, IG] FB27*



A bunch of dead [beluga] whales after the 'big kill,' Mu-loo-ah-lee Fiord, Cumberland Gulf, Baffin Island, NWT, c.a. 1924-1927. Thomas Henry Tredgold/National Archives of Canada/PA-143671

*...I remembered the times when there were so few bowhead whales, this is after the extensive bowhead whale hunting era – it may be that they [commercial whalers] harvested young bowhead whales. [Jaco Evic, PA] BB127*

*...[the whalers] used to hunt for bowhead whales way down at the floe edge [near Qikiqtan/ Kekerten], also back then [when I took part] there were not too many bowhead whales and they harvested one once in a while – I remember*

one spring when four bowhead whales were harvested. [This would have been around 1917-1920 – he was born in 1901] [Aksayuk Etuangat, PA] BB346

...as well as orally-transmitted accounts:

That white guy [Capt. George Comer or another Qallunaaq harpooner, Qirnayaaq] used to get mad that when my uncle became old enough to shoot the bowhead without a trunk to boost him up, the bowhead whales were no longer around to be seen. [Felix Pisuk, RI] HB266

[My father] used to tell me that the bowhead whales were very few in numbers, as the whalers would hunt them. He had been born at the time of the whalers... my father was not yet able to hunt but he remembered them. My father used to say that the bowhead whales were almost gone... [Ham Kadloo, PI] BB167

This depleted state of bowhead whales led to reduced opportunities for Inuit to harvest them, and ultimately to a Federal Government regulation prohibiting the harvest of this species:

After the Qallunaaq whalers had gone, the Inuit would only kill a bowhead whale once in a long while, because there were not enough bowhead whales around. ...wildlife officers had [later] put a freeze on hunting the bowhead whale. [Martha Kutiutikku, PB] HB163

...[in 1901/03 there were still a few bowheads being taken at Sanirut/Button Point] The Whaling era was coming to a halt by 1910-1911. By 1922-1923 when the Hudson Bay Company began to establish their trading posts, the Inuit were prohibited to hunt bowhead whales. [Kooneloosie Nutarak, Sr., PI/ws] BB180

Inuit are thus cognizant of the fact that their ancestors had hunted bowheads for a long time without significant impact on the population, and that the commercial whalers had depleted the population by the early twentieth century. After the end of commercial whaling, Inuit harvested only small numbers of bowheads (until about the 1970s), mostly in Foxe Basin and northern Hudson Bay. Inuit believe that this low harvest reflects both a scarcity of whales at the end of commercial whaling, as well as a perceived government ban on the taking of bowhead whales. In fact, the ban was not enacted by the Federal Government until 1979.

**ii) Voluntary cessation of Inuit harvesting<sup>2</sup>**

Several informants pointed out that Inuit refrained from hunting bowheads owing to a perceived prohibition on harvesting, in spite of harvesting opportunities. After the end of commercial whaling, Inuit continued to harvest bowheads very sporadically, until the institution of the ban prohibiting whaling in 1979:

...after the Qallunaaq whalers had left, the Inuit had the [Qallunaaq] bowhead hunting equipment... So the Inuit were able to hunt for the bowhead whale

whenever they wanted to catch one; although they did not catch them in large numbers, they hunted for it when they wanted to get some food supply after the Qallunaaq whalers had left. ...after the bowhead hunting was banned, they stopped hunting for the bowhead, although they always killed a bowhead before that... that is how it was in Coral Harbour with my ancestors. [Ben Ell, IQ] HS36

After the ban came into effect, Inuit were still capable of harvesting bowheads; although opportunities to do so were numerous, Inuit exercised restraint as they did not want to break the law (many Inuit believed that the official ban came into effect much earlier than 1979):

...I am sure that they [Inuit] could easily harvest bowhead whales if they really wanted to – but because there was plenty of food around they didn't go after the bowhead whales. [Anon. 29, RB] HB30

...since then [1964-65, when Mikitok attempted to harvest a bowhead] the prohibition on bowhead whales has been in place, thus I never attempted to get another one. [Mikitok Bruce, CH] HB90

...we could have easily harvested another one [after the last harvest in 1975] but due to the restriction imposed we never again made any attempts to harvest another one... [Participant, RB/ws] HB216

I was born when they [bowheads] were an endangered species... because of rough estimations we are not allowed to harvest them. And if in fact the actual facts were used, I would probably have seen bowhead whales being harvested. [Gamailee Nookiguak, QK/ws] BB208

They [had] intended to get more bowhead whales [in addition to the one they got] and I remember that this was in 1945, back then they had access to radios, that's when we learned that bowhead whales were not to be harvested anymore. Consequently they had to stop. Since then there has been no harvesting of bowhead whales. [Jaco Evic, PA] BB393

After the ban came into effect, some hunters even 'acted out' the hunt without harming the whale:

There was even an occasion where hunters were driving a bowhead whale to a cove as [this is] a method used when hunting for bowhead whales. There are number of hunters that have done that. [Atsiaq Alasuaq, CD] HS14

**iii) Long-term population increase: first-hand observations<sup>3</sup>**

Many elders and senior hunters testified, that when they were children or younger adults, they saw bowheads only rarely or in very small numbers, but in recent years or decades they have seen greater numbers of bowheads.



**FOX E BASIN**

In the Northern Foxe Basin area near the communities of Igloodik and Hall Beach and particularly in the mouth of Ikiq/Fury and Hecla Strait, Inuit provided strong evidence for an increase in the number of bowhead whales during recent decades, particularly since about the mid 1960s, when several bowheads were harvested in the area (FB22; Mitchell and Reeves 1982). This evidence comes from elderly informants and senior hunters who, as children or younger adults, reported seeing few bowheads; in recent years and decades, they have seen greater numbers of bowhead whales:

*...as a child I never saw any bowhead whales – for sure there are much more bowhead whales today as compared to the times when I was a child. ...during the time when we were seal hunting [not long ago], I saw lots of bowhead whales in large groups. [Terry Iqiqtuq, HB/ws] FB17*

*After I have grown and matured was the time that bowhead whales were beginning to come back and were seen on occasion. Looking at the present situation as opposed to the past, there are a lot of bowhead whales now. ...Last summer [1994] when I went caribou hunting towards the Tasiujaq/Murray Maxwell Bay area, at that time there were a lot of bowhead whales. Throughout the day I was counting every bowhead whale that we saw, and at the end of the day I had counted well over 100. [Anon. 19, IG] FB23*

*...[after] not seeing a bowhead whale for a long time, they [bowheads] started to arrive again – this was during the time when we lived at Kapuivik/Jens Munk Island. They started to venture into our waters... ...and after that they really became evidently present – there used to be a mother with her calf... [Noah Piugattuk, IG] FB41*

*...in the 1960s I was in Hall Beach and in 1964 I came to Igloodik before there were too many bowheads in and around Igloodik. ...It seemed that from 1964 onward the bowhead whales seemed to be increasing annually in numbers in our waters. ...when you look at the year 1964 and compare it to today there are so many bowhead whales close by. We even on occasion see bowhead whales at the floe edge during the month of May and June between Baffin Island and Igloodik. ...before that time you wouldn't dream of ever seeing a bowhead whale at the floe edge. [Simon Iyyiriaq, IG] FB46*

Semi Maliki of Repulse Bay (HB71, 259) is originally from the Igloodik area. He stated that while in Igloodik, he saw no bowhead whales (see also HB66, 70).

The increase in numbers of bowhead whales in northern Foxe Basin around the mid 1960s corresponds with increased harvesting of bowheads at Igloodik, Hall Beach and Kapuivik/Jens Munk Island (Mitchell and Reeves 1982). Since that time, informants report a generally steady increase in the number of bowheads frequenting Foxe Basin in spring, summer, and early fall (FB4, FB22).

**HUDSON STRAIT**

In the Sullualuk/Hudson Strait area, informants from Iqaluit and Cape Dorset reported that sightings of bowheads have increased in their community's land-use regions as compared with earlier times (HS38). However, some informants seem somewhat uncertain that the increase in sightings reflects a real population increase (HS5 – increased hunter mobility may be a factor; HS20 – redistribution of bowheads may be a factor).

*In summer time we are seeing more of them [nowadays] as compared to the time I was a child – they simply don't come this close to the community as they are traveling mostly through Hudson Bay. ...we only see bowhead whales that come around these parts as they are traveling to Igloodik. [Atsiaq Alasuaq, CD] HS15*

*...when I first moved to Iqaluit [about 1960] there were hardly any bowhead whales around, but today they are increasing in numbers, because we see more bowhead whales more frequently. [Josie Papatsie, IQ] HS41*

This testimony and that covered in later sections (see below) seem to indicate that the increase in sightings in the Sullualuk/Hudson Strait area is not as marked as the increase noted for other areas of Nunavut.

**HUDSON BAY**

Only Repulse Bay and Chesterfield Inlet residents commented on the changes in the number of bowheads they have sighted in recent years or decades as compared to when they were children or younger adults. Bowhead numbers began to increase in the Repulse Bay area around the time the community was established (about 1965: HB29, 46, 71, 259). Prior to that time, when people lived in camps outside Repulse Bay, informants remarked that outpost residents took especial note of bowhead sightings, expressing surprise or a feeling of awe (HB41, 48). One informant (HB56) noted that bowheads began to be seen more frequently in the Repulse Bay area around 1974. Peter Katokra of Repulse Bay (HB65) indicated that the increase occurred sometime after 1965 (see also HB33, 64).

*We used to travel by boat when I was a child but I have not seen one [bowhead]. But recently, when I became an adult and got older, I have seen some bowhead whales in our community. We see a bowhead whale every summer around our community. [Joe Issaluk, CI] HB22*

*...I am pretty sure that bowhead whales' population is increasing based on what I have seen in the past and what I am seeing today. As a child and as I grew older I have seen bowhead whales – before there were houses we lived in a traditional camp away from the existing community of Repulse Bay – there used to be lots of bowhead whales and I used to see lots of them back then. And from that time on we seem to be seeing much more bowhead whales as opposed to the time of my childhood. [Abraham Tagornak, RB] HB29*



**BAFFIN BAY****Arctic Bay**

Many Arctic Bay elders related that bowheads were rarely seen during their childhood and early adulthood, but that bowhead sightings have been increasingly frequent in recent decades. Some informants place the time when the increase became noticeable as about the date the community of Arctic Bay was established, or about 1965 (BB1, 4, 18, 26, 27). Other dates for noticing an increase are given: 1973-74 (near Yeoman Is.) with an accelerating rate of increase in the 1990s (BB11); or the 1970s (BB22). Philip Oingoon (BB27) testified that bowheads have been especially numerous in more recent years (i.e., early 1990s). Andrew Oyukuluk (BB1) mentioned that killer whales were present before bowheads started to become more numerous in the 1960s. A bowhead sighting during the time of their scarcity (pre-1960s) tended to elicit much excitement and curiosity among Inuit, but nowadays bowheads hardly arouse much notice (BB20). Olayuk Naqitarvik (BB26) believed that the increased abundance of bowheads near Arctic Bay may be due to changes in their distribution.



Bowhead hunt crew, Repulse Bay, August 1996. Photo by Ben Kovic

...back in the 1960s and 1970s there were hardly any bowhead whales, even though we used to see the odd bowhead whale, and there were times that we didn't even see a single bowhead whale for the entire summer. But today we see them every summer... [Mucktar Akumalik, AB/ws] BB22

I recall hardly ever seeing any bowhead whales when I was a child. And I started to hunt not too long ago [about early 1960s], and that was the time that I began to see bowhead whales. Again there were no bowhead whales before that, but now the bowhead whales are increasing in numbers. [Koonoo Oyukuluk, AB/ws] BB18

...They [bowheads] seem more numerous [nowadays], perhaps it is because they are traveling more. Since childhood, I have seen bowhead whales. ...I would go on the boat while people were hunting for belugas and we would see bowhead whales once in a while [when I was a child, in the 1950s]. We also lived over here as I was growing up and becoming a young man [in the early 1960s], every year the bowhead whales were here. ...[this was] in the summer time. As soon as the ice went, the bowhead whales would appear. On the floe

edge, bowhead whales would be very common. [Olayuk Naqitarvik, AB] BB26

The testimony from Arctic Bay elders and senior hunters, those who were direct witness to bowhead abundance over much of their lives, is fairly consistent, indicating a substantial increase in numbers of bowheads in the Tununirusiup Kangiq&ua\*/Admiralty Inlet area dating from the early 1960s.

**Clyde River**

Elders from Clyde River pointed out that bowheads were rarely seen at their outpost camps (e.g., Igaliquuuq/Isabella Bay) prior to re-settlement at Clyde River in the early 1960s, when sightings of bowheads started to become more frequent throughout the Clyde River resource-use area (BB41,68). However, Ashevak Palituq (BB41) referred to a time (the early 1950s) 'that there were so many bowhead whales'

... when I was just a young lad, there were hardly any bowheads around, even when I traveled to the deeper waters, no bowheads could be seen at that time, but nowadays when you go down there [Igaliquuuq/Isabella Bay] during the fall time you can't miss

the bowheads now, for the population had increased since then. [James Jaypoody, CR] BB59

I recall when I first moved here [Clyde River] we seldom saw bowhead whales; even at Talirujalik (Taliruujaq/Aulitiving Is. in Igaliquuuq/Isabella Bay) we didn't have or very seldom saw bowhead whales when I was full grown... ...there are much more bowhead whales now than there used to be. Same thing in our community, as well as in Igaliquuuq and other surrounding locations, people are seeing much more now than they used to. [Nauja Tassugat, CR/ws] BB68

When we were doing a study on bowhead whales [at Igaliquuuq/Isabella Bay]... ...we used to observe lots of bowhead whales... I remember there used to be a smell unlike any smell that I am used to smelling, perhaps this was due to the large number of bowhead whales and [the] seagulls [that] used to follow them. This was the first time that I experienced something like that. I remember

\* The ampersand symbol (&) represents a unique sound in Inuktitut, roughly approximated by *kl*.



as a child [at Igaliqtuuq] I used to see lots of bowhead whales but not like the ones that I saw [more recently] – it was almost like looking at narwhals in a group. [Solomonie Natanine, CR/ws] BB87

Elders and senior hunters from Clyde River, who have first-hand observational experience with bowheads over most of their lives, report that bowhead numbers began to increase at the time Clyde River was established, i.e. about the early 1960s.

### Pangnirtung

In recent decades, elders and hunters have noticed more bowheads at the floe edge (in May/June) south of Pangnirtung (BB121, 123, 135).

When I first started going to the floe edge in 1967-68, when I was able to hunt on my own – back then you could see two or three in a group or sometimes one... And in the years 1992 and 1993 it was noticeable that indeed the bowhead whales were increasing in numbers in our community. The gradual increase was noticeable in 1982 and 1983 but looking at the year 1994 there seemed to be more than ever. Being a hunter that I am and I am always hunting at the floe edge, I can tell that there are more whales than ever before. [Adamee Veevee, PA/ws] BB99

...I remember the times when there were so few bowhead whales, this is after the extensive bowhead whale hunting era... it seemed to me that the population of the bowhead whale has been continually increasing and you could see a lot more of them [nowadays] at the floe edge. [Jaco Evic, PA] BB127

In their childhood or young adulthood, informants saw whales only infrequently but in recent decades they have sighted more and more whales in Tinnujivik/Cumberland Sound (BB100, 106, 118, 121, 135, 141, 395).

When we were [living] in the outpost camps, we had been more aware of the movement and the numbers of the bowhead whales. Today, we do not study the bowhead whales. We are not around them as much as we would have been in the past. At that time [in the outpost camps], there did not seem to be as many whales [as nowadays]. [Anon. 23, PA] BB113

We lived in Sauniqjuak [near Imigen Islands], a camp just across Tinnujivik/Cumberland Sound, we never saw too many bowhead whales during those early years – however, in the last number of years and later on in our camp life we started to see more bowhead whales... [Towkie Maniapik, PA/ws] BB435

Apak Qaqqasiq (BB123), who as a young man saw bowheads only occasionally, now reports that large numbers frequent the Pangnirtung area, as well as Igaliqtuuq/Isabella Bay where he had participated in biological studies of the bowhead whale. Elders and hunters with lifetime experience of bowheads indicate that there are many more bowheads nowadays than in the past. Large numbers of whales are especially

evident at the floe edge in May and June before they disperse in the summer. The testimony suggests that bowheads were still scarce in Tinnujivik/Cumberland Sound before the expansion of Pangnirtung in the mid 1960s (BB113) and during the 1960s (BB141), with the increase becoming detectable by the 1980s (BB99).

### Pond Inlet

As children or younger adults, Pond Inlet informants saw bowheads infrequently, but in recent years or decades they have seen bowheads in larger numbers (BB162, 173, 174, 195).

Personally I begin to notice the increase [in bowhead numbers] when Siarnaag came very close to a fatal accident [with a bowhead] and I think it began to change by 1969-1972. [Elijah Panipakoocho, PI/ws] BB165

When we moved over here [to Pond Inlet, about 1970], there did not seem to be many [bowheads] around here. Today, you see more of them. ... We see them all the time. I have not seen them in [big] groups. When I see a whale, it is usually alone. ... It seems to me that I saw more bowhead whales last summer [1995] than at any other time. [Ishmail Katsak, PI] BB169

I only began to notice it [the population increase] not too long ago. ... it was the time that I was seeing a bowhead whale every day. ... I do believe it could have been in 1992. [saw a great increase near Saviit, Milne Inlet] ... I could say for sure that the population has been growing from the time we have been children to date. Reason being that sightings of bowhead whales are increasing every single year... [Joanasie Arreak, PI/ws] BB175

I was brought up on the land as a child. ... They [bowheads] were completely gone [at the end of commercial whaling], but now we see more of them. When we saw them as they were coming around again it was a wonderful sight to see. [Simon Akpaliapik, PI] BB197

Jimmy Muckpah (BB170) related that he noticed an increase in bowhead numbers in the Pond Inlet area, before he moved from Pond Inlet to Arviat in 1970. Before bowheads became more common in recent decades, the rarity of a sighting created much excitement among the people; nowadays, bowhead sightings do not create as much of a stir (BB173, 175, 191, 195).

At the Pond Inlet floe edge, sightings have also increased, especially from about 1942 (BB183). Sam Arnakallak (BB191) dates the increase from 1976, when he saw a bowhead for the first time. He added (BB192) that the few bowheads seen about that time always seemed to be swimming away from killer whales.

The time when the increase in sightings of bowheads near Pond Inlet became detectable varied widely (1942 to 1992) among informants. However, an increase in bowhead numbers starting to be noticeable in





the late 1960s to mid 1970s seems highly probable from the testimony given.

### *Qikiqtarjuaq*

Similar to other communities in northern and eastern Baffin Island, residents of Qikiqtarjuaq also reported increased numbers of bowhead whales in recent times as compared to when they were children or younger adults (BB204, 224). Jaycopie Audlakiak (BB219) reported a similar increase, but added that bowheads were more much more abundant in 1994 than in 1993.

Jacobie Koksiak (BB213) has noted a recent increase in bowhead numbers in the Qikiqtarjuaq area, but asks the question, “are they once again increasing in population, or did they wait until their food had become abundant again?” He has also noted a correlation between bowhead occurrence and presence of killer whales:

*...when I was a child in Palligvik/Padloping Island, I don't remember seeing that many bowhead whales – and there were more killer whales (aarluit) back then; but later on in time as the aarluit begin to diminish in number, that's when I began to notice more bowhead whales as opposed to the past. [Jacobie Koksiak, QK/ws] BB215*

#### *iv) Long-term population increase: first- and second-hand observations in combination <sup>4</sup>*

Many elders and senior hunters testified, that when they were children or younger adults, they saw bowheads only rarely or in very small numbers, but they have heard from other hunters that bowheads have become more numerous in recent decades. This section is similar to the previous section in that elders and senior hunters provided observations indicating the scarcity of bowheads during their childhood and/or early adulthood. However, these informants have not been able to travel out to the camps much in their later years, and have relied in large part on information from active hunters concerning the more recent abundance of bowheads.

### *HUDSON STRAIT*

Informants from Cape Dorset (HS11, 13), Iqaluit (HS48), and Kimmirut (HS64) provided similar testimony:

*When I was young and when I was a child they [bowheads] were nowhere to be spotted, and we never used to hear about people spotting them, but nowadays we hear more about the sightings anywhere, and I have also seen a bowhead whale not too long ago. [Lucassie Nutaraaluk, IQ] HS48*

### *HUDSON BAY*

#### *Coral Harbour*

Coral Harbour informants reported that they rarely saw bowheads at the floe edge in the past, but that bowheads are now abundant at the floe edge during May and June:

*I have lived in Sallit/Coral Harbour all my life and I have never ever seen one in this area [the floe edge] in the spring time and I have never ever heard of one being sighted – but now recently hunters are sighting them in the spring while there is still solid ice. [Mikitok Bruce, CH/ws] HB3*

Mikitok Bruce (HB4) further reported that floe edge sightings of bowheads have become especially common since about the late 1980s.

*... I have seen some bowhead whales [when I was a child]... ...in our outpost camps. As I get older they are seen more, it is obvious there are more of them now. ...they are increasing. In this area [Coral Harbour] there was hardly any before. ...especially now, I have seen them on the floe edge [in spring]. Others too have seen them while the ice is still around, they are seen a lot more now. [Tooma Netser, CH] HB18*

#### *Chesterfield Inlet*

Informants (HB23, 28) reported that bowheads were scarce or absent in the area a long time ago (at least until about 1950 – see HB28), but hunters have been seeing more bowheads in recent years:

*I've lived in Chesterfield Inlet for a very long time and for a long time there were no bowhead whales, but recently people continue to see bowhead whales around here. ...You can see a lot more bowhead whales around the Chesterfield Inlet area. For example, last summer some men saw some bowhead whales... People say that they see bowhead whales once in a while. [Leo Mimialik, CI] HB23*

#### *Repulse Bay*

As children or younger adults, informants (HB30, 51, 52, 53) infrequently saw bowheads; they have heard that hunters have seen larger numbers of bowheads in recent years:

*... in the 1970s we seldom saw bowhead whales at the floe edge. Since that year we are beginning to see them on a more regular basis at the floe edge. I have heard of people seeing them at the floe edge and I also have seen some at the floe edge. [Participant, RB/ws] HB53*

*...When I was a child we did not use motorized boats... [even so], we used to travel longer distances back then, and I recall not ever seeing any bowhead whales... ...back then only very few if any were seen during the summer... Now you hear hunters going out seal hunting and without fail it is guaranteed that they will definitely see a bowhead whale. [Octave Sivanertok, RB] HB51*



There is some ambivalence about the reality of an increase in the Hudson Bay bowhead population. Octave Sivanertok, while stating that hunters see more bowheads nowadays than in the past, and that population size has increased over the years, noted that:

...people say they [bowheads] travel more now. ...Earlier when we used to go out to our [outpost] camps we would be out for days, sometimes weeks, and we would not see any [bowheads] at all. Now when we go out for less than a day we see them. Maybe it is because we are traveling with our faster outboard motors that we see more of them now. We see them sometimes, but we do not see them all the time. [Octave Sivanertok, RB] HB52

### **BAFFIN BAY**

Informants from Arctic Bay (BB10, 29), Pangnirtung (BB101,119, 346, 353, 411), and Pond Inlet (BB168,181) provided testimony.

#### **Arctic Bay**

Atagootak Ipellie of Arctic Bay (BB10) saw very few bowheads as a young woman, and related that hunters nowadays frequently see bowheads at the floe edge of Tununirusiup Kangiq&ua/Admiralty Inlet. She believes that increased sightings may partly reflect modern, faster transportation methods, such as snowmobiles and motorboats. She concluded, however, that the bowhead population is increasing. Philip Qamanirq (BB29) recalled, as a child in the late 1930s, that bowheads were frequently seen at the floe edge in spring:

There would be lots of bowhead whales around the cracks, in Qaqulluk/Elwin Inlet, [and] around Umiarjuanguaq... Today I have not gone out to a camp for many years now and I do not know of them [bowheads] too much. The hunters say there are more bowhead whales now than there have been in past times when I would go out and camp with my family. [Philip Qamanirq, AB] BB29

#### **Pangnirtung**

Aksayuk Etuangat (BB101, 346, 353) was born about 1900 and raised at Qikiqtan/Kekerten Island in Tinnujivik/Cumberland Sound. He was involved with the final phase of commercial whaling activities there as a young man (around 1918-1920):

They [the whalers] used to hunt for bowhead whales way down at the floe edge [near Qikiqtan/Kekerten], also back then there were not too many bowhead whales and they harvested one once in a while – I remember one spring when four bowhead whales were harvested. ...It was also very seldom that they [whalers at Kekerten] spotted a bowhead whale down at the floe edge – back then there were very few bowhead whales. But now from what I hear, there are a lot of bowhead whales now especially in the spring time. [Aksayuk Etuangat, PA] BB346

The scarcity of whales at Qikiqtan/Kekerten by 1915 is echoed by Pauloosie Angmarlik:

...[Before I was able to shoot a rifle on my own] he [my father] had taken me [about 1915-17, at age 4 to 6] on one of the [whale] hunts [at Qikiqtan/Kekerten]... Unfortunately we did not spot a bowhead whale... ...when the bowhead whale hunt was being halted it may have been that there were less bowhead whales. ...[During this hunt] there were four boats involved separated into two groups... But they did not harvest a whale that year. [Pauloosie Angmarlik, PA/ws] BB411

This testimony (see also BB119), combined with that of hunters and elders with lifetime experience regarding bowheads (section 3.1.1.iii), along with recent observations of bowheads by hunters (section 3.1.1.vi), provides strong evidence of a post-commercial whaling recovery of bowheads in Cumberland Sound.

#### **Pond Inlet**

...[in the Pond Inlet/Clyde River areas], I have heard that there are more now than when I was a child. [Koooneeloosie Nutarak, Sr., PI] BB181 (see also BB168)

#### **v) Recent, annual population increase: first-hand observations <sup>5</sup>**

Seven informants representing all four regions of the Study Area, in addition to their testimony regarding overall population increase of bowheads, testified that they have observed increases in bowhead numbers on an annual basis:

It is evident that each year there are more than the previous year, so basically they are increasing on an ongoing and annual basis. [Albert Nuvviaq, HB] FB4

...here is the place [outer Frobisher Bay] where the bowhead whales are now being spotted more frequently practically every summer, it seems that the bowhead whales are increasing in numbers every year here. [Josie Papatsie, IQ] HS38

We do move around in the water [Repulse Bay area] when it's open and based on our observations, we could even compare the population from last year, as I could safely say that there are more now than last year. [Participant, RB/ws] HB64

...I could say for sure that the population has been growing from the time we have been children to date. Reason being that sightings of bowhead whales are increasing every single year as we see them more and more each year. [Joanasie Arreak, PI/ws] BB175



*vi) Present-day abundance: first-hand observations*<sup>6</sup>**FOX BASIN**

Hunters from Igloodik have sighted large concentrations of bowheads near their community in recent years or decades, and they believe that the bowhead population has been increasing:

...we know for a fact that they [bowheads] are multiplying in numbers, and I am sure that there is a [unknown] place that they bear their young... it is evident that when you travel by boat you see them more and more, it does not matter where you travel near Igloodik. It is evident that bowhead whales are getting more plentiful in Igloodik. [Simon Iyyiriaq, IG] FB45

**HUDSON STRAIT**

Informants from Cape Dorset (HS1, 8) and Kimmirut (HS62) report sightings of large numbers of bowheads in their respective areas:

I have not noticed the bowhead whale increasing. I have only seen more bowhead whales when we travel by boat around Tikiraq and around Cape Dorset. This would be during spring. [Anon. 10, CD] HS1

I could say that there are much more bowhead whales since the time the whalers stopped hunting bowhead whales. [Nujaliaq Qimirpiq, KM] HS62

Ben Ell and Josie Papatsie (both of Iqaluit) have provided observations of bowheads for Coral Harbour (HS33) and Pangnirtung (HS40), where they lived the earlier parts of their lives, respectively. These observations have been included in the following two sections (Hudson Bay and Baffin Bay, respectively).

**HUDSON BAY**

Ben Ell of Iqaluit (HS33) witnessed an abundance of bowheads (in groups of 10 to 20) in the Coral Harbour area when he resided there in 1955-56. Two informants from Chesterfield Inlet provided their observations of bowhead abundance near their community. Andre Tautu (HB20) reported that many bowheads are sighted annually in the Silumiut/Daly Bay area (north of Chesterfield Inlet); and "...around Nanuujumaaq [Fairway Is., just SE of Chesterfield Inlet] people continue to see some bowhead whales." Joe Issaluk (HB22) reported that people see good numbers of bowheads every summer in the Chesterfield Inlet area nowadays, as compared to his mother's stories of the absence of bowheads at the end of the commercial whaling period.

Seven informants testified that bowheads are numerous in the Repulse Bay area from spring to fall, and that the population has likely or apparently increased:

...People are seeing more than one near our shore here. I have heard that they are seen in a group of three. This is right in front of our shore [at Repulse Bay].

As well, in Ittirjuk/Gore Bay people saw the bowhead whales. This was not that recent. [Anon. 30, RB] HB33

...we see them [bowheads] every year, especially at Maluksitq/Lyon Inlet as we used to live in that area when I was a child. ...for sure we can say that we see a lot of bowhead whales in this [Repulse Bay] region. It may also be that we see more bowhead whales than we used to in the past. ...we do see them [whales] on a continual basis. [David Tuktudjuk, RB] HB39

John Ignirjuk (HB46) has encountered many bowheads at the floe edge off Repulse Bay in spring and adds: "I am in no way trying to undermine Repulse Bay, but I have only seen very few of them in Repulse Bay". John Kaunak (HB48) also noted that whales are concentrated and numerous at the floe edge in June, but that after ice break-up, they disperse and are seen in fewer numbers. Whales then gather inshore in August (see also HB51).

**BAFFIN BAY****Arctic Bay**

Arctic Bay hunters report an abundance of bowhead whales in their community's resource-use area. Koonoo Oyukuluk (BB18) reported a large concentration of bowheads amongst the ice of central Tununirusiup Kangiq&ua/Admiralty Inlet in summer 1996, while Olayuk Naqitarvik (BB26) stated: "...there has always been bowhead whales, every year [during my lifetime]. Sometimes they are more in numbers, sometimes they come in groups of three. ...there are a lot of bowhead whales".

I have made every effort to travel to [the] inlet [Tununirusiup Kangiq&ua/Admiralty Inlet] every summer... when you travel through the inlet you see them [bowheads] constantly... For example, when you travel to Ikpikituajuk, there is no end to seeing bowhead whales. I could optimistically and sincerely say that indeed the population of bowhead whales is forever increasing in the Arctic Bay area. [Mucktar Akumalik, AB/ws] BB24

**Clyde River**

Clyde River informants mentioned the large numbers of bowheads seasonally occurring within the community's marine-use area (BB91), including the large feeding aggregation that occurs at Igaliquuq/Isabella Bay in late summer and fall (BB50, 55, 123). They also reported large numbers of south-bound migrants and/or feeding whales off Clyde River during fall (BB50, 53, 55), and a large number of late summering animals off the Kuugaaluk/Kogalu River to the north of Clyde River (BB55, 57). Considering the large number of whales that they see, some informants believe that the population has grown (BB53). Seeing such large numbers of bowheads has been likened to viewing herds of narwhals or belugas (BB50, 53).



I had seen all these bowhead whales together in Kuugaaluk/Kogalu River ...there were very many whales together and I thought that they would not be gone if they were hunted because there were so many of them. [Jacobie Panipak, CR] BB57

...we used to live in Nuvuttiapik/Cape Raper at Igaliquuq/Isabella Bay and a lot of bowheads would get together ...It is a wonderful sight. Sometimes there are lots of them together. I have never thought of counting them at the time I had seen them all together. [Joannasie Apak, CR] BB65

Apak Qaqqasiq of Pangnirtung referred to his participation in bowhead studies at Igaliquuq /Isabella Bay:

...Following the time I took part in a survey of bowhead whales [at Igaliquuq/Isabella Bay] I could say now that there are lots of bowhead whales. [Apak Qaqqasiq, PA] BB123

### Pangnirtung

Josie Papatsie of Iqaluit (HS40) moved from Pangnirtung to Iqaluit about 1960. He prefaced his observations: "...I used to see bowhead whales there [in the Pangnirtung area] too, although they were not in great numbers they were spotted annually." He used to hunt off the community's floe edge, where he observed many bowhead whales.

Many informants from Pangnirtung emphasized that they frequently sight large numbers of whales in the Pangnirtung area (BB102, 104, 112, 131, 133, 144). The floe edge southwest and south of Pangnirtung has been occupied by increasing numbers of bowheads in recent decades during the months of May and June (often in March and April as well), and the bowheads tend to be concentrated or occur in large groups (BB102, 104, 106, 108, 122). Hunters pursue narwhals and belugas at the floe edge off Qikiqtan/Kekerten Island, where large numbers of bowheads are seen in May and June every year (BB114). After ice break-up, the whales seem to disperse widely in small groups and the overall rate of sightings decreases (BB102, 144). Based on reports of elders that bowheads were sighted infrequently several decades ago, many of these informants concluded that the population of bowhead whales in Tinnujivik/Cumberland Sound has increased (BB102, 106, 108, 112, 122, 131, 133, 362, 392).



Inuit Bowhead Knowledge Study Workshop, Clyde River, May 1996. Photo by Keith Hay

I hear that there weren't that many bowhead whales in and around Pangnirtung [a long time ago]. ...I go seal hunting at the floe edge in the spring around the month of May, and we see a lot of bowhead whales at the floe edge in one place... So basically I could say that there are more bowhead whales around Pangnirtung... [Amosee Angnakak, PA] BB102

During the time of the baby seals, in the month of March, we have seen a lot of bowhead whales. This would be in Qimmirsut [island in the mouth of Chidliak Bay]. ...They

definitely have increased [in numbers since the end of whaling]. Anon. 21 and I had gone hunting on the floe edge and we had to go around them [bowheads] when we were coming back to town. [Anon. 22, PA] BB108

Lypa Pitsiulak, who has resided in Opingivik Outpost Camp in Tinnujivik /Cumberland Sound for about the past 25 years, has also seen many bowhead whales in recent years:

Nowadays we see large numbers of bowhead whales and [according to my father] the Whalers had never encountered this many bowhead whales while whaling at Ummanaguaq /Blacklead Island. Today I have observed a lot of bowhead whales in groups going into the Fjord in the summer and early spring. I have even seen a good number of surfaced bowhead whales in one group and you see them everywhere and my father tells me that there weren't this many bowhead whales [after commercial whaling]. [Lypa Pitsiulak, PA] BB131

The fathers of Anon. 23 (BB362) and Jaco Evic (BB392) were whalers at Qikiqtan/Kekerten Island. They related to their sons that bowheads were very scarce during the last stage of whaling at the island (see also BB131).

### Pond Inlet

One informant reported an annual occurrence of bowheads at the floe edges off Pond Inlet, Navy Board Inlet, and Tallurutit/Lancaster Sound (BB163). Other informants (BB 164, 174, 177) have reported that bowhead whales occur in large numbers in the Pond Inlet area during summer.

...[at Nallua/Low Point, during late spring to summer 1996] my wife began to count the number of bowheads we saw... ...there were groups of 4, 3 and in some cases only one was seen at one time. ... the last count in all was



approximately 74 bowhead whales. They were something to look at... They were moving southward – though we did see a few of them moving northward. ...Chances are that there were much more than what my wife counted as she did not include those that were traveling across the way [further offshore]. [Elijah Panipakoocho, PI/ws] BB164

Ham Kadloo's father, as a child during the last stage of whaling in the Pond Inlet area, observed that whales had become very scarce at that time: "...My father used to say that the bowhead whales were almost gone, and then they starting coming back." [Ham Kadloo, PI] BB167

### *Qikiqtarjuaq*

Many informants from Qikiqtarjuaq reported that they see large numbers of bowheads in summer and fall within the community's resource-use area (BB206, 212, 217, 226, 228, 231, 234, 235). Large numbers are sighted at Qivittuq/Kivitoo every year (BB198, 202, 209, 210, 211, 212, 219, 234), and at Palligvik/Padloping Island (BB211, 217). As a child many years ago, "at the time the loud outboard motors were in use", Jaycopie Audlakiak (BB217, 219) observed, in the vicinity of Palligvik/Padloping Island, "so many bowheads you could hardly see the water. So I thought maybe these bowhead whales were seen again last year [1994 – when there were lots of killer whales (and bowheads) in this area]". He also saw (BB219) many whales near Qivittuq/Kivitoo when he was a child.

...some years ago, we passed by Qivittuq/Kivitoo, [there was] the air stench of bowhead whales, and there were lots of young calves at that time – so that was one time that I saw so many bowhead whales. [Adamie Nookiguak, QK/ws] BB198

When we did the [aerial] survey there were over 70 bowhead whales in one spot at Itillialuk... [It is] about the fall time around October that the bowhead whale starts to come from the north, that is the time they pass through [our area]. [Elaiya Qaqualluk, QK] BB206

...the ones that I observed towards Palligvik/Padloping Island, there were so many of them in a group... ...there were quite a few groups at one time... [Gamailee Nookiguak, QK/ws] BB211

...this past summer (1995) there were much more bowhead whales than usual [at Qivittuq/Kivitoo]. Over the years when I traveled to that region, I used to observe one or two bowhead whales at a time. [Gamailee Nookiguak, QK/ws] BB212 (see also BB218)

Hunters reported many more bowhead whales in Qikiqtarjuaq's waters in summer/fall of 1994 than in 1993 (BB217, 219). Initially, bowheads occurred in large numbers at the floe edge, and in summer/fall they were numerous in nearshore waters in many localities (e.g., Qikiqtarjuaq, Qivittuq/Kivitoo, Nuluit and others). Killer whales came into Qikiqtarjuaq's waters also in the summer of 1994 (see section 3.1.5. i).

Some of the informants believe, on the basis of the large numbers of whales seen in the area in recent years, that the bowhead whale population has been increasing from the low number present at the end of commercial whaling (BB210, 226, 228, 235).

...[at the time peterhead boats began to be used] there were many, many bowhead whales, I do not feel that they are decreasing now, for I have seen many bowhead whales way after the whaling was banned... [Markosie Audlakiak, QK] BB228

### *vii) Abundance/population increase: second-hand information*<sup>7</sup>

Many informants have heard from other community members that bowheads are very numerous nowadays, or that bowhead numbers have increased in recent years/decades.

### *FOX E BASIN*

Informants from Igloodik and Hall Beach have heard from other hunters about the abundance of bowhead whales in northern Foxe Basin nowadays.

What happens is that bowhead whales start congregating around Siorarjuk area [Siorarsuk Peninsula] till the ice is gone on the left side of Igloodik, then they go into [Murray] Maxwell Bay [Tasiujaq]; thus, we hear that there are so many bowhead whales in that area. [Albert Nuvviaq, HB] FB3

...with that in mind [the reluctance nowadays of Inuit to go boating when bowheads are nearby] I suspect that there are much more bowhead whales now. [Rachel Uyarasuk, IG] FB43

### *HUDSON STRAIT*

Informants from Cape Dorset (HS18, 21, 24), Iqaluit (HS47, 49), and Kimmirut (HS53) have heard about the large numbers of bowheads that seasonally visit their areas. All who commented on this matter suggested that the bowhead population is increasing.

There are more [bowheads] now than there used to be, hunters are seeing more than usual, but I really don't know as there are not usually that many around Cape Dorset and the immediate surroundings. [Timoone Toonoo, CD] HS24

...I have not seen too many [bowheads] for I rarely travel out now. ...but I have heard that the bowhead population had increased [since I moved to Iqaluit]. [Lucassie Nutaraaluk, IQ] HS47

...the Inuit who are hunters are aware that there are more bowhead whales now. ...they say that the bowhead whales are increasing and people continue to report sightings. ...they [bowheads] usually are together [in groups] too like other animals. [Anon. 20, KM] HS53



**HUDSON BAY**

Informants from Coral Harbour (HB11), Chesterfield Inlet (HB27), Repulse Bay (HB37, 42, 45, 55, 59, 62, 63), and Whale Cove (HB82, 85) stated that hunters have recently sighted many bowheads in their respective community areas. As a result, many have concluded that bowhead numbers have increased since the end of commercial whaling (HB27, 37, 42, 45, 55, 59, 62, 82, 85).

*They have spotted lots of them [at the floe edge off Coral Harbour], maybe about 14 but there were lots. ...I am sure that there are some that have been observed but not reported.* [Participant CH/ws] HB11

*You can spot bowhead whales annually now [in the Chesterfield Inlet area, up to Qatittalik/Cape Fullerton]... Although they are not in great numbers, the frequency of spotting the bowhead whale is very regular in this area now. [this area is likely a migration area rather than for summering; perhaps the regular occurrence reflects population increase?] ...during the spring when there is a floe edge in front of our community, you can spot bowhead whales there.* [Murice Kukkiak, CI] HB27

*We are now seeing more bowhead whales than we used to, as people when they are out hunting or camping, we always carry CB radios. Hunters in different locations are seeing much more than before. When we are hunting we are not looking for bowhead whales.* [Participant, RB/ws] HB62

*Some men now say they see more bowhead whales... People have not seen them for a long time but they say they see more today.* [Guy Enuapik, WC] HB82

Although residing in Whale Cove, Jackie Napayok's (HB85) sightings of bowhead whales were mainly made off the southeast coast of Sallit/Southampton Island. He concluded: "I think the bowhead whales have increased from the earlier days. ...I have not seen too many bowhead whales around here [Whale Cove]"

**BAFFIN BAY**

Informants from Arctic Bay (BB7, 29), Clyde River (BB43, 59, 67, 68), Pangnirtung (BB140), Pond Inlet (BB180, 181, 196), and Qikiqtarjuaq (BB209) have heard about the large numbers of bowheads encountered by local hunters in recent years. Many relate these observations to population increase (BB7, 29, 67, 68, 140, 180, 196).

*...the men around here say the bowhead whales have been increasing. ...When I came back to live over here [Arctic Bay] and did not go out to hunt myself, I have always heard from the people who hunted narwhal that the bowhead whales were always around, I have not gone down there personally. ...Right now people say that there are more bowhead whales around, they come around here and stay here.* [Philip Qamanirq, AB] BB29

*...[our son] had reported that he had seen a lot of bowhead whales when he is traveling by boat. They relay information to us through short-wave radios that there are a lot of bowhead whales...* [Elisapee Arreak, CR/ws] BB43

*I have heard that there usually are many bowheads there [Igaliqtuq/Isabella Bay] at one time [in August and September], so that is where they usually go... ...I have heard that there used to be many bowheads there [Arviqtujuq/Eglinton Fiord]... [James Jaypoody, CR] BB59*

*...looking at the present day you see more bowhead whales in large numbers. ...I haven't been in that area [Milurialik - at head of Isuittuq/Clearwater Fiord] for a long time but, from what I hear they [bowheads] are still frequenting that area. I think we could all say that compared to the time after the whalers left, the population of the bowhead whales has multiplied in great numbers.* [Pauloosie Angmarlik, PA] BB140

*The Whaling era was coming to a halt by 1910-1911. Personally I began to hear about more sightings of bowhead whales during the 1950s. ...It was also presumed that the growth became noticeable from 1950s onward. This is also based on what our elders were saying back then. [refers to Kidlaapik of Clyde River, who noticed that the bowheads started to increase in the 1950s]* [Kooneloosie Nutarak, Sr., PI/ws] BB180

*I've heard from people who took part in shrimp fishing in the waters of Greenland, that there are plenty of wildlife, such species as: bowhead whales, narwhals, beluga and other larger species, I hear there is lots of them in the open waters.* [Gamailee Nookiguak, QK/ws] BB209

**viii) Assumption of population increase due to cessation of whaling<sup>8</sup>**

Many informants from all regions associated the large numbers of bowheads seen in recent times with the effective cessation of whaling at the end of the commercial whaling era. Although many informants appeared to be assuming that bowhead numbers must have increased because of the absence of whaling, many of these same informants provided substantial evidence of bowhead abundance and/or increase in population size (see previous sections).

*...there are a lot of bowhead whales now compared to the past. It may be that no one was harvesting them for a long spell. As there are a lot of bowhead whales now in this part of the North. It seemed that they are establishing themselves in our seas. As they are not being harvested they are frequenting our seas in large numbers.* [Rebecca Arnardjuaq, HB] FB14

*The changes that I have noticed is that there seemed to be more bowheads since no one had harvested bowhead whales for such a long time. I don't think there has been any harvesting since the Whalers left. Today I've never heard of bowhead whales being harvested, consequently I feel that because there was no harvesting of bowhead whales for so long, that the population of bowhead whales must be increasing.* [Egaluk Nungutsuitok, CD] HS18



...now we hear and see that the population of bowhead whales is increasing, this may have a lot to do with Inuit not harvesting bowhead whales for a prolonged period of time. [Louis Oksokitok, RB] HB49

I could say that there are more bowhead whales than usual [in Qivittuq/Kivitoo], and we all know that sea mammals when they are not being harvested tend to increase in numbers. It has been many years since the harvesting of bowhead whales was banned, even before I was born. ...I am convinced [for this reason] that their populations have gone up drastically. [Gamailee Nookiguak, QK/ws] BB212

**ix) Abundance/population increase:  
unsubstantiated statements<sup>9</sup>**

A fair number of informants from all four regions of the Study Area believe that bowhead numbers have increased in recent times, but did not provide substantiating evidence in the immediate context of their remarks. However, many of the same informants, in other parts of their testimony, have provided more substantial evidence for population growth of bowheads (see previous sections).

Presently the population [of bowheads] has increased very drastically and there are a lot of people who have never tasted maktak... [Noah Piugattuk, IG] FB40

...there are a lot of bowhead whales today, it would be better to tell us that we are allowed to harvest a bowhead whale, instead of asking too many questions. [Ben Ell, IQ] HS31

I have noticed that there are more bowhead whales now. ...As well, in Arviat, there are some bowhead whales. They see some once in a while. ...It seems like they are increasing. [Rhoda Karetak, RI] HB78

...I don't know what year it might have been [when bowheads started to increase]. But I remember seeing lots of bowhead whales in this area in 1952. We were living in Mituksujuk. [Elisapee Arreak, CR/ws] BB44

It is very obvious that there are so many bowhead whales now. Also there are times that I have difficulty believing what researchers are saying, also that mostly they could make predictions based on their studies – but they could never be precise all the time. Perhaps it should be noted that what we are hearing here [of an increase in bowhead numbers] is exactly what we know it to be. [Solomonie Natanine, CR/ws] BB88

**x) Decrease of population<sup>10</sup>**

A few informants from the Hudson Bay and Baffin Bay regions provided evidence of a local or short-term decrease in bowhead numbers. Mark Nakoolak of Coral Harbour (HB1, 2) lived at Nuvualuk/Terror Point on the Bell Peninsula of Southampton Island in the 1960s. He recalls seeing small numbers of feeding bowheads mainly in June and July at Nuvualuk;

the whales were migrating southward towards Aningannaq/Leyson Point where he has also observed bowheads. However,

Based on my observation I seem to detect that they are less in numbers [now] at least at Nuvualuk/Terror Point – I seem to recall seeing much more than I do now. [Mark Nakoolak, CH] HB2

Koonoo Oyukuluk of Arctic Bay (BB18) noted a specific inter-annual reduction in bowhead numbers: "I also noticed that there were fewer bowhead whales this year [1996] as opposed to last year [1995]." A Pangnirtung informant (Anon. 26, BB377) stated that bowheads were numerous in 1946 (when a whale was harvested, see Mitchell and Reeves 1982); but after 1946, killer whales began to appear in Tinnujivik/Cumberland Sound and the bowhead population declined. Josephhee Keenainak of Pangnirtung (BB129) also correlated a recent decline and/or dispersal of bowheads and other marine mammals in Cumberland Sound with the presence of killer whales [he seemed to be referring to the Isuittuq/Clearwater Fiord area]. He added:

My parents knew of the time of the Inuit [with the whalers] hunting the bowhead whales. During this time, there were lots of bowhead whales. After some time, the number of bowhead whales had declined. During the time of my parents, they were more plentiful. [Josephhee Keenainak, PA] BB400

**xi) Stability of bowhead numbers<sup>11</sup>**

A small number of informants (Hudson Strait – 2, Hudson Bay – 2, Baffin Bay – 4) suggested that bowhead numbers have been stable over recent decades.

At least around this area – you do see bowhead whales on an on-going basis and it has been like that quite steadily. [Anon. 3, CD] HS2

Around here in the Kivalliq/Keewatin region, I do not think they [bowheads] have greatly increased in numbers, because it is not very frequent that people see one, down near Uqsuriaq/Marble Island. ...[my uncle Ugjuk] used to say that if whaling ever came back to go there [Maluksitaaq/Lyon Inlet] and hunt for one, for they said if and when the bowhead whales start to increase, you will be able to see more than one in a day over there. [Felix Pisuk, RI] HB76

...I have not noticed any change in the bowhead whales [in their numbers] but as a child I used to see many bowhead whales. ...At one time I had seen many, many bowhead whales. I have never seen them that many before... [Jacobie Panipak, CR] BB57

...It is never really like there are a lot, or there are very few, there are always the same number [from year to year]. We see them around all the time, every year we see them over here. ...although they are not in many numbers, we see them every summer, every year. [Simon Qamanirq, AB] BB30



**xii) Population changes: no information**<sup>12</sup>

Although they may see bowheads frequently, many informants from all four regions could not comment on changes in abundance of bowhead whales:

*I'm not sure if they have increased because people as they go out in their boats have been afraid of the amount of bowhead whales that they see. ...I'm not sure if they are increasing or if they are coming over to this area more.* [Anon. 16, HB] FB8

*I don't know if there is any changes among the bowhead whales, but I have seen a lot of bowhead whales and I could indicate on the map, but as to the changes of bowhead whales I cannot say.* [Lucassie Ikkidluak, KM] HS60

*...now the bowhead whale population seems to be increasing... ...you can even spot them now around our caribou hunting area around the other side, I do not know if there have been any drastic changes...* [James Jaypoody, CR] BB61

Some hunters (HB50; BB49, 64, 106, 234) deemed themselves unable to comment on population changes because they did not know what population numbers were in the past:

*I do see bowhead whales every summer. I honestly can't see the change in bowhead whale population as I don't know what the population was in the past.* [Luke Angotialuk, RB] HB50

Because bowheads are not hunted and hunters tend to focus their efforts on other species, some informants (FB9, HS10, BB198) are not cognizant of population changes (see also section 3.2.4. i):

*We do not hunt them so we do not know [if the population has changed].* [Ben Arnaryoark, HB] FB9

*The bowhead whale is not hunted so we do not seem to notice it as much. I can not say there are more bowhead whales or less bowhead whales.* [Anon. 8, CD] HS10

Because some community areas (Cape Dorset – HS24, Kimmirut – HS52, 57, 61) are not host to many bowhead whales, some informants have no knowledge of population changes:

*...I really don't know [about population changes] as there are not usually that many around Cape Dorset and the immediate surroundings.* [Timoon Toonoo, CD] HS24

Non-hunters (HS51, 63; BB119, 184) may not have this kind of knowledge either:

*I do not even pay attention to it [changes in bowhead population] for I am not a hunter myself. By hearsay from the renewable resources is that they are increasing in numbers...* [Naki Ekho, IQ] HS51

The community of Grise Fiord was established in the 1950s. Although bowheads are often sighted near the community, hunters (BB93, 95) were not aware of bowhead population changes.

**xiii) Abundance near other communities: second-hand information**<sup>13</sup>

Several informants have heard through the local community radio station, portable CB radio, and/or other sources, that bowhead numbers have increased or that bowheads are now quite numerous, in other areas of Nunavut.

The abundance of bowheads near Igloolik in summer and fall is well known to many informants. Philip Kripanik (HB66, 70) and Semi Maliki (HB71), both of Repulse Bay, lived in the Igloolik area a long time ago, and they rarely saw bowheads there:

*...Perhaps because they [bowheads] increased that is the reason why a lot of people see them now. Myself, I think the reason why they are over there [Igloolik] is because they are running away from the killer whales. I think the killer whales are many, and the bowhead whales are very afraid of them.* [Philip Kripanik, RB] HB70

Two Arctic Bay informants expressed the opinion that the abundance of bowheads in Igloolik in recent years is due to emigration from Arctic Bay. Andrew Oyukuluk (BB3) and Atagootak Ipellie (BB5) believe that the emigration is related to excessive disturbance at the *Tununirusiup Kangiq&ua*/Admiralty Inlet floe edge by hunters shooting narwhals, and that many narwhals have similarly moved to the Igloolik area because of disturbance:

*I think there were no bowhead whales in the Igloolik area [about 1951-57]. I recall that there is a camp called Kapuivik/Jens Munk Is. ...And [the elders] were surprised to see a bowhead whale – which they mistook for a submarine... That shows that there were no bowhead whales in the Igloolik area [in the 1950s]... ...as for the narwhals and bowhead whales, they are now plentiful in that region [having emigrated from the Arctic Bay region]...* [Atagootak Ipellie, AB/ws] BB5

Ham Kadloo of Pond Inlet (BB167) suggested that bowheads have emigrated from Pond Inlet to the Igloolik area in pursuit of better feeding grounds, while Simon Akpaliapik (BB196) suggested a similar emigration but for a different reason:

*... they [bowheads] most likely went towards Igloolik to get away [from Pond Inlet commercial whalers] ...a long time ago. We hear of many bowhead whales and narwhals that are spotted over there [at Igloolik], they have so much more of them than here [Pond Inlet]. We know now that they [bowheads] have increased...* [Simon Akpaliapik, PI] BB196





Clyde River and nearby Igaliquuq/Isabella Bay are well known for hosting large numbers of bowheads:

*Today I hear that Northern/Central part of Baffin Island has a large population of bowhead whales – while there is less in the southern part of Baffin. ...it is obvious that they are not declining, they are increasing in numbers... [Takealook Temela, KM] HS65*

*...the people of Clyde River had no more [bowheads] around there before, but there are a lot more of them now. ...Any of this area here [Clyde River], I have heard that there are more now than when I was a child. [Kooneloosie Nutarak, Sr., PI] BB181*

Many informants referred more generally to the high frequency of sightings of bowheads throughout eastern and central Nunavut, which they attribute to population growth:

*After the mining exploration [nickel mine at Rankin Inlet, 1957-62] started down there, it seems like the bowhead whales have been spotted more around the communities now. ...After the mine was established, it seems like the bowhead whales have increased. ...because people see them around all the time now.... [Simon Inuksaq, PB] BB157*

To summarize, informants referred mainly to Clyde River, Igloodik, and Pangnirtung as places of significant bowhead abundance, with fewer mentioning Qikiqtarjuaq, Repulse Bay, and Coral Harbour. They generally attribute this abundance to growth of the bowhead population. The abundance of whales near Igloodik has also been attributed to killer whales (one informant), and emigration from Pond Inlet or Arctic Bay (four informants).

### 3.1.2 Distribution and Migration

#### i) General observations<sup>14</sup>

This section summarizes informants' observations and comments on the seasonal distribution and migration patterns and behaviour of bowhead whales in the Study Area. These observations are complementary to the maps of seasonal distribution and migrations (section 3.1.2.iv), which are composites of the mapped data contributed by all informants in the Study.

#### HUDSON STRAIT

The informants' observations and remarks give the impression that bowheads are not very numerous in the Sullualuk/Hudson Strait region (HS17, 19, 33, 54, 64, 65).

*...we do see bowhead whales on occasion. [Eqaluk Nungutsitok, CD] HS17*

*...every summer, I have seen some bowheads [in Frobisher Bay area] but they were not in large numbers, perhaps I have seen three bowheads in one summer sometimes... [Ben Ell, IQ] HS33*

*I have not seen the bowhead whale in many numbers around here...[Anon. 20, KM] HS54*

On the other hand, one informant suggested that bowheads use the south coast of Baffin Island mostly for migration. This, and a possible offshore distribution of migrants, could explain the irregularity and/or scarcity of sightings:

*For sure the area near Kimmirut is used mainly as a passage / migrating route [by bowheads]. ...I know that they are not seen on a regular basis – instead they are seen more on occasion in this area, that is from what I hear and from what I have seen. Perhaps in the fall they are seen [more] in open waters compared to belugas and narwhals. [Sandy Akavak, KM] HS64*

#### HUDSON BAY

Repulse Bay residents emphasized that bowhead whales frequent the following areas every summer: Maluksitaq/Lyon Inlet; Kuugaarjuk/Barrow River; Repulse Bay; Aqiarunnak/Duke of York Bay; and Itirjuk/Gore Bay. The floe edge of Repulse Bay is frequented by bowheads in July of every year. Philip Kripanik (HB253) reported that Maluksitaq/Lyon Inlet hosts more bowheads than the waters of Repulse Bay, at least it did during the 1930s and 1940s. In August, bowheads approach the land most closely (John Kaunak, HB48). Generally speaking, Repulse Bay informants sight bowheads in small numbers in summer, only one, two, or three at a time (e.g., HB65). Peter Katokra (HB65) speculated that bowheads come to the Repulse Bay area from Baffin Island or Greenland:

*I remember back in I think it was in 1983, I was traveling from Hall Beach [to Repulse Bay along the coast] on a canoe at the beginning of August... During the whole time I saw bowhead whales every single day. The bowhead whales became more plentiful as I got further away from Hall Beach... So based on that I suspect that bowhead whales that frequent our waters do come from the waters of Baffin Island/Qikiqtaaluk and perhaps the waters between Greenland and Baffin Island. And when the fall time comes they travel back to the same areas where they spent the winter season. [Peter Katokra, RB] HB65*

Mary Nangmalik of Whale Cove (HB86,87) grew up in the Repulse Bay area, where as a child she saw bowhead whales every year.

Chesterfield Inlet informants reported seeing bowheads in the following locations: the floe edges off Chesterfield Inlet (HB27) and Qatiktalik/Cape Fullerton (HB20); from Chesterfield Inlet all the way to Repulse Bay (HB24); and the Chesterfield Inlet area in general (HB25, 27). Murice Kukkiak (HB27) pointed out that bowheads occur regularly on migration along the coastline from Chesterfield Inlet to Qatiktalik.



The testimony suggests that bowheads are regularly sighted every year in the area but in small numbers (e.g., HB27).

Informants from Rankin Inlet and Whale Cove apparently do not sight many bowheads in their communities' hunting territories:

*Right in the Hudson Bay there are not too many bowhead whales...* [Jack Angoo, WC] HB83

Another Whale Cove informant, Mary Nangmalik (HB86), believes that the absence of bowheads in the Whale Cove area is due to an absence of their preferred food, copepods (*iglirait*).

Informants from Coral Harbour mentioned two nearshore areas where bowheads regularly occur in late summer and autumn: *Aqiarunnaq*/Duke of York Bay and the Bell Peninsula of southeastern Southampton Island (HB6). Several Rankin Inlet and Whale Cove informants also referred to the occurrence of bowheads in these same two areas (HB73, 79, 85). Many informants in the south Kivalliq region (Chesterfield Inlet and southwards) are originally from the Coral Harbour or Repulse Bay areas; these informants contributed much of the mapped data for the latter two regions (section 3.1.2.iv).

## BAFFIN BAY

### Arctic Bay

Bowheads occur at the *Tununirusiup Kangiq&ua*/Admiralty Inlet floe edge in June and July (BB11, 14, 28, 29). They may leave the floe edge for awhile but will return in July at the time of break-up, when substantial numbers will enter the inlet via the widening cracks and open areas (BB28; see also BB11,14,18). Summer (July to September) will find bowheads in Admiralty Inlet (BB14), often reaching the southern portion of the inlet (BB18). Bowheads are seen every year in the inlet (BB26); but no sightings are reported during winter (BB28). In summer, adults, family groups (including calves), and solitary juveniles are seen (BB14, 26).

*...down there in what is referred to as Sinaasiurvik [NW corner of Elwin Inlet], I would see any age group [of bowheads]. But as we moved to Qaggitalik [mouth of Baillarge Bay], down there as well, I would see a family group.* [Philip Qamanirq, AB] BB29

Koonoo Oyukuluk (BB15) reported that bowheads without calves are the first to arrive at the floe edge in June and July; at that time calves are not present, and bowheads generally occur as solitary animals or in pairs. (However, one informant (BB14) reported a juvenile/mother pair at the floe edge). Bowheads with calves arrive at the inlet in mid-summer. The month of October and freeze-up will find the whales leaving the inlet (BB3).

### Clyde River

Clyde River informants provided a wealth of detail on the seasonal distribution, migrations, and activities of bowhead whales in the Clyde River marine-use area.

Bowheads are generally sighted in the following areas/locations in most years:

- the floe edge in June and July (BB38, 51, 67, 90)
- near the community of Clyde River in summer (BB31, 38, 58, 61, 65)
- the Clyde River region generally from August until freeze-up (BB31, 42, 58, 61, 64, 81, 83, 280)
- *Igaliqtuuq*/Isabella Bay during August and September (BB31, 34, 37, 38, 55, 58, 59, 61, 65, 66, 70, 73, 79, 85, 86, 287, 337)
- *Arvaaqtuq* from July on (BB34, 37, 58, 85)
- *Arviqtuuq*/Eglinton Fiord from July on (BB34, 59, 60, 297)
- *Taaqtualuk*/Dexterity Island in the fall (BB46)
- *Pinguarjuut*/Cape Christian in late fall (BB55)
- Kogalu River in late summer/fall (BB55)
- *Pinirag* - near mouth of Inugsuin Fiord (BB58)
- *Natsiqsujuuq* at the northeast corner of Scott Inlet (BB58, 70)

Bowheads can occur in many areas around Clyde River, but these areas are probably linked through bowheads' seasonal movements and migrations.

There are fewer observations on migrations in the area. Nauja Tassugat (BB70) reported that whales migrate northwards every summer to *Natsiqsujuuq* (at the mouth of Scott Inlet) where they feed and cavort, after which they head south to *Igaliqtuuq*/Isabella Bay. En route to Isabella Bay from the north in late summer and fall, they are observed offshore from Clyde River (BB31, 34, 55, 58, 59, 61). Some informants reported that bowheads move around a lot in late summer/fall, heading north and/or south (BB61, 66). The whales leave Isabella Bay by the time of freeze-up in late fall (BB31, 73, 287), and return to their wintering areas (via *Qikiqtarjuaq* - BB85) as the weather becomes colder (BB63, 65). One informant suggested that bowheads winter in ice-free waters between Baffin Island and Greenland (BB65). Bowheads consistently return to Isabella Bay (BB73).

The behaviours and activities of bowheads in *Igaliqtuuq*/Isabella Bay include feeding (BB31, 59, 70, 73, 85); calving (BB31, 38, 85); mating/breeding (BB34, 38, 59, 73, 85, 86); and playing\* in groups in

\* Play, playing, etc. are subjective words describing observed bowhead behaviour. What is viewed as play (splashing, breaching, rolling, etc.) may in fact be highly functional behaviour (e.g., mating).



shallow water (BB31, 34, 38, 59, 73, 85, 86). Bowheads feed in the deeper parts of the bay (BB73). Anon. 14 (BB38) suggested that bowheads frequent Isabella Bay owing to an absence of killer whales there, and reported that bowheads may leave the bay but return a short time later. The number of bowheads visiting the bay varies from year to year (BB38, 59); Anon. 14 (BB38) stated that bowheads were numerous there in 1976-79. Bowheads prefer the sheltered, shallow parts of Isabella Bay (BB58, 65, 79, 287), especially when the water is rough (BB66). The following size classes of bowheads are present: large adults (BB31, 34, 66); weaned, solitary juveniles in the shallow waters (BB31, 34); and all size classes, with the larger whales forming groups (BB38). Although some informants believe that calving occurs there, calves are rarely sighted (BB34, 66).

At Arviqtujuuq/Eglinton Fiord, bowheads are involved in mating (BB34) and in playing and feeding (BB60), while they feed and play in the waters near Natsiqsujuq – mouth of Scott Inlet (BB70).

Several informants reported that, throughout the Clyde River marine-use area, bowheads are involved in one or more of a variety of activities: play, feeding, calving, and mating. These activities take place in nearshore, sheltered, shallow waters (BB64, 65). Two informants stated that bowheads also moult and grow a new skin (maktak) during the summer (BB48, 63).

We had an occasion to tag a bowhead whale near Qikiqtarjuaq and from that we learned they stay in one place for a day or two and then move on. Their migration is similar to the beluga and narwhals. [Ashevak Palituq, CR/ws] BB42

...the habitat areas are Arviqtujuuq [Eglinton Fiord], and they say that many bowheads could be found there at one time... even the big rock there is called “unajaagaluk” because the bowhead would circle around the rock, perhaps playing or feeding... [James Jaypoody, CR] BB60

...we used to live in Nuvuttiapik/Cape Raper and a lot of them [bowheads] would get together [Igaligtuuq/Isabella Bay]. They looked very good. It is a wonderful sight. Sometimes there are lots of them together. I have never thought of counting them at the time I had seen them all together. [Joannasie Apak, CR] BB65

...especially in the area of Taliruujaq [Aulitiving Is. in Igaligtuuq/Isabella Bay] where they usually go to, they would play there in large numbers and they would stay in that area in the summer time. ...they [bowheads] keep coming back there [to Igaligtuuq]... They come to feed, mate and breed at the park [Igaligtuuq] and they really enjoy themselves, they go there to have leisure time. ...they play around the shallower waters right here. They stay around here [Igaligtuuq] going back and forth during the whole summer, and they feed... where it is really deep... [Nauja Tassugat, CR] BB73

...the bowheads play a lot any where in the summer time, I have been mesmerized by them, they would slap their fins and flippers on the water and they make very loud noises, I think that they were actually applauding... [Pauloosie Arnakak, CR] BB83

...the bowhead whales usually are around the mouth of Igaligtuuq/Isabella Bay and the area around Taliruujaq/Aulitiving Is. and Nuvuttiapik/Cape Raper... They are usually here around August and then stay until fall. ...we put some radio-tags on some of the bowhead whales and we've been tracking them down and they have gone down as far as Qikiqtarjuaq [in the fall]. ...And you can see the bowhead whales playing. They come over here for their holidays, like we do as human beings. ...As a child I had been brought up around Igaligtuuq/Isabella Bay and I saw a lot of bowhead whales then. And there are lots of bowhead whales [at Igaligtuuq]. ...They play and you can hear their fins flapping [louder than a rifle-shot] on the water and it's a nice sound to listen to... And sometimes you see them go up in mid-air. [Solomonie Natanine, CR] BB85

...sometimes they [bowheads] would chase one another but always in separate groups. ...in the area where we did our study [Igaligtuuq/Isabella Bay], I had an occasion to observe this particular whale, where it would rush out of the water and literally get up into the air, and then it would begin to slap its front flipper on the water [and] the other whales began to show up. ...Based on my knowledge they seem to begin to group up closer to the fall (Ukiassaaq). For example, it may be that they are mating earlier in the fall -you notice their large penises in the early fall when they begin to group. ...In Igaligtuuq you see them in groups of one, two or three. Even when they are moving, you could see them in large numbers [groups] just like the belugas/narwhals. [Solomonie Natanine, CR/ws] BB86

### Grise Fiord

I do not know the migration route [of bowheads] but the people of Greenland have said before that they have seen the bowhead whale along the floe edge. The Greenland hunters are usually around the floe edge in the spring time. [presumably the floe edge off Qanaaq, NW Greenland – so some bowheads could winter in the High Arctic/North Water Polynya] [Anon. 15, GF] BB94

### Pangnirtung

Bowheads are rarely seen during winter at the floe edge (BB102, 105, 120, 126, 128, 130), but one adult has been seen in February (BB120).

Bowheads enter the upper part of Tinnujivik/Cumberland Sound in the spring. They aggregate in large numbers at the floe edge in May and June, and they may stay around the general area for some time (BB102, 105, 108, 116, 120, 126, 128, 130). People see them the most at the floe edge off Qikiqtan/Kekerten Island (BB117, 118). Bowheads may be seen as early as March – April when the floe edge is farther offshore (BB117, 120, 126). They have also been seen at the floe edges off



Millijuat/Wareham Island (BB117) and off Mitligaajuit/Miliakdjuin Island (BB134).

After ice break-up, the bowheads which had aggregated at the floe edge disperse in smaller groups in the Sound, so that they are not seen as often as during the spring (BB102, 105, 108, 116, 117, 120, 126, 134). One informant explained the rarity of summer sightings in terms that hunters don't go boating much to the area where the floe edge used to be (BB117). However, informants did provide indications of where bowheads are seen in the open-water summer season: anywhere in the Tinnujivik/Cumberland Sound (BB116, 397); in the 'beluga hunting areas' (BB117); in the offshore, deeper regions of the Sound (BB126); in Pangnirtung Fiord (BB105, 116, 122); at Nuvuja – an island off Ikipit Bay (BB108); offshore from Pangnirtung Fiord (BB120) and at Qikiqtan/Kekerten (BB118); and in Isuittuq/Clearwater Fiord (BB105, 138, 401). At Isuittuq bowheads occurred in larger numbers in 1946 (BB401) than they do nowadays (BB105). They are present in Milurialik, a small bay near the head of Isuittuq, in the company of belugas (BB138):

*...I know that they [bowheads] like to frolic/play around Milurialik [at head of Clearwater Fiord]. I had personally observed bowhead whales playing and leaping out of the water like fish, and there was this whale that was slapping his fins on the surface of the water and you could hear the echo of the slap around the mountains... [Pauloosie Angmarlik, PA] BB139*

The frequency of bowhead sightings decreases greatly in the fall (BB117, 120, 126, 134). Most informants who commented on this believe that whales are leaving the fiords and bays and heading out to open water in the Sound (BB117, 122, 126). This reduction in number of whales sighted was attributed by one informant to boating being restricted to the shoreline while the whales are in the deeper, offshore waters (BB117). However, Anon. 22 (BB108) reported seeing bowheads at Kipisa in the fall.

General migration patterns were described by Inuit informants. After reaching the floe edge in May (BB102, 108), some bowheads migrate to inner bays and fiords during and after ice break-up (BB116). They leave the bays and fiords in fall before or at the time of freeze-up (BB102, 116, 134, 136), often at the same time as belugas and narwhals (BB119, 130). Apak Qaqqasiq (BB122) provided a wider perspective on bowhead migrations:

*...Once the ice break up occurs... you could see them at the mouth of the Pangnirtung Fiord nowadays. ... I think in the early fall they are migrating back, and you do see them in these waters. I think they spend the summer in the northern part [to the north] of Pangnirtung [in eastern or northern Baffin Island]. ...In the spring they are moving northward [along the east coast of Baffin], exactly where I don't know, and in the fall they are migrating back [south]. In our observations during the survey [at Igaliqtuuq/Isabella Bay] we noticed that when they are migrating back [in fall] there are usually smaller*

*bowhead whales with them. We suspect these are calves and for sure there is a calving area somewhere up North. [Apak Qaqqasiq, PA] BB122*

Springtime bowhead activities include mating (BB102, 108, 120), feeding (BB108, 120), playing (BB108) and calving (BB120). At the spring floe edge, informants reported seeing immature (BB102, 117) as well as large mature bowheads (BB102, 116, 117), or all sizes (BB120). Large mature whales are also seen in summertime (BB116, 117), although one informant (BB120) stated that smaller whales are common in summertime and that different-sized whales form up into groups. In summer, bowheads feed (BB120) and play (BB111), but mating is not likely to occur because bowheads are more dispersed than during the spring (BB108). Fall sightings are mostly of large bowheads in groups (BB120, 136). Jaco Evic (BB127) reported that large, stationary aggregations of bowheads tend to be engaged in play and do not seem to be feeding.

### Kugaaruk

*[I grew up in Repulse Bay area] ...for sure the bowheads are closer to land in summer time... when it freezes in winter time there are no sightings of bowheads, in the Repulse Bay area; when the ice is gone, there are usually sightings, perhaps they [bowheads] are searching for food. ...my mother used to see whales in summer time, the hunters used to wait for them to go near the land. ...they only used to hunt whales in summer time, perhaps you could see them in springtime at the floe edge; around Repulse Bay the weather warms up faster than in the Kugaaruk area. [Guy Kakkianiun, PB] BB148*

*...[according to my mother] as the bowhead whale is spotted, they have often been mistaken for a small island or a rock in the water... [Martha Kutiutikku, PB] BB154*

### Pond Inlet

During June-July, some bowheads migrate towards the west along the north coast of Bylot Island (BB188, 194), heading to the floe edge of Navy Board Inlet and Nallua/Low Point (BB178). Bowhead whales occur at the Pond Inlet floe edge near Sanirut/Button Point from May to July (BB178, 179, 194). In late July as the sea ice breaks up, they enter the inlets, bays and fiords, where they feed (BB179, 189). During the summer open-water season, bowheads occur at Qaurnak in western Eclipse Sound (BB167), in Milne Inlet (BB190), and in the Pond Inlet area generally (BB178). The majority of whales leave the fiords in September before freeze-up (BB176, 189); however, there is a smaller out-migration in October as the sea ice is starting to form (BB176). There are no winter sightings of bowheads in the area (BB178). Bowheads will vary in numbers and location from year to year (BB159, 167, 178).

John Tongak (BB178) reported that the bowheads he has seen in the Pond Inlet area are mother/calf pairs and large adults.



One informant elaborated on the relationship between bowhead migrations and the hatching of snow buntings:

*...[an Inuk whaler who raised me] told [me that]... ...there was a certain season that bowhead whales started to penetrate deeper into the inlets to start feeding. This would be late into July when the ice is breaking up. ...The snow buntings had a part to play in the timing of bowhead whales going into the fiords to feed. [when the chicks hatch, then bowheads will be entering the fiords to feed (in late July)]. ...[then] the hunters used to go whale hunting further into the land. [Kooneloosie Nutarak, Sr., PI/ws] BB179*

### *Qikiqtarjuaq*

Few informants mentioned sightings of bowheads during springtime. Bowheads may be seen at *Qivittuuq/Kivitoo* in late spring (BB202). Pauloosie Kooneliusie (BB232) reported seeing bowheads occasionally at the floe edge of *Qikiqtarjuaq*.

In summer and early fall (August/September), bowhead whales annually frequent the nearshore waters of *Qivittuuq/Kivitoo* in considerable numbers (BB199, 201, 202, 206, 209, 210, 219, 221, 229, 234). They remain in the shallow waters around *Kivitoo* for an extended period of time before leaving the area to head south. Another summering area is Home Bay to the north of *Kivitoo* (BB209). Leah Newkingak (BB509) reported that bowheads never used to occur at *Palligvik/Padloping Island*; they now seem to occur in the area (Map 4, section 3.1.2.iv). In the shallow waters around *Qikiqtarjuaq (Island)*, bowheads are not often observed in summer (BB199, 202). However, other informants indicated that bowheads may be seen frequently around the island during the summer (BB219, 229, 232). Several informants (BB224, 225, 229, 231, 232) referred to an apparent summertime abundance of bowheads in the *Qikiqtarjuaq* region generally, especially in the shallow waters. In fall (September/October) bowheads frequent *Qivittuuq/Kivitoo* (BB206) and are numerous around *Qikiqtarjuaq* (BB228).

*Once on our way back home from caribou hunting, we went to the other side of Qivittuuq/Kivitoo... ...All that ocean area had a lot of white caps from the bowhead whales swimming through there, there were many bowhead whales up there. They stay in very shallow waters... ...I personally have seen bowhead whales around near Qivittuuq, every summer nearer to autumn, and every late spring... [Adamie Nookiguak, QK] BB202*

*When we are out caribou hunting around Qivittuuq/Kivitoo, we usually see the bowhead whales [every summer]... ...I have not seen them in other places as much. ...I usually see them right around our community [Qikiqtarjuaq] as well as farther away from our community. We always see the bowhead whales around... ...during the summer time [August and September]. ...They probably just stay around the floe edge [before ice break-up]. [Mary Alookie, QK] BB229*

*Koalie Kooneliusie (BB221) has seen very few bowheads north of Qivittuuq/Kivitoo, and therefore believes that whales remain at Kivitoo for the duration of the summer. Whales arrive at Qikiqtarjuaq in October from the north (BB206). Gamailee Nookiguak (BB209) stated that southbound fall migrants occur in large numbers on the north side of Qikiqtarjuaq in September. Other informants reported that bowheads leave the Qikiqtarjuaq area in fall (BB219, 231) or in September/October (BB224).*

Bowheads usually occur in small groups of one, two, or three animals (BB203, 219) but play activity is associated with larger gatherings of whales (BB203). Play activity is common among the large groupings at *Qivittuuq* in August (BB234). Only one informant (BB221) suggested that mating may be occurring among large groups of mature whales which are swimming and writhing over each other (he observed such an instance in 1995). Feeding and play activity occur in large, relatively stationary groupings of bowheads during August in the *Qikiqtarjuaq* area (BB224, 232).

### *ii) Stock identity/site fidelity*<sup>15</sup>

A small number of informants from Hudson Bay and Baffin Bay stated that bowheads return to the same locations every year for feeding and other activities (BB14, 121, 126, 204, 216, 234). A few informants (HB39, BB38, 73, 74, 137, 219) explicitly indicated that the same whales are involved (site fidelity). Some informants (BB120) speculated that the bowheads seen in spring at the floe edge are also seen later on (in summer) along with smaller whales. Informants did not present observations or speculations on stock identity/discreteness.

*...some [bowheads] you can recognize because they have been seen every year for many years, they keep coming back to the same area [Igaliqtuuq/Isabella Bay] every summer. Some Inuit have even seen the same bowhead for many years... [Anon. 14, CR] BB38*

*...[yearling bowheads] would just follow their mothers to the place where they always went again and again, although they were no longer suckling... [Nauja Tassugat, CR] BB74*

*...If it were the same stock that I have seen during the spring time earlier [at the floe edge], I have seen them again during the summer time with smaller bowhead whales. [Anon. 27, PA] BB120*

*...bowheads seem to frequent certain and specific places where they feed. [Jacobie Koksiak, QK/ws] BB216*

*There's also one bowhead whale that is usually around Ikirasak [on Qikiqtarjuaq]. People continue to see this one bowhead whale. We know it is the same one. [Jaycopie Audlakiak, QK] BB219*



*iii) Changes in distribution and migration patterns<sup>16</sup>*

Inuit informants from all regions reported the occurrence of bowheads in areas where they were not seen before, and this was often related to or attributed to an increase in the population.

**FOX E BASIN**

Anon. 16 of Hall Beach (FB8) is uncertain if bowhead whales are "...increasing or if they are coming over to this area more." Simon Iyyiriaq (FB46) implied that the occurrence of bowheads at the Igloodik floe edge is a recent phenomenon.

**HUDSON STRAIT**

...For sure in the past bowhead whales were sighted, but as time passes we now see bowhead whales in areas that we have never seen them before. [Anon. 5, CD] HS5

Nujaliaq Qimirpiq of Kimmirut (HS62) related these 'new' occurrences to population increase, although he admits that "...I could say that they travel on different routes [from one year to the next], perhaps some may travel always on the same route...".

**HUDSON BAY**

Coral Harbour informants have reported a relatively recent occurrence of bowheads at the floe edge (HB10, HB14) and some other locations. Some have attributed this to population growth of bowhead whales (HB10). One informant (HB14) added this caveat:

*The community structure is such that we no longer live in Outpost Camps, thus we don't get around as much. ...we really haven't been observing bowhead whales, where they are now going that they never used to go - this lack of knowledge is due to that we haven't been allowed to harvest for a long time.* [Tooma Netser, CH/ws] HB14

Murice Kukkiak of Chesterfield Inlet (HB27) believes that the relatively recent, regular annual occurrence of small numbers of migrating bowheads in the Chesterfield Inlet to Qatiktalik/Cape Fullerton area may also reflect a population increase.

Repulse Bay residents have also noted changes in bowhead distribution. One informant (HB63) reported the recent occurrence of large numbers of bowheads at the Kuugaluk/Barrow River area.

*I also think that in the olden days bowhead whales were never very close to the land but now you can see them very close to the land.* [Octave Sivanertok, RB] HB51

And bowhead distribution may be strongly influenced in the short term by the presence of killer whales:

...before there was a community [prior to about 1965] I hear that there were lots of killer whales in the [Repulse] Bay. Narwhals and seals used to gather in the shallow waters near the land... Possibly since then the bowhead whales left Repulse Bay area. ...I suspect that whales temporarily avoided Repulse Bay but after that they started to come back. [Participant, RB/ws] HB61

**BAFFIN BAY**

One Arctic Bay informant linked the appearance of bowheads in the Arctic Bay area with population increase and/or immigration of bowheads:

*They seem more numerous, perhaps it is because they are traveling more [to our area]. ...maybe because they have increased in numbers, it seems that they are traveling over here [more]...* [Olayuk Naqitarvik, AB] BB26

Philip Oingonn (BB27) reported the occurrence of bowheads in the last couple of years in one particular area in the Arctic Bay region, but according to another informant:

...[I haven't seen bowheads in any new places], the bowhead whales were always around. [Simon Qamanirq, AB] BB30

Near Clyde River, changes in bowhead distribution have occurred in conjunction with an increase in population number:

...now the bowhead whale population seems to be increasing, and we tend to see them more often on the ocean, you can even spot them now around our caribou hunting area around the other side... [James Jaypoody, CR] BB61

*I have noticed bowheads in places where there never used to be bowhead whales... I am basically saying that there are more bowhead whales now...* [Solomonie Natanine, CR/ws] BB87

Joannasie Apak (BB64) stated that he has not been to Igaliqtuuq/Isabella Bay "...since the bowhead whales started going over there. I can not say there has been much change in the way they travel to this location."

In the Pangnirtung area also, bowheads are now seen in locations where in earlier years none had been sighted (BB116, 121, 123, 124, 133, 137). These changes are often related to population increase (BB116, 124, 137).

...nowadays there are many bowhead whales right in front of the mouth of the bay [Pangnirtung Fiord], which never used to be the case back then. That's why we know that the bowhead whale population has been increasing in numbers... [Anon. 24, PA] BB116

...I have noticed the whales being around Mitligaajuit/Miliakdjuin Is. I have also gone to another location with other hunters, and we have noticed that the bowhead whales have been around this area where they normally were not seen before. [Manasee Maniapik, PA] BB133



Mosesee Qiyuakjuk (BB137), who intermittently lives at an outpost camp (*Qaniraluk*) in *Tinnujivik/Cumberland Sound*, noted that bowheads are seen more around the communities nowadays, and not so much in areas that were favoured by whales in the past. He thinks that there has been a population increase among bowheads in the Pangnirtung region.

Kugaaruk residents sighted bowheads during the early 1990s in their hunting area, previous to which bowheads were apparently not seen in the area (BB146, 147, 150, 151). All sightings from 1992-94 have been in the same general area (BB146), and one informant seemed to infer that increased hunter mobility may be involved:

*I think we all know that there always have been some bowhead whales around here. In the earlier days we did not use our outboard motors but today we have outboard motors and we tend to travel further.* [Charlie Niptayok, PB] BB146

Two Pond Inlet informants (BB159, 175) reported more bowheads being sighted in certain areas in recent years, while two others (BB178, 181) have not noticed changes in distribution.

*...I do believe it [noticeable population increase] could have been in 1992. [saw a great increase in the Saviit area, Milne Inlet]* [Joanasie Arreak, PI/ws] BB175

With respect to the *Qikiqtarjuaq* area, Jacobie Koksiak (BB213) raised the possibility that the increase in sightings in recent years could be due to either population increase or a change in distribution (immigration):

*...are they once again increasing in population [in the Qikiqtarjuaq area], or did they wait until their food had become abundant again?* [Jacobie Koksiak, QK/ws] BB213

**iv) Seasonal distribution and migration**

Inuit traditionally related their observations of wildlife and other natural and human phenomena to the Inuit calendar, consisting of six (or sometimes more) seasons. Each of the Inuit seasons can be recognized as a suite of specific and observable environmental conditions, which an Inuk observer integrates into his/her recognition of a particular season. In this Study, the six Inuit seasons were utilized to provide an annual time framework for the observations and knowledge of informants with respect to seasonal occurrence, concentrations, and migrations of bowhead whales in the marine waters of Nunavut. The Inuit seasons are defined and described according to local/regional environmental and climatic conditions. This is shown in Appendix III using the High Arctic (including Grise Fiord, Arctic Bay, Hall Beach, and Igloodik) as the example. Also given in Appendix III are the calendar months corresponding to the Inuit seasons for the High Arctic, after Stewart et al. (1995).

Interpretation of a given seasonal map covering the entire Study Area (see Maps 1 – 6) is complicated by differences in timing of the Inuit seasons among localities and/or regions, such differences depending upon latitude, climate, oceanographic conditions, influences of topographic features, and other factors. Therefore, the map for a particular season may not provide a simultaneous picture of all observations throughout the Study Area. This complicates comparison of distribution and migration of bowheads both within and (possibly to a lesser extent) between seasonal maps.

In addition, the timing of an Inuit season (in a particular locality/region) may vary naturally from year to year, sometimes by up to one month. Nonetheless, an Inuit season in a given locality/region may be assigned to certain months of the calendar year, considering these as an average for that season.

It is clear that hunters relate their observations and activities to the Inuit calendar, and that traditionally this has had cognitive importance as well as great survival and predictive value. Inuit seasonal maps provide much additional information that the calendar months can not give, such as the local/regional environmental conditions which determine the behaviour of wildlife and the activities of humans. The use of Inuit seasons in this Study was deemed necessary because it provided a familiar time framework within which Inuit observe, classify, and record the natural phenomena around them.

We prepared maps showing the distribution and migration routes of bowhead whales, using the information contributed by all informants in the Study, including information from interviews that have not been translated, and as corrected or modified by participants at the eight workshops. Six maps were prepared, one for each Inuit season. The transcribed observations of informants regarding bowhead distribution and migration are given in section 3.1.2.i, which can be read in conjunction with the maps. These maps, included with this report, are as follows:

**Map 1:** Distribution and migration routes of bowheads during UKIUQ (winter).

**Map 2:** Distribution and migration routes of bowheads during UPIRNGASSAAQ (early spring).

**Map 3:** Distribution and migration routes of bowheads during UPIRNGAAQ (spring).

**Map 4:** Distribution and migration routes of bowheads during AUJAAQ (summer).

**Map 5:** Distribution and migration routes of bowheads during UKIASSAAQ (early fall).



**Map 6:** Distribution and migration routes of bowheads during UKIAQ (fall).

**Ukiuq (winter; Map 1):** A few informants reported sighting bowheads at the floe edges off Igloodik, Repulse Bay, Cape Dorset, Kimmirut, Pangnirtung, and southwestern Southampton Island in winter. However, the testimony indicates that few bowheads likely winter in the nearshore waters of Nunavut.

**Upirngassaaq (early spring; Map 2):** Bowheads can be found near many communities, migrating through *Sullualuk*/Hudson Strait into Foxe Basin, into *Tinnujivik*/Cumberland Sound, and northward along the east coast of Baffin Island. Bowheads also occur at the floe edges off *Tununirusiup Kangiq&ua*/Admiralty Inlet and Pond Inlet in this season, as well as migrating northward through Baffin Bay in early spring. Bowheads are reported to occur northeast of Coats Island, off southwestern Southampton Island, and off the floe edges of Chesterfield Inlet, Rankin Inlet, Repulse Bay, *Maluksitaaq*/Lyon Inlet, and Igloodik/Hall Beach. Most of the early spring sightings of bowheads are at the floe edge or in offshore waters. *Upirngassaaq* is clearly a season of initial bowhead migration northwards and into nearshore waters.

**Upirngaaq (spring; Map 3):** *Upirngaaq* presents a picture similar to that of *Upirngassaaq* (Map 2), showing much the same migration routes but a deeper shoreward penetration of whales in *Tinnujivik*/Cumberland Sound and near the communities in northern Foxe Basin and northern Hudson Bay. In the High Arctic, bowheads are still on migration at this time; some informants indicated that whales occur at the floe edges, while others indicated that some whales reach deep into the bays, fiords, and sounds of northern Baffin Island at this time. Between Cumberland Sound and Pond Inlet (mostly in offshore waters of Home Bay to the north of *Qikiqtarjuaq*), bowheads are migrating northwards. There is also movement of bowheads through *Tallurutitit*/Lancaster Sound and into Prince Regent Inlet and the Gulf of Boothia, via which bowheads sometimes reach Kugaaruk. The overall picture is an intensification of bowhead migrations northward and into nearshore waters, and the occurrence of bowheads off the floe edges of most communities.

**Aujaq (summer; Map 4):** Bowheads have many different summering areas, with whales being widely but patchily distributed in inshore waters. Informants indicated that some whales are still migrating to their summering areas at this time. The patchy distribution of bowheads is to some extent a reflection of observer effort, as most sightings and reported concentrations are within the marine-use zones of the communities. Observer effort may also be a factor in the distribution of sightings for other seasons. In Foxe Basin, northern Hudson Bay, and northeast Baffin Island some whales are beginning their southward/offshore migrations. In the High Arctic, *Aujaq* presents a picture similar to that of *Upirngaaq*, with indications that whales are concentrating in the inshore waters and fiords of North Baffin Island. As in *Upirngaaq*, there is some migration of

whales through Prince Regent Inlet and the Gulf of Boothia in *Aujaq*. Bowhead whales also occur near Kugaaruk during this season. Also in summer, bowheads occur along the west coast of Hudson Bay from Arviat, through Roes Welcome Sound, to the Repulse Bay area. There are also sightings in the Coral Harbour area and the Bell Peninsula of southeastern Southampton Island. Informants presented a variable and complex picture of bowhead migrations in western and northwestern Hudson Bay and around Southampton Island.

**Ukiassaaq (early fall; Map 5):** Bowheads are still distributed in nearshore waters but the southward/offshore migrations have clearly commenced. Bowheads are still present in inshore waters of the High Arctic, and some occur in *Tallurutitit*/Lancaster Sound and near the community of Grise Fiord. At this time of year in the High Arctic, bowhead whales are moving to the outer parts of their inshore summering habitat and commencing their southward/offshore migrations. There is a migration of bowheads south along the east coast of Baffin Island, where bowheads are seen in some scattered localities in this season. They are also reported to leave *Tinnujivik*/Cumberland Sound at this time. Bowheads are reported in the nearshore waters of Repulse Bay and Igloodik/Hall Beach in early fall, but are also indicated to be heading south from these areas towards northeastern Hudson Bay and *Sullualuk*/Hudson Strait.

**Ukiuq (fall; Map 6):** Bowhead whales occur in only a few scattered locations at this time, as the southward/offshore migration continues. Few whales are seen in inshore waters of the Study Area in this season. Only the communities of Igloodik, Kimmirut, and *Qikiqtarjuaq* seem to have any bowheads in their vicinity at this time.

At any given season except winter (*Ukiuq*), some bowheads are migrating to or from, while others are appearing and concentrating in, nearshore areas. For example, in spring (*Upirngaaq*) bowheads are concentrating near Igloodik and Hall Beach and at the same time bowheads are migrating through Foxe Basin towards those two communities (Map 3). A similar pattern is evident for northern Hudson Strait/*Sullualuk* and northern and eastern Baffin Island at this time of the year. A number of explanations may be offered: 1) bowhead migrations may be extremely protracted, with whales traveling in small, well-separated groups; 2) different informants may have different interpretations of bowhead behaviour for the same season, and/or 3) different informants may assign a slightly different period of the calendar year to a particular Inuit season.

*Aujaq* (summer) is the season of maximum extent of open water and the time when bowheads are most widely distributed in the bays, fiords, inlets, and coastal waters of eastern Nunavut (Map 4). The pattern of bowhead distribution and migration in *Upirngaaq* (spring) is similar to that during *Aujaq*, except that in *Upirngaaq* (Map 3) the inshore distribution of whales is not as prevalent and widespread as during *Aujaq*.





*Upirngaaq* is the time of sea ice melt and break-up, with widening cracks and enlarging holes; thus whales could penetrate into the bays, sounds, and fiords during this season. This would produce a distribution pattern similar to that of *Aujaq* (Map 4).

### 3.1.3 Recent Changes in Group Size <sup>17</sup>

One informant from the Hudson Bay region (Repulse Bay) and six informants in the Baffin Bay region (Arctic Bay, Clyde River, Pangnirtung, and Pond Inlet) reported an increase in group size of bowheads in recent years. Most informants related this change to a concurrent increase in population size (BB41, 67, 118, 128, 162).

*From what I hear they seem to be traveling in groups more now.* [Anon. 30, RB] HB33

*When I was young I would see only one and not very often. Today they are in groups, together.* [Philip Oingonn, AB] BB27

*I have never seen bowhead whales [before] in large groups, right now at the present time we can see large groups of bowhead whales anywhere...* [Nauja Tassugat, CR] BB75

*...Currently the bowhead whale population has increased for sure. For we can see them around more frequently, some in large groups, and when I was a child, we never used to see bowhead whales in groups.* [Anon. 25, PA] BB118

*...I could say for sure that there are much more bowhead whales now than there used to be when we were children. Where today you now could see a single whale, 2, 3 or 4 whales in one group. While in the olden days we used to only observe single bowhead whales and never more than one...* [Elijah Panipakoocho, PI/ws] BB162

\* In Inuktitut, a small calf accompanied by its mother is referred to as *arvaaq*; *ingutuq* is a larger, one- to two-year old bowhead which may be solitary or still accompanying its mother. See section 3.1.5.vi for definitions of bowhead age/size categories.

### 3.1.4 Occurrence of Bowhead Calves\*

#### i) Observations of calves and juveniles <sup>18</sup>

##### FOXEBASIN

Bowheads seen in summer north of Igloodik in northern Foxe Basin are mostly juveniles and females with newborn calves, suggesting that this area is a bowhead nursery area (Cosens and Blouw 1999). Observations of informants from Igloodik provide support for this conclusion.



Aerial view of bowheads (notice small calf at left). Photo by Andries Blouw, Department of Fisheries and Oceans

*... they seem to be having more calves, as you seldom see bowheads by themselves, they always seem to be with their young. [sees many female/calf groups in Igloodik area] [David Irngaut, IG/ws] FB24*

David Irngaut (FB25) witnessed a female bowhead giving birth in the Igloodik area at Siorat (near west side of Murray Maxwell Bay) and believes that the area could be a bowhead calving area.

*I don't recall ever seeing a bowhead whale with its arvaaq/calf [when he was young]. But now I am hearing that bowhead whales are being seen with arvaaq.* [George Kappianaq, IG/ws] FB34

Noah Piugattuk (FB99) provided details about a mother/calf pair seen at Kapuivik/Jens Munk Island, in the 1960s: "Even after it (calf) had grown it still remained with its mother and they feed on small crustaceans and it remained with its mother until it had learned to harvest, then he would gradually leave its mother."

##### HUDSON STRAIT

Two Iqaluit informants commented on calves:

*That [changes in calf population] is totally unknown to me today... ...the Inuit are not studying the bowhead today, even the elders are not paying attention to them...* [Ben Ell, IQ] HS35

*[Last summer(1994)] I kind of thought that I had seen a bowhead with a calf for one was much smaller than the other one, the other was very huge... ...they were pretty close...* [Josie Papatsie, IQ] HS42



Josie (HS42) is uncertain about this observation, as Frobisher Bay is an area “...where bowheads hardly go”. Atsiaq Alasuaq of Cape Dorset reported that in spring of 1994, he saw five calves in the *Taliiruat* Islands.

### HUDSON BAY

There are no informant reports of calves from Chesterfield Inlet as usually only solitary adults are seen (HB 25). Tooma Saunik of Rankin Inlet (HB81) has seen what to him were mother/calf pairs, but he did not mention the location. Calves may occur around the southeastern Southampton Island area:

*Some of them are a mother and a calf team [among the bowheads he saw at Nuvualuk/Terror Point, SE Southampton Is. many years ago]. [Jackie Napayok, WC] HB85*

There are very few reports of calves south of the Repulse Bay area. Several informants (HB38, 52, 54, 57, 58, 198) reported a number of sightings (by their own observation or oral transmission) of bowhead calves in Repulse Bay and the surrounding area.

*I also had seen calves in the past – in those days we only used to use sails for boating. At one time we spotted a calf and we the younger people wanted to harvest it but our elders told us that we shouldn't harvest young bowhead whales. The story is that if the calf is harvested the mother would keep coming back to the spot where her calf was killed, year after year. Personally I had seen only one whale with a calf. I suspect that they raise their young in the waters of Repulse Bay. [David Tuktudjuk, RB/ws] HB38*

One mother/calf pair has been observed at the floe edge off Repulse Bay (HB54).

### BAFFIN BAY

Only Kugaaruk informants did not report calf sightings; all other communities from the Baffin Bay region reported sightings of bowhead calves.

#### Arctic Bay

Calves are frequently sighted in the Arctic Bay area. The spring migration of mothers with calves is later than that of other bowheads; thus, calves are rarely spotted at the floe edge, and it is during summer that females with calves enter *Tununirusiup Kangiq&ua/Admiralty Inlet* and can be seen at places like *Qattiaq/Kakiak Point* (BB15, 18). However, ice may still be present in summer in the areas inhabited by calves (BB27).

*When people went out on the boat and I went for a walk here in my community, I would see a mother and a baby whale. ...[This was] in the summer, closer to spring. [Philip Qamanirq, AB] BB29*

Further evidence of calves in the northwest Baffin Island area comes from the whale bones left behind by commercial whalers in the last century:

*...[on Somerset Island] there are lots of bones including skulls of bowhead whales. There are skull remains of calves of bowhead whales. ...apparently they [Whalers] were killing small calves of bowhead whales. Even though the skulls are of calves of bowhead whales, they are still very large. [Andrew Oyukuluk, AB/ws] BB239*

#### Clyde River

Informants offered many observations and thoughts about calves and calving in the Clyde River area. Mothers with calves are occasionally seen in late summer/early fall at *Igaliquuuq/Isabella Bay* (BB31, 34, 65, 68, 85, 122), and some informants surmised that calving occurs here (BB31, 65, 85, 122). Some informants reported not seeing calves at *Igaliquuuq* (BB66) or elsewhere (BB80, 82). The locations of calving areas for the bowhead whales seem to be unknown (BB70, 82, 122). *Ipellie Qillaq* (BB52) provided some information on the physical process of calving in the bowhead whale.

*...I think a calf was just born recently in August [at Igaliquuuq/Isabella Bay], so that is why I think that they have their calves in August. ...it is very rare to see a bowhead whale with a calf. ...at first the big bowhead whale seemed to be alone, but within the same month the same bowhead had a calf ...at the same place where I had previously seen it... ...I know for a fact that they deliver their calves in August, because I have seen a newborn in August, but I have [also] seen the young [juveniles] when they are alone in the fall time. [Anon. 11, CR] BB31*

*...The younger newborn calves that we think we see [at Igaliquuuq/Isabella Bay] are more reddish in color. The skin is different from their adult skin color. I think they change their skin color as well after they have been newborn as they get older, just like any animal... [Joannasie Apak, CR] BB65*

*...We seldom see them [calves], but they are seen, and we called the calves of bowhead whales “ingutuq” – they used to recognize bowhead whales with calves... [Nauja Tassugat, CR/ws] BB68*

*...As I have been involved in the study of the bowhead whales, I have noticed the calves when they are around. They are already very big, even young calves, and Igaliquuuq/Isabella Bay is a favourite spot for the bowhead whales. ...The bowhead whales come over to this area [Isabella Bay] to give birth to their calves. [Solomon Natanine, CR] BB85*

*In our observations during the study [Igaliquuuq/Isabella Bay] we noticed that when they are migrating back [in the fall] there are usually smaller bowhead whales with them. Perhaps this is due to calving. ...we suspect these are calves and for sure there is a calving area somewhere up North. ... it is in that area [Igaliquuuq] that I have seen two calves being born, they are a similar size as*



beluga and once they were born they surfaced right away... They took a long time to bear their calves and when they are in labour the other bowhead whales are very protective of the female who is about to bear a calf. [Apak Qaqqasiq, PA] BB122

Females with calves have been sighted elsewhere in small numbers in the Clyde River hunting area: location not specified (BB49, 89, 305); Pinguarjuik/Cape Christian (BB56); Qakijaaq, near Kuugaajuk/Kogalu R. (BB58); and Patricia Bay (just off the community) (BB61).

...[I have seen] many bowhead whales around Qakijaaq. ...this would be before Kuugaajuk/Kogalu River. I had noticed a couple of calves, I think they were just newborn calves because they were sort of a reddish brownish color. There were lots of bowhead whales over there and I think they were giving birth to their calves. These two small whales were ...smaller than the narwhal... I think their mother[s] had just given birth to them. These two small calves were around the more shallow part of the water and they never went down into the water so I thought they were just newborn. ...there would also be two big bowhead whales around them and I thought they might have been the mothers. ...As well I have seen an older calf [in Aavaatuq] ...we had seen this smaller [solitary] bowhead whale by the shore and it had been running away from something. [This one] was very small. [Jacobie Panipak, CR] BB58

### Pangnirtung

Many informants reported the occurrence of mothers with calves (BB98, 105, 107, 111, 116, 117, 120, 126, 128, 130, 135, 136) in the Pangnirtung resource-use area. Calf sightings occur mostly in spring and early summer (BB107, 111, 116, 117, 120, 126, 128, 130) rather than in late summer or fall (BB107, 136). Some informants believe that calving may occur in the area (in late July, BB116, 136; in spring, BB130) while others cannot say where calving occurs (BB126). Informants reported the occurrence of red-coloured calves, probably newborns (BB107), as did a few informants from Clyde River (previous section).

...I have never seen a baby [newborn] bowhead whale – but I do see small ones with their mothers when there is a large number in a group. ...it could be that they were born the previous year as they are not that big and they are usually hanging around a larger whale. [Anon. 21, PA] BB105

The bowhead whales go to safety, away from the killer whales, to deliver their calves, inside our bay here. ...It was during the spring time, in July, [when] I have seen calves more than once, for they are a lot smaller than the mother. ...The immature bowhead whales tend to be loners and sometimes they are still with the mother bowhead, they are quite small in size. [Anon. 24, PA] BB116

Few informants (BB130, 136) reported seeing the birth of a bowhead and/or direct evidence of a very recent birth. Josephee Keenainak (BB130) observed a newborn bowhead shortly after its birth in the Pangnirtung region.

There was one [bowhead] whale that had given birth to its calf just before the month of August [probably in Isuittuq/Clearwater Fiord]. I had seen this same cow [before] who had given birth to its calf, and the second time I had seen it was in August. The calf was [then] a little bit bigger. ...The calf had changed its skin colour. It was more white. ...I had been around this cow and the calf as I was working with the Qallunaat whalers [probably the Hudson Bay Co. (HBC) beluga whalers?]. ...The calves are usually pretty big by [the following] spring, and I have seen a calf during the spring time. During this time, it seemed like the calves would be travelling by themselves [year-old calves?]. The mothers are still aware of their calves and where they are, but they are further apart. ...I have not seen a small calf during the spring. I had seen one during the fall. This would be in Nasaujaq [at the mouth of Pangnirtung Fiord]. [Mosesee Qiyuakjuk, PA] BB136

Many informants reported the occurrence of generally solitary yearlings/ingutuit (BB98, 107, 111, 116, 134, 136, 138, 142, 231) in the Pangnirtung region. Ingutuit may also be seen with older whales (BB116, 126, 136, 142). Pauloosie Angmarlik (BB138) saw (in summer) one solitary, dark reddish ingutuit at Illunngajunni [headland to east of Kangilo Fiord] where he resided many years ago.

My father would talk about these lone bowhead whales. ...Usually, their skin is very thick. The Inuit refer to them as lone bowhead whales... These would be whales that were a year old—calves that were a year old. Their skins would be layered much like the narwhals. [Anon. 23, PA] BB111

It seems that young calves [ingutuit/yearlings] tend to be on their own separated from the rest of the group. It seems to be that they are more comfortable on their own. ...I think they like to wander off away from the group for a time but normally they will get back to the group in time sometimes during the day. [Petersoosie Karpik, PA/ws] BB142

Apak Qaqqasiq of Pangnirtung (BB122) provided some details about calf sightings from Igaliqtuuq/Isabella Bay (see previous section).

### Pond Inlet

Informants reported seeing mother/calf pairs within the community's marine-use area (BB159, 160, 167, 178, 193). John Tongak (BB178) has seen mother/calf pairs at the floe edge at Sanirut/Button Point, and believes that calving may occur in the area.

...I think it was in 1995, me and Laimikie were camping in Kugluktuk/Koluktoo Bay and we did see three whales with calves. [thought one mother had a calf plus yearling]. The last one was a huge one [male?] and he used to slap his flipper onto the water creating a large splash of water [and scaring the narwhals towards shore]. ... the reason why we do not fully believe that they [only] bear calves every three years [according to scientists] is that it seemed to me that the calves that we saw were born one after the other. I am sure that if people leave them alone, I am pretty sure that there could be calves on a more regular basis. [Elijah Panipakoocho, PI/ws] BB160



[Sam believes that, seeing a mother bowhead with a newborn and an older calf discredits the 3- or 4- year calving interval derived from Alaskan scientific data] [Sam Arnakallak, PI/ws] BB193

### *Qikiqtarjuaq*

Many informants reported mother/calf pairs in the Qikiqtarjuaq community marine-use area (BB198, 203, 204, 209, 210, 211, 212, 219, 221, 224, 232, 234). Gamailee Nookiguak (BB209, 210, 211, 212) reported a small number of sightings of mother/calf pairs (in separate groups) in the shallow waters off Qivittuuq/Kivitoo, which he believes could be a calving area. Calving may also occur in the waters around Qikiqtarjuaq (BB219).

I remember some years ago, we happened by Qivittuuq/Kivitoo, the air stench of bowhead whales, and there were lots of young calves at that time... [Adamie Nookiguak, QK/ws] BB198

...I had observed young calves in that area [Qivittuuq/Kivitoo], and I have seen a lot of bowhead whales in Qangiqlipak and Koaniluk, these are in fact the areas where I have seen a lot of bowhead whale calves and they stick around their mothers. [Gamailee Nookiguak, QK/ws] BB212

...I seem to see bowhead whales with calves every year. ...there are many mature adults and smaller ones... [Pauloosie Kooneliusie, QK] BB232

One informant believes he has seen evidence of actual calving:

We were on the boat and we saw this dark bowhead whale. ...we had gone to the area where it had surfaced and it seemed very oily and it was very calm... ...we thought that the bowhead whale was giving birth to a calf. ...I have seen these types of bowhead whales [mothers with calves] ...around our community. ...They probably get a calf every year too. It's just my guess. [Jaycopie Audlakiak, QK] BB219

Older, solitary ingutuit are also seen (BB206, 228):

...I have seen one [calf] but I've never really tried to investigate them, and I've never seen an adult with a calf though. [Elaiya Qaquulluk, QK] BB206

...I have suspected that the one I have seen before stuck across from us, was a [yearling?] calf [a bowhead once got stuck in shallow water across from Qikiqtarjuaq]. [Markosie Audlakiak, QK] BB228

### *ii) The presence of calves and population increase*<sup>19</sup>

Although many informants reported the presence of calves and small juveniles, only a few informants representing all four regions commented on the connection between the presence of calves (or juveniles) and the growth of the bowhead population:

Because of the population increase you could occasionally see a school of young bowhead whales gathered in one group. This also tells that indeed the population of the bowhead whales is increasing. [Noah Piugattuk, IG] FB38

I know for a fact that the population had increased for sure, if they did not have any calves they would be extinct now. The only way they grow in population is by having calves... [Ben Ell, IQ] HS35

...we also notice that we see more calves in groups of bowhead whales and that signifies the population rise. We also see a lot more young bowhead whales even though they might be very large in size. [John Kaunak, RB] HB48

The bowhead population is increasing, for they are breeding [producing calves]... [Pauloosie Kooneliusie, QK] BB233

## 3.1.5 Ecology and Behaviour

### *i) Killer whales and bowheads*<sup>20</sup>

Inuit often refer to killer whales as 'wolves of the sea', owing to their habit of attacking, killing, and consuming other marine mammals. Inuit informants reported the occurrence of killer whales during the summer in all regions of the Study Area. They have documented through first-hand knowledge and the oral tradition the interactions between killer whales and bowheads, including predation and the effects of killer whales on bowhead behaviour, distribution, and migrations. Bowheads and other marine mammals often exhibit a pronounced fright reaction to the presence of killer whales. This reaction, called 'aarlirijuk' in the South Baffin dialect of Inuktitut, involves the movement of marine mammals into areas of broken sea ice or shallow inshore waters, which may provide some measure of protection from the killer whales.

### FOX E BASIN

The Igloodik region apparently had few visits from killer whales prior to the increase in numbers of bowhead whales which dates from the 1960s.

...as the bowhead whales are also hunted by killer whales for food. This area [Igloodik area] had no killer whales when there were no bowhead whales. As the population of the bowhead whales increases, so did the killer whales following the bowhead whales. [Noah Piugattuk, IG] FB39

...And the killer whales are the wolves of the sea as we have wolves on the land. All sea mammals fear the killer whale. [Gemma Piiallaq, HB] FB62

### HUDSON STRAIT

Lucassie Nutaraaluk of Iqaluit (HS46, 50) is well aware of the fear that marine mammals have of the killer whale, and the impact of the killer whale on the bowhead:



The only ones hunting for the bowhead [since the ban on whaling] were the killer whales... Like most of all the animals on land are scared of wolves, it is like that too in the ocean with the killer whales. When the mammals are scared of killer whales they tend to go very close to the land, that even happens to beluga whales, perhaps the killer whales are very noisy for they travel at a great speed. Since they live off all the mammals of the sea, they can kill a bowhead whale, that is very well known by the Inuit. [Lucassie Nutaraaluk, IQ] HS46



A bowhead whale pierces the water's surface. Photo by Sue Cosens, Department of Fisheries and Oceans

### HUDSON BAY

Killer whales have been reported by Inuit throughout much of Hudson Bay (within the Study Area). Leo Mimialik of Chesterfield Inlet (HB23) reported that hunters continue to sight these whales near the community, and that killer whales kill narwhals and bowhead whales:

...I think there are a lot of killer whales around now. Somehow the killer whales have to be killed or moved so that there are less killer whales around here. [Leo Mimialik, CI] HB23

...for the killer whales are predators, they hunt any animal, and they should be the one blamed for over-hunting, for a fact. They just play with the mammals... [Murice Kukkiak, CI] HB26

Jack Angoo (HB84) of Whale Cove had been told how three killer whales attacked and killed a bowhead, presumably by suffocation or drowning, in the Chesterfield Inlet area.

Tooma Saumik of Rankin Inlet (HB81) has heard of killer whales hunting a narwhal, but not a bowhead whale. Felix Pisuk (HB265), also of Rankin Inlet, stated that "...if there was a killer whale [around], the bowhead whale would go as near as the beach, bypassing the rocks that could land them and get [them] stuck, actually deflated by letting all the air out, then that is the best opportunity to start the attack [by hunters] on the bowhead whale." [Felix Pisuk, RI] HB265

Most of the comments and information about killer whales (aarluit) in the Hudson Bay region came from informants living in the community of Repulse Bay. Informants reported that killer whales occur in summer in the Repulse Bay area but not every year (HB48, 70, 179, 252); however, one informant (HB36) stated that killer whales are seen very

infrequently nowadays in Repulse Bay waters. Although informants know that aarluit do occasionally attack and kill bowheads and other marine mammals (HB36, 42, 55, 70, 179, 208), only a few actually referred to an eye-witness or second-hand account of a killer whale attack on a bowhead:

...two killer whales were swimming back and forth criss-crossing its air spout [blowhole], cutting [off its] air. We were not able to harvest one [killer whale], but we did harvest one bowhead

whale. [referring to a 1940 harvest of a bowhead at Maluksitaq/Lyon Inlet- see Section 3.3] [Philip Kripanik, RB] HB252

Some informants reported observing killer whales hunting narwhals and/or belugas (HB48). There are observations of bowheads and other marine mammals fleeing into very shallow waters when killer whales are about (HB36, 61, 65):

...I remember seeing two bowhead whales getting very close to the land... this was in the place called Itirjuk/Gore Bay and also at the same time other species such as belugas/narwhals, seals, and others were also sticking very close to the land, obviously they were afraid of something. [Peter Katokra, RB] HB65

Although there is natural mortality of bowheads not due to killer whales (dead bowheads have been seen out at sea – HB205), some informants attributed many of the recently-found dead, beached bowheads (siluit) to killer whale predation (HB55, 179, 208):

...the dead carcasses of bowhead whales that are found may well be the results of killer whales. A large number of dead carcasses of bowhead whales are found near Maluksitaq/Lyon Inlet and at Nagjuktuk/Vansittart Island, for sure these bowhead whales were not killed by Inuit, most likely they were killed by killer whales. [Anon. 29, RB] HB179

Perhaps these [beached] bowhead whale carcasses [about six in the Repulse Bay area since the 1960s] are the results of killer whale attacks – because we can tell from the carcass that they were not very old bowhead whales... the latest one was a large bowhead whale. I think the guilty party for killing off bowhead whales are aarluit. [John Kaunak, RB] HB208

Some informants believe that there is a connection between absence of killer whales and abundance of bowheads and vice-versa (HB36, 42, 61,



70). Killer whales were more abundant in Repulse Bay in about the mid-1960s, when bowheads were less abundant than they are today (HB61) :

*...before there was a community [prior to about 1965] I hear that there were lots of killer whales in the [Repulse] Bay. Narwhals and seals used to gather in the shallow waters near the land... Possibly since then the bowhead whales left Repulse Bay area. ...I suspect that whales temporarily avoided Repulse Bay but after that they started to come back. [Participant, RB/ws] HB61*

Philip Kripanik (HB70) believes that bowheads are now abundant in the Igloodik area because they are avoiding the killer whales elsewhere in their range:

*...I think the reason why they [bowheads] are over there [Igloodik] is because they are running away from the killer whales. I think the killer whales are many, and the bowhead whales are very afraid of them. [Philip Kripanik, RB] HB70*

## **BAFFIN BAY**

### **Arctic Bay**

Killer whales occur in the Arctic Bay area during summer (BB29). Bowheads, narwhals, belugas, and seals (all prey of the feared killer whales) will go very close to shore when killer whales are around; this can be a blessing for marine mammal hunters (BB25, 29). One informant (BB9) advocated the hunting of killer whales by Inuit in the north Baffin region, due to the killer whales' depredations on narwhals, belugas, and bowheads. As a little girl, she heard stories of killer whales killing calves of bowheads and full-grown narwhals.

*My feeling is that if the bowhead whales and narwhals [and harp seals] are no longer disturbed by killer whales, they probably wouldn't bother going into various inlets up here, instead they would remain in the open water. [Mucktar Akumalik, AB/ws] BB25*

*The feared whales referred to as killer whales are around here all the time... The narwhal and other sea mammals [and the bowhead] will go to the shore... ...as the killer whales get closer to shore. [We see the sea mammals] because of the killer whales, they would be driven to shore because they were afraid. [Philip Qamanirq, AB] BB29*

### **Clyde River**

Clyde River informants provided much information about bowheads and killer whales. There is direct evidence of killer whale predation on bowheads – people very infrequently see dead bowheads floating at sea which may be victims of predation by killer whales (BB32). One informant (BB64) reported hearing about people finding stranded carcasses of bowheads having broken bones, such as the ribs, but no other wounds; these are also assumed to be victims of predation by the killer

whale (BB64). These stranded, dead whales (*siluit*) were often used as food by Inuit and their dogs in times past (BB64).

Some Inuit suspect that killer whales may kill quite a few bowheads, in spite of the bowhead population increasing (BB38). In addition to predation by killer whales, disease may be another source of mortality in this growing bowhead population:

*...because there's so many of them [bowheads] I think they can get diseases and get sick and die off this way. As well, the killer whales will kill them, and people have continued to see many more bowhead whales. I would be concerned about the types of diseases that they can pass on to each other. [Solomonie Natanine, CR] BB91*

How killer whales attack and kill bowheads was not much mentioned by informants. Killer whales hunt in packs (BB38). Stranded carcasses of bowheads found with broken ribs and other bones (BB64) were perhaps killed by killer whales using head blows to the bowhead's body.

Informants had much information on the behaviour of bowheads in respect to killer whales, during the time of spring migration as well as in summer. Much of the information and observations pertain to *Igaliqtuuq/Isabella Bay*. Bowheads may avoid or abandon *Igaliqtuuq* in summer/early fall if killer whales happen to go there as well (BB38, 83). However, bowheads more often will react in specific ways to the arrival or presence of killer whales along the migration route or in the summering areas. According to one informant (BB40), bowheads migrate close to the shore to avoid killer whales, which are generally found in deeper offshore waters. When killer whales appear at bowhead summering areas such as *Igaliqtuuq*, bowheads will swim into shallow coastal waters near *Nuvuttiapik/Cape Raper*, thereby obtaining some measure of protection (BB34, 37, 38, 50, 64, 67). This has been observed in other areas as well, e.g., at *Clyde River* (BB81).

*...even though bowhead whales prefer deep waters [at Igaliqtuuq/Isabella Bay], but because of killer whales (aarluit) they go into peninsulas to avoid aarluit. [Nauja Tassugat, CR/ws] BB67*

The killer whale is a formidable adversary of almost all marine mammals. However, at *Igaliqtuuq*, Inuit have observed a sophisticated system of detection and avoidance of killer whales by bowheads (BB40, 71, 73):

*...once they reached their goal where they will be feeding and mating, that's in and near Taliruujaq/Aulitiving Is. in Isabella Bay – they always have a mature bowhead on the look-out by staying a little ways out in the deep water. And once the look-out notices any killer whales he/she would let the other bowhead whales know immediately. ...[the bowheads] would move up right close to the land and stay still. And [they would] wait for the look-out whale to signal them that the killer whales are clear... ...[then] they return to their normal routine – that's the way they are. [Ashevak Palituuq, CR/ws] BB40*



...look-out bowhead whales [called silaaq] ...are the leaders of the school of bowhead whales... The leader, once he realizes that there are aarluit (killer whales) around, he takes in a deep breath of air and then sinks to the bottom of the sea and stays there, and watches, until such time that he needs air – usually once the killer whales have passed he would then surface again for air and then go back down to the floor of the ocean and remain there until the killer whales have passed again, going back to wherever they came from, and only then he will surface to let the other whales know that the killer whales have passed. ...In Inuktitut it's [the leader] called "uatsingat" – modern day people call it 'Aallaaluk' [Nauja Tassugat, CR/ws] BB71

When they [the elder bowhead look-outs] find any danger they make whistling noises to let the others know... [the bowheads] would start scurrying towards the land to get away from the killer whales and the older bowhead whales would follow behind the younger ones and keep watch to see if they are being followed.... ...when the bowhead whales are in small numbers, the elder bowheads would surround the younger ones, and when the killer whale tries to attack from either side, it would be hit on the ribcage by the bowhead whales, and they [bowheads] can kill by breaking the ribs, that's why they keep watch at a lower level. ...when the bones start to break they [killer whales] start getting immobilized after being hit so many times by the bowhead whale, [so] that's how the bowhead whale can kill a killer whale. The elder bowhead whales are the ones that are capable of killing the killer whales, that's why they are the protectors down lower than the younger ones. ...that's how they are, and they can kill killer whales, when they are not in great numbers. [Nauja Tassugat, CR] BB73

### Pangnirtung

Informants provided much testimony about bowheads and killer whales. As in the Clyde River testimony, beached carcasses (*siluit*) of bowheads were reported to have broken ribs, evidence of a killer whale attack (BB109). Another informant reported a bowhead *silu* but didn't know the cause of death (BB127).

The testimony demonstrates that killer whales do kill bowheads, at least occasionally, in the Pangnirtung area. One informant (BB113) learned from his father that bowheads are hunted by killer whales which form a group or pack, led and directed by one whale which is the oldest and biggest in the pack. This informant provided a description of how the killer whales attack and kill bowheads. Jaco Evic (BB127) observed a group of killer whales herd a bowhead out to deep water, where they killed it. Jaco was uncertain if or how much of the whale was consumed, but it soon sank. An informant (BB137) saw a killer whale chasing a bowhead, and as it did so the killer whale was often 'in mid air'. After the killer whale submerged for some time, the informant noticed a lot of oil on the water and assumed that the bowhead had been killed.

Informants reported that marine mammals (including the bowhead) often head to shallow inshore waters when killer whales make an appearance (BB116, 127). They may go to the land even before their

predators can be seen, as the marine mammals can detect the killer whales by the sound of their dorsal fins slicing through the water (BB113). This fear reaction to the presence of aarluit is called 'aarlungajut' (BB118).

Could it be that in the past they [bowheads] more or less frequented that area [Isuittuq/Clearwater Fiord] to keep away from killer whales? Presently there are virtually no more killer whales, that could be one of the reasons why bowheads are not frequenting that area [as much as before]. [Petersoosie Karpik, PA/ws] BB143

...[at Kipisa two hunters] noticed a bowhead whale in pretty shallow water where it was almost right on the bottom. ...it was there all day... However, it was gone the next day... ...probably there had been killer whales around and in the process of escaping he [bowhead] got into shallow water and it stayed there until high tide. [Towkie Maniapik, PA/ws] BB434

Many Inuit believe that killer whales had a significant impact on bowheads in the Pangnirtung region. Elders have seen killer whale attacks on bowheads in the past (BB114, 118).

The killer whales are killing off the bowhead whales too, so the animal rights activists should do something about the killer whales too. [Anon. 24, PA] BB114

Bowheads may be impacted by their predators not only as individuals, but also at the level of the group or population. Josephée Keenainak (BB129, 397) believes that an influx of killer whales into the region [year not provided] resulted in bowhead whales decreasing their use of the area at the head of Tinnujivik/Cumberland Sound:

This area where we lived before [when I was a child] once had a lot of bowhead whales. After the killer whales started coming here, the bowhead whales did not come around as much any more. ...[also] you do not see too many narwhals or beluga whales. To me, it seems like the narwhal have declined ever since that time. [Josephée Keenainak, PA] BB129

Some informants reported that this increase/influx of killer whales caused a decline in the number of bowheads and other marine mammals in the Sound (BB112, 113, 377). This began to happen after 1946 when Inuit harvested one bowhead at Isuittuq/Clearwater Fiord (BB377).

...The killer whales have killed a lot of bowhead whales. The older people in our community are aware of this. The killer whales are predators, so they have been part of the cause to make the bowhead whale decline to its low number today. [Anon. 23, PA] BB113

The above observations which indicate an inverse relationship between bowhead and killer whale abundance may be compared with observations of changes in abundance of killer whales over the past few decades. There are fewer killer whales today than in the past (BB113, 143). The 'past' referred to may be the years after 1946, when



killer whales began to appear in the Sound in greater numbers (BB129, 377, 397).

### *Kugaaruk*

One informant mentioned the threat that killer whales pose to bowheads:

*I have heard of the killer whale hunting the bowhead whale by letting it suffocate... the killer whales chase and hunt the bowhead whales. If the killer whales were human, the wildlife officers would have stepped in a long time ago, so I think it's about time they do something with the killer whales. [Anon. 28, PB] BB145*

### *Pond Inlet*

Pond Inlet informants believe that bowheads enter the bays and fiords at ice break-up not only to find good feeding areas, but also to avoid killer whales (BB179, 189):

*...bowhead whales started to penetrate deeper into the inlets to start feeding... late into July when the ice is breaking up. That was also the time that they would be feeding without fear of predators such as killer whales. [Kooneelosie Nutarak, Sr., PI/ws] BB179*

Sam Arnakallak (BB192) reminisced about earlier times when all marine mammals seemed terrified of the killer whales:

*I remember years ago when I first saw a bowhead whale, how frightened I was. Because the ones that we seldom saw always were swimming away from killer whales... first we saw the bowhead whales, and shortly after we saw narwhals... and after awhile we saw the killer whales chasing the [bowhead] whales [and narwhals]. ...they [bowheads] seemed more scared than the narwhals and belugas. [this was at Nallua/Low Point] ...I remember years ago when we only had dinghies, I saw killer whales chasing after seals, bearded seals and whales. I also recall shooting at them [the seals] and they didn't even seem to notice the shots that were aimed at them. But lately I haven't heard of killer whales being seen, perhaps it's due to that there are too many boats. [too much noise nowadays (for the killer whales), seals are not as often scared ashore by killer whales] [Sam Arnakallak, PI/ws] BB192*

### *Qikiqtarjuaq*

Pauloosie Angmarlik of Pangnirtung (BB417, 420) reported that in about the year 1920, Inuit at Qivittuuq/Kivitoo (north of Qikiqtarjuaq) harvested a bowhead that had been injured by killer whales (see section 3.3; see also FB101).

Many informants expressed the view that killer whales may have a significant impact on bowhead populations. Killer whales are feared by almost all marine mammals (BB200), and in arctic waters they do subsist on several species (BB202). Since the end of commercial whaling, killer

whales have been the only predators of bowheads in the Qikiqtarjuaq area (BB504, 505). Even with some predation by killer whales, the bowhead population is growing (BB210). Jacobie Koksiak (BB215) believes that there is an inverse relationship between the numbers of these two species:

*...when I was a child in Palligvik/Padloping Island, I don't remember seeing that many bowhead whales – and there were more killer whales/aarluit back then, but later on in time as the aarluit begin to diminish in number, that's when I began to notice more bowhead whales as opposed to the past. [Jacobie Koksiak, QK/ws] BB215*

Levi Nutaralak (BB226) and Mosesie Qappik (BB231) believe that killer whale predation is a major source of mortality of bowheads:

*I think the killer whales are the major cause of the bowhead whales dying. It is obvious that the killer whales do hunt the bowhead whales and kill them. The killer whales are the only ones that hunt the bowhead whales. They probably kill a young bowhead whale very quickly because they gang up on it. [Levi Nutaralak, QK] BB226*

*...since the whalers came, they said that they [bowheads] were depleting in numbers and I am sure that we can't just blame the whalers for that, because the killer whales prey on them too and kill them. [Mosesie Qappik, QK] BB231*

Many informants in this Study stated that bowheads frequent shallow waters to avoid killer whales. A Qikiqtarjuaq informant (BB226) observed a bowhead fleeing into shallow waters as it was being chased and attacked by aarluit in fall of 1994 (but the bowhead was killed by its attackers – see below). Around Qivittuuq/Kivitoo, bowheads seem to prefer the shallowest waters (BB202).

Informants from Qikiqtarjuaq reported a dramatic encounter between killer whales and bowheads during September 1994, in the mouth of Merchants Bay, in the vicinity of Palligvik/Padloping Island (BB209, 217, 222, 226, 236). As many as one hundred killer whales were in the area over several days, and at least one bowhead was killed and partly consumed. A detached entire flipper of a bowhead was seen floating, and informants noted an oil slick and floating blubber which attracted hundreds of sea birds.

*...a bowhead whale was hunted by the killer whales. People said that the fin [flipper] had been taken right off the bowhead whale by the killer whales. As well people said there were lots of northern fulmars which were perhaps eating the blubber of the bowhead whale. People thought that the killer whales were eating the bowhead whale. As well, last year [1994] my brother Levi [BB226] had gone down towards Palligvik/Padloping where the [commercial] whalers would have occupied a camp and they said that they were watching a killer whale hunting a bowhead whale. They were saying that you could see the fins*





[flippers] of the bowhead whale as the killer whales were trying to kill it. [Jaycopie Audlakiak, QK] BB217

During [September] 1994... I was on the boat when the killer whales were chasing a bowhead whale. We did not see the dead bowhead whale but we had seen the killer whales chasing and trying to kill the bowhead whale. ... You could just see the side fin [flipper] of the bowhead whale as it was being hunted by the killer whales. ... it had gone towards the shallower part of the water but the killer whales were ganging up on it and we thought for sure that was the end of the bowhead whale. ... If we had gone back we would have found out for sure whether it was killed or not. I think the bowhead whale was killed for sure. ... but it got windy and we were on a bigger boat so we did not go to the shallower part of the water. So we did not see the bowhead whale... [Levi Nutaralak, QK] BB226

Another informant (BB234) observed killer whales attacking bowheads near Qikiqtarjuaq but he did not provide the date.

### ii) Sea ice and bowheads<sup>21</sup>

Bowheads seem to prefer areas where there is some ice cover (HB36), or the edge of the ice or floe edge – *sinaa* (HS135):

...we seem to see fewer bowhead whales when there is ice around... [but this could be because] we are usually not looking for bowhead whales between ice pans, and normally we travel [by boat] where there is no ice. Last summer [1995] when the research team from Fisheries and Oceans were in town the ice accumulated in the bay and I presumed that they [bowheads] would be in areas where there is no ice but I was wrong, instead they went further into the water where there is ice. [David Tuktudjuk, RB/ws] HB36

Bowheads will enter fiords and bays as the ice is breaking up, melting and dispersing in the spring (HS28; BB75, 178). They leave Nunavut's nearshore waters and bays in late fall as fast ice begins to form (BB31, 59, 116, 231, 349), and they are sighted hardly ever in Nunavut during winter (HS28, 47; BB130, BB349; see also Map 1). One bowhead and several narwhals spent the winter of 1998/99 at the floe edge off Igloodik (Ammie Kipsigak, Hall Beach, *pers. comm.*). In Tinnujivik/Cumberland Sound, some bowheads over-winter at the floe edge and will even make breathing holes (*aglu*) in thinner ice which forms seaward of the floe edge in very cold weather (BB116). However, bowheads may leave the Sound during the very cold weather of mid-winter (BB116). Some informants interpret that sea ice does not seem to be a significant problem for the bowhead whale (e.g., BB13, 116).

Bowheads over-winter in loose pack ice or in open water (HS28), probably in several areas including Davis Strait, Hudson Bay, and Sullualuk/Hudson Strait. However, bowheads avoid areas where the ice cover is very extensive or apparently continuous (HS 28, 47; HB115; BB85, 130, 178).

They [bowheads] do not come as soon if the ice is still around, or if there's too much ice [at Igaliqtuuq/Isabella Bay]. [Solomon Natanine, CR] BB85

Adamee Veevee (BB99) pointed out that bowheads are generally more numerous at Pangnirtung's floe edge when there is more open water off the floe edge in spring (see also BB117).

Mortality due to ice-entrapment may occur (see also section 3.1.5. vii):

My brother-in-law found a dead bowhead whale at the beach in Siurakjuk [Siorarsuk Peninsula, N. of Igloodik] during spring time when there was still land fast ice. This particular bowhead whale didn't seem to have any wounds. Chances are that it may have gotten stuck in pack ice and died from that. [Philip Kripanik, RB/ws] HB236

I have also heard that there were bowheads that got caught in the ice in Arviqtujuq/Eglington Fiord before. [James Jaypoody, CR] BB59

I have seen a dead bowhead whale that was frozen in on the ice, that was during the winter time, out in Pangnirtung, back when I was just a child... [Adamie Nookiguak, QK] BB489

### iii) Tides, currents, and bowhead feeding ecology<sup>22</sup>

This section documents Inuit observations on bowhead foods and feeding, and how the moon and tides may affect the general activity and feeding of bowhead whales and other wildlife. The information presented was provided by informants from the Hudson Bay and Baffin Bay regions.

#### HUDSON BAY

Bowheads and other marine mammals are strongly influenced by the tidal cycle and the tide-induced sea currents. 'Piturnirtuq' is the time around the full moon when tidal variation is greatest and the tidal currents are strongest. During *piturniq*, bowhead whales are very active and feed heavily in areas where the currents are strongest:

...I know that the current is very strong in between the islands [near Repulse Bay] when it's high tide. We had observed during *piturniq* [full moon] season, four bowhead whales within that area and they may have been feeding. When the low tide is coming, they were moving out into the deeper waters, and when the high tide comes they would go back to the area where there is a strong current and start feeding again. [Donat Milortok, RB] HB40

When it's "piturniq" they come much closer to the land away from the strong currents and they seem to frequent small bays and peninsulas. [John Kaunak, RB] HB48

During spring and summer in the Repulse Bay area, bowheads will gather and remain in places where their food is most abundant as long as they are not disturbed (HB65, 68).



...you could see them [bowheads] at Avatuqpatiak/Haviland Bay every summer when they are not being disturbed, they simply stay in one location for a long time and I am sure that they are feeding. [Peter Katokra, RB] HB65

Jackie Napayok of Whale Cove (HB85) stated that when their food supply becomes depleted, the bowheads will move on to other feeding areas. During the 1930s to 1950s, Mikitok Bruce of Coral Harbour (HB93) reported that bowheads fed in groups of up to six animals near his home at Kuuk (near Leyson Point, Southampton Island), during September. The whales remained in the same location for extended periods of time, often surfacing with open mouths.

## **BAFFIN BAY**

### **Arctic Bay**

Bowheads feed in the Arctic Bay community resource-use area during summer (BB16, 18, 239):

*There is plenty of food for bowhead whales up here – for example, during strong current tides, it is almost impossible to see the bottom of the sea because of plankton.* [Koonoo Oyukuluk, AB/ws] BB16

*[American commercial whaling] was at the floe edge [near Somerset Is.] a long time ago, and I also remember people inspecting the stomach contents [of the bowheads] and it contains crustaceans.* [Andrew Oyukuluk, AB/ws] BB239

### **Clyde River**

In late summer and fall, bowheads feed in the Clyde River area. Igaliquuq/Isabella Bay is an important and well-known bowhead concentration and feeding area (BB38, 50, 73, 85). Bowheads feed in the deeper offshore areas (BB34, 73, 287), where they may dive deep for a long time, and re-surface close to the same spot (BB31). At Igaliquuq, the main food of bowhead whales is *iglirait*/copepods (BB37, 50, 58, 73). Bowheads form smaller, separate groups within the larger feeding aggregation (BB86). How bowheads feed is well described by Nauja Tassugat (see also BB37, 50):

*Bowheads feed on iglirait/copepods... they feed on them by opening their mouths and waiting, the mouth is full of suqqaq/baleen and they are just like hair... [in this way] the bowhead collects its food; I guess when they feel that they have collected enough [on the hairy fringes of the baleen] then they close their mouths and eat it. ...the tips of the baleen are quite hairy, and they stand up like teeth all the way to the back of the mouth...* [Nauja Tassugat, CR] BB73

*...Taliruujaq/Aulitiving Is. [in Igaliquuq/Isabella Bay]... is where they go to feed, perhaps there are lots of crustaceans in that particular area. Apparently when they are feeding, they are swimming with their mouth wide open.* [Ipellie Qillaq, CR/ws] BB50

There may be annual variations in the abundance and/or location of the bowheads' food, which directly affects the distribution and abundance of the whales:

*Their food, the krill or the copepods, when they are more plentiful during some springs and summers, the whales are around in greater numbers, and in some summers they are less; so people would know that there are more bowhead whales if they have seen a lot more krill or copepods.* [Jacobie Panipak, CR] BB58

Nauja Tassugat (BB70) reported another location where bowheads feed before they head south to Igaliquuq:

*...there used to be a fair number in a group [at Natsiqsujuk- NW point of Scott Inlet], and I think that's where they used to feed... then next you notice they are traveling to Igaliquuq/Isabella Bay where they feed; I think they get into larger groups once they are feeding. ...just like belugas/narwhals* [Nauja Tassugat, CR/ws] BB70

### **Pangnirtung**

Bowhead whales feed off the floe edge in Tinnujivik/Cumberland Sound during spring (BB106, 108, 117), sometimes forming large feeding aggregations (BB120). However, their behaviour and movements near the floe edge seem to be strongly influenced by the tides (BB102, 106):

*...I think they are feeding [at the floe edge] and sometimes you could tell that they are feeding. After they have been feeding they usually gather in one area where they seemed to be playing, then they disappear. ...At the floe edge their actions seem to be related to the tides, where when it's high tide they seemed to be more plentiful...* [Anon. 21, PA] BB106

Bowheads also feed during the summer at various locations in Tinnujivik/Cumberland Sound (BB117, 126).

*...there are a lot of crustaceans that bowheads feed on, in and around these waters. Most likely they are here to feed. I am sure that their feeding habits are similar to those of belugas/narwhals where they take time to build up their fat.* [Jaco Evic, PA] BB126

At any time of the year, the movements of the bowheads are influenced by the lunar/tidal cycles and currents (BB110, 114):

*The bowhead whales will go to a certain spot when the current is stronger. It is because they like to travel during this time. ...you tend to see more sea mammals when the current is stronger.* [Anon. 23, PA] BB110

*... during the full moon, the bowheads tend to go inside the bay, where the beluga goes, to the place called Isuqturjuaq/Clearwater Fiord, the bowhead whales too follow moon cycles, inside our big bay here.* [Anon. 24, PA] BB114



Some hunters may be unaware of these influences as bowheads are a non-harvested and hence often ignored animal (see also section 3.2.4.i):

*From what I have seen bowhead whales seem to occur at anytime regardless of current or high tides. [Petroosie Karpik, PA/ws] BB429*

### **Kugaaruk**

One informant commented on the feeding method of the bowhead whale:

*The bowhead whale uses the tips [of the baleen] to gather their food [iglirait/copepods]. ...People used to say that a man could stand inside the mouth of the bowhead whale... [Anon. 30, PB] HB144*

### **Pond Inlet**

Bowheads also feed in the Pond Inlet area. They probably have specific feeding locations (BB167, 178), although one informant proposed that many of these grounds are not known because of lack of surveys (BB173). When bowheads are heading to their feeding grounds, they do so in large groups (BB173). A bowhead that dives for a long time, then re-surfaces (also for a long time) near the same spot, is feeding (John Tongak, BB178). Kooneloosie Nutarak, Sr. (BB179) observed a bowhead feeding:

*An Inuk whaler who raised me told [me] of one incident down at the floe edge, when they were watching for bowhead whales. ...bowhead whales started to penetrate deeper into the inlets to start feeding late in July when the ice is breaking up. That was also the time that they would be feeding without fear of predators such as killer whales. ...I also had an occasion to see a bowhead whale feeding [at Ivisat on S. Bylot Island]. ...[I heard a crunching sound, ice was still present] ...there was this huge bowhead whale just floating – as it was very close I started to observe it, you could tell that his back [and head] were covered with mud. Then it submerged, and resurfaced after about an hour, and he repeated the same thing time after time... [I observed this for a few hours]. ...I went down to our tent and explained this to my older brother... he told me that this bowhead whale had been feeding in front of our camp [he/she lay on the bottom of the sea on his/her back and fed on bottom creatures – krill]. And I later learned that once they leave the floe edge and go into fiords and inlets, that that's the way they feed. [Kooneloosie Nutarak, Sr., PI/ws] BB179*

### **Qikiqtarjuaq**

Bowheads feed in the Qikiqtarjuaq area in summer and fall. There are certain specific locations where bowheads usually feed (BB216); however, these areas may not be used by many bowheads in years of low prey [crustacean] abundance (BB207). They will generally be found in greater numbers in locations where there is the most food for them (BB198, 200, 207). Annual fluctuations in bowhead numbers (in any

given location) are often due to variations in the abundance of their prey (BB200, 207):

*...the populations of wildlife fluctuate from one year to the next, this is because of their needs, food-wise. ...As they [bowheads] start coming up from June to August, that's when their food is plentiful, that is at least in Qikiqtarjuaq. [Adamie Nookiguak, QK/ws] BB200*

*I am sure that because there is plenty of food around, that's the reason why they always come up here, naturally the abundance of food fluctuates as well, one year there is more than the previous and so on. [Gamailee Nookiguak, QK/ws] BB207*

Informants reported that bowheads usually feed during August and September in the immediate vicinity of the community of Qikiqtarjuaq (BB219, 224, 225, 229, 231).

*...around here [Qikiqtarjuaq area], you can really notice them feeding here... ...when they all group-up like that, when they are feeding and playing and staying in that one spot in August... [Koalie Kooneluisie, QK] BB224*

*...I have watched bowhead whales feeding, here in Qikiqtarjuaq... I figured they were feeding, because... ...after being under water for awhile they would surface at the same spot... [Leah Newkingak, QK] BB225*

### **iv) Impacts of environmental disturbance on bowheads<sup>23</sup>**

#### **Impacts of noise from snowmobiles and small water-craft**

Many informants reported that bowheads do not seem to be adversely affected by canoes or small boats powered by powerful outboard engines (FB48, HS5, HS146, HB51), even when hunters are shooting at other species (HB51). Because bowheads are not an object of hunting and hence not always closely observed, some informants were uncertain about impacts of noise on bowheads (FB86). As bowheads are not hunted any more, they may readily habituate to the presence of skidoos and boats (FB86; HS146; BB16, 227). Belugas and narwhals are more sensitive to noise than are bowheads (HS146).

*Some of them [bowheads] don't seem to be bothered by anything. Even if you're going on your boat they just continually stay where we have seen them. Some of them are even close to our boats. Perhaps it is because they are not hunted. [Levi Nutarak, QK] BB227*

In the late commercial/post-commercial whaling days, bowhead hunters had to be very quiet and make no sudden noises in their sail or row boats when pursuing a whale, lest the whale hear the noise and submerge and flee (FB88; HB51, 75, 96, 234, 253; BB403). According to Philip Kripanik of Repulse Bay (HB234), on windy days bowheads could be approached without being "...disturbed in the slightest". One should not



approach a bowhead with the sun behind him or her so as not to spook the whale with the boat's shadow (HB234, 253). Even during the kayak hunts of ancestral times, the hunter had to be quiet and not form a shadow as he approached the whale (HB265).

...apparently in the olden days, when they were hunting for bowhead whales, hunters were not even allowed to urinate into the sea; but nowadays here we are using powerful and noisy motors on our boats and the whales are right nearby. Even down at the floe edge we are using ski-dos which are quite noisy and you still see bowhead whales right at the floe edge. [David Irngaut, IG/ws] FB88

When we used to hunt for the bowhead whale, we made sure that we sneaked up on the bowhead whale and made sure that we were very quiet [using whaling boats with oar and sail]. If the outboard motors are used, the bowhead whale will know right away. [Arsene Paniuq, RI] HB75

Mikitok Bruce (HB96) mentioned that the bowhead hunters had to urinate inside the boat so as not to disturb their quarry: '...if bowheads become aware of human beings around they will submerge and travel a long distance away just like belugas and narwhals.' [Mikitok Bruce, CH] HB96

On the other hand, some hunters perceive that bowheads do react negatively to skidoos and/or small vessels. Atsiaq Alasuaq (HS15) believes that the use of outboard engines is a possible explanation for the relative scarcity of bowheads near Cape Dorset. Some informants believe that many species of sea mammal avoid areas that they used to frequent, owing to vessel, boat, and other sources of noise (HS26, 45). Akakak Saata (HS 26) believes that noise may be an explanation for the low number of bowhead sightings in the Frobisher Bay area. Banging on something inside your boat can cause the whale to flee towards the land (HB76). Motor boats tend to frighten or disturb the whales (BB76, 92, 127, 132, 143, 435), although they may be closely approached in kayaks or boats with the engines turned off (Anon.14 of Clyde River, BB38).

...[when disturbed by noise] they [sea mammals] go to areas that they do not usually frequent and where there is less noise... When I first came here to Iqaluit, Frobisher Bay had more [sea] mammals frequenting it, for there were less motorized boats being used at that time, no wonder they do not like the sound of motors and they go close to the land to run away, that happens especially to the seals and the beluga for they have acute hearing... they can hear the people walking on ice on the floe edge even when they [people] are trying to be very quiet. [Lucassie Nutaraaluk, IQ] HS45

...And I am sure that bowhead whales were not particularly disturbed by noise [in the time before the Whalers]- as opposed to today. [Mikitok Bruce, CH] HB91

They [bowheads] seem to start their other activities [such as playing] after the hunters have gone home from hunting and there is no more sound of engines in the water... [John Kaunak, RB] HB48

...bowhead whales had been increasing around Taliruujaalik/Aulitiving Island [in Igaliquuq/Isabella Bay] because nobody usually goes there by motorized boats... [Nauja Tassugat, CR] BB76

Since motorized boats have been introduced bowhead whales that used to be around and in the [Pangnirtung] Fjord seemed to have moved into deeper waters and the floe edge – this is the results of noise made by motorized boats. [Jaco Evic, PA] BB127

Peteroosie Karpik of Pangnirtung (BB143) has noted a decrease in the number of bowheads at Isuittuq/Clearwater Fiord since motorized boats started to frequent that area for beluga hunting. However, the bowhead whales' infrequent use of this area today could be due as well to the lower number of killer whales that enter Tinnujivik/Cumberland Sound as compared to the past (BB143).

Bowheads may be disturbed by snowmobile noise at the floe edge or in the breaking ice:

We know that the noise from the ski-dos are disturbing to bowheads. That is why they do not come here. Before the ski-doo when we lived down there, when people spotted the narwhals, everyone was careful not to make any holes in the ice so that they would not make any noise. As well, the first narwhal they saw, they would not kill them. They would only kill the ones that came after the first ones had appeared. ...so that they will not go back to where they came from for a while. ...if some hunter tried to kill [the first group of migrating narwhals] the rest of the narwhals would not follow, knowing there is danger. They would come around again only after a long period of time had passed. That is what the Inuit have come to know in the Inuit way. Right now they [sea mammals] are staying away because of the ski-dos. The sea mammals in particular are very easily frightened; all of them. [Simon Akpaliapik, PI] BB197

### Impacts of large-vessel noise

Some Inuit believe that bowheads may be disturbed by large vessels (HS44, HS50, HS126, HS147; HB77; BB16, 92, 132, 360). Although sea mammals may have been disturbed by large ocean-going ships in the past (when large-vessel traffic first started to increase), due to habituation they may now not be very affected or disturbed by large ships (HS32; BB453). Although uncertain about the impacts of large vessel traffic on bowheads and other marine mammals, some elders do not worry a lot about this as most large ships are necessary for today's Inuit economy (HS101). One informant (HB16) suggested that the non-harvested status of bowheads has led to a lack of knowledge as well as concern about the potential impacts of large vessels on bowhead whales. In the Hudson Bay area, ship traffic may not be a big problem for bowheads because of the relatively low number of bowheads in this area (Jack Angoo, Whale Cove, HB83). This same lack of concern applies to the Kugaaruk area (BB150). On the other hand, two Qikiqtarjuaq informants believe that increasing ship traffic is not a concern because



there are so many bowheads now and they are increasing in numbers (BB233, 235).

*I am sure that they [bowheads] would be forced to move somewhere else if shipping and oil exploration are increased within Nunavut. Sea mammals are much more easily disturbed by activities than land mammals- they are unlike caribou. [Lucassie Ikkidluak, KM] HS147*

*I'm not only worried about bowhead whales, I think the ships might have an impact on sea mammals in Tallurutiit/Lancaster Sound and Barrow Strait. ...starting in 1966, the seals and the harp seals would go up onto the shore as the ships would start arriving to our community. The way I think is that the sea mammals are bothered by the ships. [Anon. 15, GF] BB92*

Large vessels might displace bowheads from prime habitat into marginal areas where food may not be adequate:

*...[the sea mammals] would be traveling to places where they have never been, trying to get as far away as possible from the noise that the ships are making. ...the other smaller species like seals, ringed seals, and belugas may be frightened for a short while and come back to the same location. ...if there is too much shipping activities bowhead whales will surely move somewhere else. ...it would be preferable that they not be disturbed on the basis that they go and frequent areas where there is food. Food that helps their young and only by eating a sufficient amount could they bear their young. ...it is also evident that sea mammals do not like to be near large communities where it is populated. [Lypa Pitsiulak, PA] BB132*

### Potential impacts of oil spills/pollution from ocean-going tankers and drilling

Many hunters fear the negative impacts that oil spills may pose for bowheads and other sea mammals (HS32; HB77, 164; BB273, 382, 519).

*I would be concerned about an oil spill for this bay [Rankin Inlet] is quite small, and it could be filled with oil, and if that happens the animals in the water would disappear. The outsiders might think that it is a vast land, but the oil could spoil the land very easily. As long as they treat the land and the water with respect, I would not have any concern. [Felix Pisuk, RI] HB77*

*I do not want the Nunavut environment to be destroyed [by the mineral or oil and gas exploration vessels] ...perhaps if the Inuit are involved and actually participate in the surveys, the environmental damage that is occurring can be less. The Inuit should be respected, because they do not want to be in an environment that is polluted... [Philip Qamanirq, AB] BB273*

*...if there are too many activities in the waters inhabited by sea mammals, there is a good possibility that accidents could easily occur in the ocean and pollute the water and that would for sure destroy the wildlife. [Inusiq Nashalik, PA/ws] BB382*

*I would only worry about the fuel [spill from a ship]. I am not too concerned about the impact that the ships might have on the sea mammals as long as we continue to hunt the sea mammals and as long as there is enough wildlife left over for our children [to hunt]. That is all I care about as long as we live in peace. [Martha Kutiutikku, PB] HB164*

*...if the bowhead whale is wiped out by any kind of pollution while we are still not allowed to hunt them, (there are so many chemicals nowadays that are pollutants to the world), if the animals are killed by, like any kind of pollutant spills, like oil, I would be very sorrowful. [Mosesie Qappik, QK] BB519*

### Impacts of other sources of water-borne noise

The bowhead and other marine mammals are sensitive to land-based explosive charges and may avoid areas of such disturbance (HS45; BB333).

*...also at the time when they were blowing up the point down there... ..that is when the beluga stopped coming here, but now they are starting to come back for they no longer use the explosives as much. I also think the drills have scared the mammals too... [Lucassie Nutaraaluk, IQ] HS45*

### Impacts of hunting activities

Some Arctic Bay hunters believe that, during the recent decade, some bowhead whales and narwhals have been disturbed by hunting activity at the Tununirusiup Kangiq&ua/Admiralty Inlet floe edge and have re-located to the Igloodik area (BB3). One informant from Pond Inlet believes that the present-day abundance of bowheads near Igloodik is due to emigration from the Pond Inlet area where bowheads were heavily hunted until about 1920 (Simon Akpaliapik, BB196).

When searching for bowhead whales, hunters were not allowed to shoot into the water, make unnecessary noises, or even pursue a herd of migrating belugas, as bowheads were sure to be coming behind the belugas (Lypa Pitsiulak, Pangnirtung, BB403).

### v) Bowheads as a hazard to small-boat traffic<sup>24</sup>

#### FOXE BASIN

Numerous hunters from Igloodik (FB23, 25, 29, 30, 31, 36, 43, 46, 47, 48, 49) and Hall Beach (FB3, 4, 6, 8) are concerned about possible accidents occurring between hunters' boats and bowheads, within the bowhead concentration area(s) of northern Foxe Basin, as bowheads are nowadays quite numerous and have increased in number in this region during the past few decades (section 3.1.1).

*...we hear hunters fear possible accidents with bowhead whales, i.e. whale surfacing on a boat, or bumping into bowhead whales; basically hunters are concerned with bowhead whales and their abundance. I've heard of a near*



accident with a canoe where the bowhead whale almost surfaced on a canoe. [Albert Nuvviah, HB] FB3

There was an occasion that one [bowhead] went by us at a very rapid speed. [Ammie Kipsigak, HB/ws] FB6

Now when one is going caribou hunting by boat [towards Tasiujaq/Murray Maxwell Bay], because there are so many bowhead whales we have to detour around them. [Anon. 19, IG] FB23

Our outboard motor had come right off our boat because of a bowhead whale. Our driver had hung on to the motor so that was the reason we did not completely lose our outboard motor. [Felix Alaralak, IG] FB30

Those of us who travel on our boats, we usually are very careful as we travel because there are too many bowhead whales around so we travel only in the shallower part of our water as we go out on our boats. [Felix Alaralak, IG] FB31

About 2 years ago I took part in traveling to Baffin area by boat in the fall when it was getting dark. When we were traveling back home, it was very calm and we ran out of gas and had to fill up our tank – as we were filling up our tank we could hear bowhead whales everywhere and we got concerned that we might accidentally hit a bowhead whale in the dark because there were so many. [Simon Iyyiriah, IG] FB46

If the bowhead whale will continue to increase, I think they will become more and more dangerous especially during the springtime in Ikiq [mouth of Fury and Hecla Strait]. During the springtime the boats continue to go across our water all the time and the bowhead whales don't seem to be bothered by the outboard motors of the boats. They do not swim away from the noise. It seems like they can be very dangerous because the bowhead whales continue to surface very close to the boats. Perhaps they are used to the outboard motor noise by now or maybe because there are so many of them they don't swim away. ...it is becoming more and more dangerous if you are going to ride your boat. It is obvious today that they might cause an accident with the boat because there are too many of them. You see a lot of them during spring as well as during summer time and they are even more towards the fall weather. [Victor Aqatsiah, IG] FB48

### HUDSON BAY

Two Repulse Bay informants (HB46, 64) and one from Whale Cove (HB87) commented on the threat to boaters from bowhead whales in the Hudson Bay region. In the last few years, the increasing numbers of whales have been causing hunters to be more fearful and attentive of bowheads when they are out boating (HB46, 64). There have been near collisions with bowheads (HB64, 87).

Even when you are boating on a calm day you have to be constantly on the look-out for bowhead whales – I even almost rammed into whales on more than one occasion. Also, when you are boating alone it gets a little frightening at

times as they seem to be everywhere. For sure we can say that there is more of them around. [Participant, RB/ws] HB64

Recently we almost ran into a bowhead whale. We had seen the bubbles from the bowhead whale and moved away from the bubbles by our boat. [Mary Nangmalik, WC] HB87

### BAFFIN BAY

Most of the communities in the Baffin Bay region of the Study Area reported that boaters are quite fearful of collisions with bowhead whales which have been increasing in numbers for the last few decades (see section 3.1.1).

Four informants from Arctic Bay (BB10, 19, 22, 29) mentioned the danger that bowheads may pose to boaters, based on the increased numbers of whales now using the area in summer.

I also recall Andrew Oyukuluk's younger brother was traveling across the way to hunt for belugas/narwhals; their boat was completely lifted off the water and sat on the back of a bowhead whale. He said that it was a very frightening experience to have such an encounter with a bowhead whale... This would have been about 1969. [Lazarus Aola, AB/ws] BB19

...very recently, I was told, as I do not go out to camps anymore, a boat from here almost had a run-in with a bowhead whale. Apparently, the boat went right over the bowhead whale, when the boat was traveling through a swell, but the motor of the boat was not damaged, so the boat did not tip over. [Philip Qamanirq, AB] BB29

Clyde River informants (BB38, 43, 45, 85, 87, 89) expressed similar fears and had similar experiences with respect to the abundance of bowheads in the summer:

...It even comes to a point where we can't even go boating due to too many bowhead whales coming around here, it gets too scary to go boating... This does not happen every season, it only happens occasionally. ...there were a lot of bowhead whales around 1976-79, that's the last time that I have ever seen that many bowhead whales around here, we were unable to move on our boat because there were so many bowhead whales around; when the bowhead whales were reaching the land it got pretty scary to go boating. [Anon. 14, CR] BB38

...[our son] had reported that he had seen a lot of bowhead whales when he is traveling by boat. ...Because when they go out caribou hunting in the summer they have to go a long way, and you do worry about them because of the abundance of bowhead whales. [Elisapee Arreak, CR/ws] BB43

Although, according to Solomon Natanine (BB85), bowheads at Iqaliquuq/Isabella Bay "...don't do anything to the boats. They are harmless...", he also notes:



[there are more bowheads nowadays compared to the past] ...hunters have to be constantly on the look-out for whales when they are hunting with boats – there have been some incidents where accidents have occurred caused by bowhead whales. [Solomonie Natanine, CR/ws] BB87

[At Igaliqtuuq/Isabella Bay] some bowheads [are aware of motorboats]... ...there was one incident where a bowhead whale surfaced right near my boat and I could be a little bit frightened. I think some of them are quite dangerous and curious... ...[so] I started the motor and moved away, [but] they were still on the surface... They are a little bit frightening when they are up real close...[Solomonie Natanine, CR/ws] BB89

Pangnirtung informants (BB108, 112, 113, 114, 380) also expressed concern about potential collisions between boats and the numerous bowhead whales:

ANON 21 and I had gone hunting on the floe edge and we had to go around them [bowheads] when we were coming back to town. [Anon. 22, PA] BB108

I have seen many bowhead whales, down in front of Qikiqtan/Kekerten, more to the west of Qikiqtan. We had to get out of the water, on to a piece of ice for safety, for there were too many bowhead whales around, for it was getting too dangerous to keep on boating. They were passing us by all day long, so we literally stayed on the piece of ice all day for safety. There was more than one boat, so the other crew, Etuangat and his step son, Palluq, had to go to safety too on to a different piece of ice. [Anon. 24, PA] BB114

Pond Inlet informants (BB161, 170, 171, 193) also fear boat-bowhead collisions:

I think I also heard that there was a boat that had to literally speed away from a bowhead whale. [The Game Officer sped away quickly because a bowhead was circling their boat] [Elijah Panipakoocho, PI/ws] BB161

Two informants documented a serious collision between a small boat and a bowhead in the Pond Inlet area, which fortunately did not result in loss of life or serious injury:

...[in 1970] in this area [Pond Inlet], my son-in-law and some other men lost their outboard motor. It was wrecked, their boat was almost capsized. They were trying to see if they could get a little adventure, all they tried to do was just take a look [at a bowhead]. The bowhead whales are dangerous, they will attack. They were thrown off to the side. There is a man named Siarnaq... ...he was the man in the boat thrown off to the side of his canoe. As well in Igloodik, we heard the same kind of thing happened, also in Clyde River we heard that a local guide had taken some tourists out and a bowhead whale had capsized their boat. You can ask Nataaq [of Igloodik], he was also thrown clear off his boat [after an encounter with a bowhead]. [Jimmy Muckpah, PI] BB170

...there was one here [boat-whale collision], I do believe that it was Siarnaq and his boat companions, apparently the bowhead whale surfaced right from

under them. Their engines broke during that incident. It was a very near-death accident. ...He never actually fell in the water, he later said that the boat almost capsized. [Joanasie Arreak, PI/ws] BB171

Qikiqtarjuaq informants (BB203, 227, 228, 234, 235) are afraid to go boating when there are many bowheads around:

When we travel by boat they [bowheads] don't seem to be bothered at all. Some of them get very close to us. We get scared at times because there are so many of them, because we think that we might drive over them with our boats. They are not very fierce animals and they are usually very close to our boats. That's the way they are. [Levi Nutarak, QK] BB227

Around here [Qikiqtarjuaq] after we started using Peterheads, during the fall time it used to be covered with bowhead whales. ...so that is the area where it gets scary to move [with a small boat], especially scary when they come up for air right near the boat, even the boats were very slow moving. ...it was too scary to go out for when you did the splashes would come up right by the boat for there were many bowheads. [Markosie Audlakiak, QK] BB228

...it became quite scary there [near Qivittuuq/Kivitoo], there were so many bowhead whales, on our way home, the route we were going to take was full of bowhead whales, we had to travel by the land to get to Qikiqtarjuaq. ...[this occurred] in August. [Stevie Audlakiak, QK] BB234

#### vi) Aggressive behaviour and different types of bowheads<sup>25</sup>

Many informants provided information on aggression in bowhead whales and about the various age classes and other categories or types of bowheads found in Nunavut waters. Most of this information is traditional knowledge in its strictest sense, in that it was passed down orally to the informants by their own elders or even earlier ancestors.

#### Aggression in bowhead whales

Traditionally, Inuit hunters recognized bowheads of two types with respect to ease or difficulty of hunting: those that tended to be aggressive and retaliatory and very difficult or dangerous to hunt, and those that tended to be more docile and easier or less dangerous to hunt. Inuit bowhead hunters usually sought out and pursued the more docile bowheads. The aggressive bowheads have a high, pointed, prominent protuberance on top of the head on which the blowhole is located, while the more peaceful, docile bowheads have much less of a raised protuberance so that the blowhole is located on a rather flattened area on top of the head. The quotations suggest that these bodily and behavioural differences are age-related, with the aggressive whales being younger than the docile ones (see HB253; BB69, 362, 372, 383, 403, 418, 434, 464, 479, 486, 496, 507, 514, 521).



If a bowhead whale is a young whale, the blowhole will be pointed [the blowhole is situated on a rise on the top of the head]. If it is flat it is an older whale. They say it is qinngaujjariktuq because it is a young whale. If people are going to kill a bowhead whale I would like them to kill one that is full grown. You can tell which of them are full grown and adults. [Philip Kripanik, RB] HB253

...[according to my elders]... ...if the long bump from the nostrils to the front [of the head] is narrow in width it means that you cannot get near that particular bowhead... But if the bump from the nostrils to the front is almost smooth it means that that particular bowhead is not aggressive and could be approached... ...when hunters used to hunt with kayaks, if a bowhead whale is harpooned and if it has a bumpy nostril, it would mean that it would take a long time to kill the bowhead. ...on the other hand, if the nostrils were smooth the hunter could go right beside it and harpoon it, being reassured that this bowhead whale is not aggressive. [Nauja Tassugat, CR/ws] BB69

[according to my father] ...when the bowhead whale has a pointy nose [blowhole], and roundish body, it would be very hard to catch [and aggressive], and sometimes lost; even when they put many lines to it, the bowhead whale would not even slow down with a heavy drag, and the boats would not be able to catch up to them, for they are very fast swimmers. The more docile ones, would require only two lines, then it would slow down... Then they would use a penetrating lance or exploding dart to kill it. [Anon. 26, PA] BB372

The whales with high and pointy nostrils were called “arviqunungittut” literally meaning that they should not be harvested [because they are retaliatory]. While on the other hand bowhead whales with flat nostrils were known as “arviqunuttut”, these were the preferred for harvesting as they were not dangerous and they don’t retaliate. [Pauloosie Angmarlik, PA/ws] BB418

...[my father] would say the bowhead whales that had sharper snouts [raised blowhole area] were known as more aggressive whales [qinautjattiariktuq]. ...this one is qinautjattiarinngittuq, the one that is not aggressive. When they say piqunnirtuq, they mean that they are non-aggressive. ...we say piqunninngittuq, for the ones that are aggressive, the ones that would be dangerous. [Kooneloosie Nutarak, Sr., PI] BB464

...the ones that had the more visible [higher] snouts [blowhole] were difficult to hunt and kill [these are called qinngaujattiariktuq]. The ones that could be killed easily had less visible [flatter] snouts. The hunters from their kayaks picked the ones they wanted by looking at their snouts. ...The bowhead whales were hunted in the same way as they hunted for walrus. The bowhead whales were easier to kill as they got old. They got weaker and slower as they aged just as we do. [Simon Akpaliapik, PI] BB479

I had an occasion to observe a bowhead whale with a pointy/bumpy nostril – this particular bowhead whale actually went after us. ...we knew that it was intending to frighten us and it was going right along side our boat, and we could even observe its lice... For some reason when we went to an area where

ice was just forming that’s when it left us alone. [Jacobie Koksiak, QK/ws] BB496

Hunters could use other bodily features to distinguish aggressive and docile bowheads:

...the whales with flat body (back) are easier to harvest, however the ones with a slight hump are very difficult to harvest because they retaliate when being sought after. [Towkie Maniapik, PA/ws] BB434

...during the time of the whalers... ...some bowhead whales would face the ships, these would be aggressive whales. Their flippers can reach up to the corner of their mouths. There was one incident where one of these aggressive bowhead whales attacked [a whaling vessel]. [Kooneloosie Nutarak, Sr., PI] BB464

Hunters should never approach or attempt to hunt a bowhead asleep at the surface:

...my elders said that one should never harpoon a sleeping bowhead whale because it could be very dangerous... ...such a harpooned whale would thrash with its flukes... My younger brother (Tagonak) told of bowhead whales when they are sleeping – it doesn’t even look like a bowhead whale and they remained that way for an entire day; there was one time that I wanted to harpoon one that apparently was sleeping, but my avanukutuk (namesake) told me that if a sleeping bowhead whale is harpooned it could be very dangerous. Only a few of the fearless, learned and knowledgeable hunters were able to harvest and harpoon a sleeping bowhead whale... [Philip Kripanik, RB/ws] HB234

If a bowhead splashed the water a lot with its tail flukes/sarpik, it was deemed wise to avoid hunting such a whale which was considered to be aggressive (Tooma Saumik, HB81, 148). If such a whale was to be hunted, the hunter would harpoon the whale in its tail area, hoping to damage the tendons and thus stop the tail movement and splashing (HB148). Jackie Napayok (HB288; see also Jimmy Muckpah, BB170 and Mathias Awa, BB473) described an attack by a bowhead on a Peterhead boat (probably in the Coral Harbour area):

...the bowhead whale was chasing the Peterhead boat. And the boat started moving towards the shallow part of the water... The bowhead whale rammed into the Peterhead boat, six of the ribs of the Peterhead boat were broken and the Peterhead was sunk. I think some of the bowhead whales are very vicious. My older brother [Ben Ell, Siusarnaat] was on this trip. [Jackie Napayok, WC] HB288

But some bowheads are certainly more gentle than others:

My father told us a story about their boat being on top of a bowhead whale. The water was very calm. ...they tried to move by poking their paddles on the bowhead whale. But they wouldn’t budge because it was just impossible to move away. So the bowhead whale eventually just went down into the water and did not upset the boat... [Mary Nangmalik, WC] HB293





Large, older bowheads with much white on their bodies may be aggressive (see below, the description of silaat in Other categories of bowheads):

*...I have seen a large bowhead whale down at the floe edge, this one was somewhat white in color due to its age perhaps. When it surfaced it was facing the people at the floe edge, it may be that he was hearing the skidoos... it was almost white in color. [Anon. 21, PA] BB105*

Certain whales, when they were being pursued by ancestral Inuit hunters, sometimes gave an indication of their aggression by the way they were breathing, and the hunters would then abandon the chase:

*...if its breath is a cracking sound with breaks in between, this is an indication that the bowhead whale is warning [the hunters], as the bowhead whales are capable of striking at the kayaks or umiat [large skin boats]. The hunters were able to detect the mood of the bowhead whale by the way it was breathing. [Lypa Pitsiulak, PA] BB403*

*...People say that they [some bowheads] breathe differently... They say that the bowhead whales that make a lot of noise would be very difficult to kill. I guess they would be fierce, vicious. [Levi Nutaralak, QK] BB514*

### Mothers with calves

In traditional times, female bowheads and their calves were usually avoided by Inuit whalers (HB162, 234, 251, 268; BB13, 403). If a calf is hunted or killed, the female bowhead may become very aggressive and vicious and go after the kayak or small boat from which the calf was hunted. The mothers are very protective of their young. If a hunter in a kayak or umiaq (larger boat) was going after a calf, the mother would attack the kayak with her tail flukes from an upside-down or side-down position (Felix Pisuk, HB268; Lypa Pitsiulak, BB403). If the calf has been killed or separated from its mother in any other way, the female bowhead will linger around the area where it lost contact with its calf. In the succeeding summer, the mother would return to this same general area and be seen to grieve the loss of its calf and emit sad-sounding mourns, cries, or calls suggesting that she was still looking for her calf. This elicited a great deal of sympathy from the Inuit (HB268) and is one reason why Inuit did not hunt bowhead calves (in addition to the possible aggression of the mother). This is in sharp contrast to the early commercial whalers, who sometimes killed the calf first and then the mother who stayed around trying to protect her calf. (see also HB146, 153, 162; BB153, 231, 294)

*...[in traditional times] the hunters would make sure that the bowhead whale they are hunting had no calves before they actually started to hunt for it, and they used to get more excited when they saw a bowhead whale without calves, because the calves could be as large as the mother bowhead, for they grow pretty fast. When they accidentally killed a calf, when the mother is feeding off somewhere else, the mother would keep coming back to the same location the*

*next year, at the date when the young was killed; the Inuit said that it was mourning its young, with cries, which the Inuit would be able to hear from under water very loud, that is what I heard, and my late uncle confirmed that; he said that it is very sad to watch them mourning; and the traditional law was that you were not supposed to kill the calves of the bowhead whale... [Felix Pisuk, RI] HB268*

*The calf of the bowhead whale should not be killed. The mother will come back every year if her calf is killed. We care for our children very much as human beings; the bowhead whale too cares for their young just like we do. They are dangerous. It is obvious that the bowhead whale will nurture their young... [Philip Kripanik, RB] HB251*

*[This is a story told by Sappa] ...there were lots of bowhead whales at the floe edge. ...a bowhead calf was approached by the hunting party [which was on the ice]... they were faced with a lot of water [splashing]... the bowhead whale mother was circling the area and causing a lot of turbulence, because she was protecting her calf. The young people and others at that time were warned not to get too close to a calf... they say they [mother bowheads] are very dangerous as they protect their calves. Even after so many years, the bowhead mother will continue to go to the same spot, the same area where the calf was [if the calf had been harvested]. [Joseph Oqallak, AB] BB13*

*[if her calf is killed]... the mother will always know what area and what kayak has killed the calf. I think it is because they have souls, too, that they would know which kayak had killed their calf. [Martha Kutitukku, PB] BB153*

If hunters want to harvest a calf, the mother must be killed first (HB184, 234; BB153). But Inuit and the commercial whalers did not usually hunt a mother with a calf, because her calf would then starve (Nauja Tassugat, BB74; Martha Kutitukku, BB153).

*They [elders] would say that it is wise to try to kill the mother rather than the calf. It is very dangerous to kill the calf. The adult would have to be killed first before the calf is killed. If you kill the calf first you can come across a very vicious animal. The boats that you see around here can be overturned. When it [mother] starts to come towards the whalers because they killed a calf, the men would have to fend for themselves by running away from it. [Anon. 30, RB] HB184*

*...one particular bowhead whale [which had a calf] went chasing us. [Ipellie Panipak, CR/ws] BB294*

### Age categories of bowheads

Inuit recognize several age/size categories of bowhead whales (arviq; arviit -plural):



<b>arvaaraq</b>	Calf (newborn)
<b>arvaaq</b>	Calf (older, still being nursed by the mother)
<b>ingutuq</b>	One to two year old bowhead (small; with mother or alone)
<b>aktuarjuk, mikinisaarjuk</b>	Juvenile or immature (not full-grown; mid-size)
<b>arvaaralik, arvaalik</b>	Adult female with a calf
<b>tiggalluk</b>	Male, medium-size
<b>akturjuaq, aktualuk</b>	Adult male (large)
<b>arviq, aktut</b>	Adult bowhead (with white patches and spots); full-grown

Usually when they are immature their maktak is usually lighter in color, while the mature bowhead whales are bright black in color. [Andrew Oyukuluk, AB/ws] BB237

...the bull (male) ones can be identified by their [white] spots, the ones with no spots are younger than the spotted ones, and they say that they are the females... [Ipellie Panipak, CR] BB49

...at an age of one year, they [bowheads, called ingutuq] would just follow their mother [to the place where they always went again and again], before they become completely independent from their mother. ...although they were no longer suckling... ...a [newborn] calf would be called arvaaraq and the mother would be called arvaaralik. [Nauja Tassugat, CR] BB74

I guess it was the elder whales that had the white mark on the corner of their mouths. [Pauloosie Arnakak, CR] BB81

...The ones referred to as inutui [ingutuq] were the ones that had been calves. ...they still tasted like milk... These are the ones that were born last year [now one year old], they are referred to as being alone... [Kooneloosie Nutarak, Sr., PI] BB464

...I seem to see bowhead whales with calves every year. ...there are many mature adults and smaller ones, but it seems like there are more mature adults of younger ages, kind of in mid-age. ...I assume that the largest ones in a group are the bull bowhead whales, for the female bowhead whales with calves are not as large as the bulls. [Pauloosie Kooneliusie, QK] BB232

See also: HB146; BB107, 111, 130, 134, 138, 203, 223, 229, 347, 464, 484, for further descriptions of bowhead age/size classes.

### Other categories of bowheads

Repulse Bay workshop informants distinguished between two categories of bowhead based on size, degree of fatness and tastiness or desirability of the animal's maktak and meat (HB196, HB 219). There is kivaaqi –

fatter, larger bowhead, and papijjuk – thinner, smaller bowhead. The elders preferred the fatter kivaaqi. Kivaaqi refers to a large mature female bowhead in the Pond Inlet area, or merely bowhead in Igloodik; papijjuk is a medium-sized bowhead (Pond Inlet). This distinction appears to be one based on size and age, with the larger, older, fatter ones (kivaaqi) being preferred for eating.

Bowhead whales are categorized or called differently: a) kivaaqi [fatter bowhead] b) papijjuk [thinner bowhead]; using this categorization we could choose which bowhead whale we should harvest... Personally I would choose kivaaqi as it is large and wide. The categorization of bowhead whales is the same as sculpins. [Participant, RB/ws] HB219

Some bowhead whales, when harpooned, will head toward the shore while others will head out to sea. The whale's behaviour, after being harpooned, is believed to depend on the particular hunter (HB102, 104, 242; BB503). Hunters whose harpooned whales head toward the land are desired as harpooners, while those whose whales move farther offshore are discouraged from being harpooners. A bowhead may want to select its hunter; if harpooned by an undesired hunter, it will struggle and resist and pull the kayak or boat at great speed (Joanasie Kakka, BB503).

...I hear that different hunters have different pull, in that some hunters, if they harpooned a whale, the whale could pull towards the land and others not. I honestly don't know why it is like that or if it based on the character and up-bringing of a hunter... [Participant, CH/ws] HB102

...different hunters are different in the way they harpoon bowhead whales and belugas... ...some whales have a very strong pull when harpooned by certain hunters and some have very little... ...say by chance that they are harpooned by a hunter with a strong pull, chances are the whale could go straight for land. [Participant, CH/ws] HB104

[There were] hunters with strong pull and weak pull. Apparently my grandfather Annunguak harpooned one here in the [Repulse] bay. And it was attached to the boat once he harpooned it, because of the strong pull the sail and the mast were knocked down, and the whale pulled the boat so fast towards the open water... The elder and the driver of the boat were raising hell with the harpooner, saying that he should never again harpoon a bowhead whale because the pull was too strong. ...when I saw a bowhead whale and we were going after it, while it's on the surface I am O.K., but the moment it submerges my heart begins to throb with anxiety and I think this goes for all the hunters. [Philip Kripanik, RB/ws] HB242

A large bowhead at the surface may remind one of a rock or small island:

...when the Inuit traveled [by boat] they would say that they came across a large black hill. This is the largest bowhead whale; because it's so black they think it's a rock or part of the rock. This would be the largest bowhead whale of all the bowhead whales. [Prime Okalik, WC] HB302



Nauja Tassugat (BB71, 73) tells of the look-out or leader bowhead – silaaq (see also section 3.2.1):

*...look-out bowhead whales [called silaaq] ...are the leaders of the school of bowhead whales, and their duty is to oversee the whales within their pod. [and to warn them of the presence of killer whales] ...In Inuktitut it's called "uatsingat" – modern day people call it Aallaaluk – 'the stranger' [Nauja Tassugat, CR/ws] BB71*

*...the elder bowhead whales would keep watch over the younger ones. ...these whales have white spots and they are the real old ones. These old ones are not as active as the younger ones, like us human beings. The adult whales and the younger ones would be grouped up in one spot and the older whales would be down lower keeping watch to see if there were any killer whales around... ..then they notify the others as soon as there was any danger (killer whales) lurking around or coming. [Nauja Tassugat, CR] BB73*

*This [white] bowhead whale is very huge and it's different from the other bowhead whales. People continue to see this whale every year. This bowhead whale has been given the name Stranger [Aallaaluk]... ..it would be in Igaliqtuuq/Isabella Bay. [Solomonie Natanine, CR] BB91*

**vii) Strandings, net-entanglements, and ice-entrapments**<sup>26</sup>

Many informants reported the occurrence of beached (stranded) and occasionally ice-entrapped bowhead whales. See also sections 3.1.5.i (dealing with killer whales and bowheads) and 3.1.5.ii (dealing with the impacts of ice on bowheads). Several strandings and ice-entrapments of bowheads in Nunavut, documented in Table 1 of Mitchell and Reeves (1982), were also reported by informants in this study.

**FOX E BASIN**

In September-October 1999, four dead bowheads were found by Inuit in the vicinity of Igloolik and Hall Beach. Inuit had previously reported the occurrence of killer whales in the area, and two of the carcasses had scratches or marks suggesting killer whale predation. Three whales had lengths ranging from 24 feet (7.3 metres) to 30 feet (9.1 metres). (Patrice Simon, Department of Fisheries and Oceans, Iqaluit, pers. comm.).

*Since I have been here in 1964, I have learned that there had been two bowhead whales found beached [a dead, beached sea mammal is called silu], we've never learned as to how they were killed. [Simon Iyyiriaq, IG] FB46*

*My brother-in-law prior to coming to Repulse Bay found a dead bowhead whale at the beach in Siurakjuk [Siorarsuk Peninsula, north of Igloolik] during spring time when there was still land-fast ice. This particular bowhead whale didn't seem to have any wounds. Chances are that it may have gotten stuck in pack ice and died from that. [Philip Kripanik, RB/ws] HB236*

**HUDSON STRAIT**

Informants (mostly from Cape Dorset) reported a few instances of stranded bowheads in that region. Carcasses were sometimes used for dog food, and for human consumption or other human use if fresh enough (HS16, 78, 92, 115).

*Naturally you do see beached bowhead whales and we never know how they were killed. ...Those that are beached perhaps were attacked by other species; they may not have died right away but gradually died and floated to the coast line. [Atsiaq Alasuaq, CD] HS16*

*There was a dead bowhead whale near a lake or on a lake near Cape Dorset. I had seen this, and taken some of the meat out of the lake so the dogs had some of it for food. ...I had brought it up on the land but the dogs started eating it and I had let it sink again in the lake... [Mangitak Kellypalik, CD] HS92*

*Around Nuvutjuaq, people had found a dead bowhead whale that had surfaced, so we were eating maktak, when I was a child they sent a big piece to my father... [Lucassie Nutaraaluk, IQ] HS115*

**HUDSON BAY**

Over the last few decades, a few strandings have occurred in the Hudson Bay area, especially in the Coral Harbour (HB79, 100, 208, 288, 303) and Repulse Bay (HB179, 181, 205, 208, 212) regions. Often the carcass was utilized for dog feed (HB288), human food (HB79, 100, 288), and for the bones and baleen (HB79, 303). Some informants suggested that killer whales had been involved in the death of some stranded bowheads (HB179, 181, 208, 212). Others suggested that some whales may die from natural causes, rather than human- or killer whale-caused mortality (HB181, 205). Dead whales have been found floating out at sea (John Ignirjuk, Repulse Bay, HB205). Some stranded carcasses attract polar bears, foxes, and wolves, providing hunting opportunities for Inuit (Octave Sivanertok of Repulse Bay, HB212; HB288). A stranded bowhead was found at Native Point, Southampton Island, in September 1999 and had a body length of 31 feet (9.4 metres) (Patrice Simon, Department of Fisheries and Oceans (DFO), Iqaluit, pers. comm.).

*Some people had found a dead carcass (silu) on the beach down there [Coral Harbour area]. I was given some of the maktak at the bottom, it was not rotten at all. As I ate some of it I felt better because I remembered how it tasted; my craving was gone. [Naleopa Kadlak, CH] HB100*

*...sometimes killer whales come up here [to Repulse Bay] in [a] pack. And the dead carcasses of bowhead whales that are found may well be the results of killer whales' attacks. [Anon. 29, RB] HB179*

*It would be rather ridiculous to continue the ban on bowhead whale harvesting when we are finding dead carcasses of bowhead whales, which is the result of other species hunting them or when they die of natural causes... [Anon. 29, RB] HB181*



John Kaunak of Repulse Bay provided the locations in the Repulse Bay area where several stranded dead bowheads were found over the last 30 or so years:

*...in 1965, a carcass of a bowhead whale was found at Nagjuktuk/Vansittart Island and in 1968 a huge carcass of a bowhead was found right at the bay of Repulse Bay at a place called Siuruqtujuk, and later on in years a bowhead whale carcass was found again right at the point of Tulukaat/Blake Bay. And again at Nagjuktuk a carcass of a bowhead whale was found and this was very recent – you could still see the jaws of that whale. And again, about 2 years ago [about 1993], a carcass was found at Qajugvik/Cape Martineau and it seems that bowhead whales in that area are slowly dying off. So from 1968 to date, a total of 6 carcasses of bowhead whales have been found. And just about 2 years ago [about 1993] there was also a dead carcass of a bowhead whale on an island near Salliit/Southampton Is. Perhaps these bowhead whale carcasses are the results of killer whale attacks – we can tell from the carcass that they were not very old bowhead whales... [but] the latest one was a large bowhead whale. [John Kaunak, RB] HB208*

*We did not see any wound on this stranded bowhead. We did not know how it died. ... The maktak was eaten by us. The meat was used for dog food..... and the blubber was used as food. This dead bowhead whale was very fresh. ... This was near Nuvualuk/Terror Point [on Bell Peninsula, Southampton Island] in 1954... ..the dead bowhead whale was [then] eaten by foxes and we didn't eat it anymore. ... We did not cache any of the meat because the polar bears had already eaten most of it. [Jackie Napayok, WC] HB288*

Some stranded whales may be the victims of human-caused mortality:

*There's a large dead carcass of a bowhead whale down in Aqiarunnaq/Duke of York Bay. ... Some men had harpooned this bowhead whale with a dart gun but it had escaped. ... This [whale] was harpooned in Repulse Bay. [likely the 1947 kill at Tajarniit/Beach Point that drifted to Duke of York Bay, not listed in Mitchell and Reeves 1982 – see section 3.3] [Prime Okalik, WC] HB303*

### BAFFIN BAY

Ice entrapments of bowheads appear to occur infrequently. However, one bowhead was discovered entrapped on March 20, 1997 in a polynya (an area of open water maintained by swift currents) in Easter Sound, just before the Inuit Bowhead Knowledge Study workshop was held in Arctic Bay. Easter Sound is at the head of Tununirusiup Kangiq&ua/Admiralty Inlet, about 250 km from the floe edge and open water at the Sound's mouth into Tallurutiiit/Lancaster Sound. The young whale must have gotten trapped there at freeze-up in October or November of 1996; the whale was still alive and in apparent good condition when last seen just before the time of ice break-up. Although it was not seen after break-up when it could finally escape its icy prison, no carcass was ever found in Easter Sound or elsewhere in Admiralty Inlet, suggesting that the whale survived (Don Moors, Arctic Bay, pers. comm.). Elders at the workshop

were confident that the whale would be finding food in the polynya and would survive until break-up.

*From what we hear whales are suspected to be in the Greenland waters in winter time. This is the first time that we have a bowhead whale stuck in the open water in winter time [in the Arctic Bay region]. [Atagootak Ipellie, AB/ws] BB8*

Pond Inlet informants stated that they had not seen or heard of an ice-entrapped bowhead in their region (see BB189 – Sam Arnakallak).

Informants from the Baffin Bay study region (except those from Kugaaruk and Arctic Bay) reported occurrences of stranded bowheads over the past few decades (BB32, 36, 64, 109, 127, 202, 293, 411, 433, 436, 439, 447, 448, 478, 509, 521). Killer whales are often implicated in these bowhead deaths (BB32, 64, 109, 127, 436, 478). Elders told informant Joanasi Apak of Clyde River (BB64) that they had found beached bowhead carcasses with broken bones but no other wounds; the deaths were attributed by his elders to killer whale attacks. Similarly, elders told a Pangnirtung informant (BB109) that a beached bowhead carcass had broken and cracked rib bones (especially the smaller, thinner ribs) due to predation by aarluit/killer whales.

*[a long time ago]... I had not had any children, yet; and my grandparents and I and some other people had found a dead bowhead whale carcass [silu] beached up on the shore, in Igalituuq/Isabella Bay. They were saying that it was a small bowhead whale... [Anon. 13, CR] BB36*

*We had found a bowhead whale carcass that only had a very small section eaten and the rest was fine. ... This was not that recent, as my first daughter was born. [Ashevak Palituuq, CR/ws] BB293*

*...they had also found a dead bowhead, this one was not the fault of the Inuit, and I took some of the meat for dog feed. [this was on an island in the Nettilling Fiord, probably in the 1950s] [Pauloosie Angmarliik, PA/ws] BB411*

*...from this bowhead whale carcass, we were able to get some meat for our dogs. Iqalukjuaq found that carcass. ... I was much too young to actually participate. [this whale washed ashore in the 1950s on an island at the mouth of Livingstone Fiord] [Towkie Maniapik, PA/ws] BB433*

*I can even remember my father finding a dead bowhead whale during early winter [probably in the Pangnirtung area], they salvaged the jaw bone for [sled] runners. [Mosesie Qappik, QK] BB521*

*Inuit found a dead stranded whale at Imigen Island [Pangnirtung region] around 1985. [Pangnirtung workshop, March 1996, Study Coordinator's notes]*

Several Pond Inlet informants (BB436, 447, 448, 478) told of a carcass found at Nunasiq (to the north of Nallua/Low Point on the west side of Navy Board Inlet). This carcass was found in the early 1950s by Manasi



Qamanirq, and it was fresh enough to be used as food for Inuit and their dogs (especially the blubber). It was an old animal, as the bones were fused [had stopped growing before death], soft, and appeared to be in poor condition. Inuit at the time suspected that this whale had been killed by aarluit. This beached whale may be the same whale reported as no. 24 in Table 1 of Mitchell and Reeves 1982:

...Some people ran across a washed up carcass... Perhaps this was during 1952 or 1953. It was over here in Tununiq/Pond Inlet area. ...it was a full-grown one. The maktak did not have miqquq/fur [epidermis] upon it, because it was so old. ...the blubber was used as I went to feed my dogs at the spot where the washed up carcass was located. ...we [also] liquefied the blubber and ate it that way. [Alain Mucktar, PI] BB436

...a stranded dead bowhead was [found] about 20 miles from Nunasiaq... It was rather old as some portion of the whale was deteriorated. And my father assumed that it was killed by killer whales. I even attempted to collect some of its bones for carving but they were way too soft. The bowhead died due to old age, its bones were fused [had stopped growing before death] and deteriorated. ...this happened around 1950... the blubber was still very good for usage. ...we were about to go without food for a long time, because at that time the ice conditions were very bad, when we came upon the carcass of the bowhead whale – even though the meat was inedible the fat was very well utilized. The meat was used for dogs. [Sam Arnakallak, PI/ws] BB478

Another, probably old bowhead carcass was described by Ham Kadloo (BB439):

I have seen one washed-up carcass or silu... it is at Ipiutalik [on SE side of Milne Inlet] ... it is very old. All the bones are still there intact and have not been scattered or damaged at all, so I thought that it had died of a natural cause. It is not a recent carcass... The blubber and the maktak and the miqquq/fur [epidermis] are still on [the carcass] ...it was on the beach, the high tide could reach it. ...we were awed by this... [Ham Kadloo, PI] BB439

Informants (BB202, 509) have observed or heard about dead, stranded bowheads in the Qikiqtarjuaq region:

...when we were in Palligvik/Padloping Island, the people in the camp called Qivittuuq/Kivitoo found a dead bowhead that had surfaced, that is what I have heard; although we lived very close to them while in Palligvik, they never came to give us some of the maktak... [she was born in 1933] [Leah Newkingak, QK] BB509

In Tinnujivik/Cumberland Sound, bowheads sometimes swim into nets set for belugas or narwhals (or even fish) and they damage or carry the nets away:

Bowhead whales just destroy beluga nets without even seeming to notice them. The nets are usually attached to the floe edge, at the beginning of June. [Adamee Veevee, PA/ws] BB97

An elder was saying that he used to set nets for beluga at the floe edge but the bowhead whales used to destroy them. The net [mesh] size was 16" x 32". [Petroosie Karpik, PA/ws] BB144

...and the bowhead whales have been caught in fish nets or tangled with fish nets. [Mosesee Qiyuakjuk, PA] BB410

### viii) Bowheads and species other than killer whales<sup>27</sup>

A small number of informants from the Baffin Bay region commented on the interactions of bowheads with species other than their predators and prey. Narwhals and/or belugas are sometimes seen in company of bowheads at the floe edge or moving into inlets at the time of ice break-up (BB6, 122, 194); or on migration to and from the summering areas (BB113, 130, 134, 136, 167, 189). The bowheads may be followed by the narwhals (BB136, 167).

...narwhals/belugas are very friendly to bowhead whales. [Andrew Oyukuluk, AB/ws] BB3

They [bowheads] go away during the fall just before the ice forms—just like the narwhal. When the narwhal goes away, they go away at the same time. [Josephee Keenainak, PA] BB130

This area here [Qaurnak – western Eclipse Sound]; as I was a child I noticed that a lot of bowhead whales would be chased by narwhals. The narwhals would follow the bowhead whales... [Ham Kadloo, PI] BB167

I would like to refer to the smallest [bowhead] whale, that these particular whales are not feared by even the seals. This is from my observation. [Adamie Nookiguak, QK/ws] BB200

## 3.2 CULTURAL AND TRADITIONAL IMPORTANCE OF BOWHEADS TO INUIT

### 3.2.1 Inuit Values and Beliefs Regarding Wildlife<sup>28</sup>

During the time of their ancestors, the survival and well being of Inuit depended on wildlife. The Inuit believed that all animals were put on earth for them to harvest and utilize. They had strict guidelines and rules regarding harvesting wildlife, which were transmitted to subsequent generations through oral culture and traditions.

The Inuit have observed and been taught that wildlife tend to have natural cycles of abundance and distribution. These cycles will be reflected in local occurrence and/or number of animals harvested:

...the animals vary from one year to the next, sometimes they are more abundant, and sometimes they just seem to disappear, and that is the same with



all the animals and that is how it was when I was growing up. Some years the Inuit were starving and some years were plentiful, that is what it was like back then in my time. [Akakak Saata, IQ] HS103

...Of course there will be times when there is hardly any wildlife around but sooner or later they will come back. [David Irngaut, IG/ws] FB87

The Inuit were convinced that wildlife populations would remain healthy and abundant only if they were harvested and treated with respect. Species that are harvested in a disrespectful manner, or not harvested at all (a sign of disrespect), may decline in numbers or disappear altogether. Arguing and fighting over wildlife, or talking badly about wildlife in any way, are considered as being offensive to the wildlife; this also includes harming, mistreating, and abusing wildlife, or causing wildlife to suffer. Such displays of disrespect may also lead to the disappearance of wildlife.

...We used to be told that if we fight over certain animals and talk about animals in a derogatory way, that the animal that we hunted would no longer be around, or there would not be enough to hunt any more... [Levi Nutaralak, QK] BB513

It was also stipulated that harvested animals must be utilized to the maximum extent possible, with minimal waste; this is another means of respecting wildlife. In the Inuit traditional way of living, everything was utilized and nothing was thrown away. Anything from the animal that was left over would be cached for later use, and Inuit would harvest only what they needed.

...Back then the law was not to waste food, and to never leave the meat behind, but they [Inuit] used to leave meat behind to be picked up on a later date. We would cache the meat when we were leaving it behind even in the spring time. The dogs can usually eat aged meat, so that is how we saved the meat for dog food... They cached most of it, even the part that is not too good to eat, for human and dog use later on, the bowhead whale meat was never thrown away... [Lucassie Nutaraaluk, IQ] HS114

Failure to share wildlife with other members of the community also constituted disrespectful treatment of wildlife. Sharing of food is one of the basic and vital foundations of Inuit society. Harvested wildlife must be shared with family and community.



Inuit Bowhead Knowledge Study Workshop, Pangnirtung, March 1996. Photo by Keith Hay

...if you share among everyone, it [wildlife] will always be around to be shared again. They wanted to share the kill so that it will be replaced quicker. ...If the Inuit share the kill among themselves and do not fight among themselves, there will always be plenty of wild game to hunt anywhere. [Levi Nutaralak, QK] BB513

Besides these traditional laws, Inuit have a belief referring to the respect that should be granted to animal leaders. The leader of a group of animals is called *Silaaq*, or the

'beloved of the weather'. *Silaaq* are very special and unique animals. They are hatched from eggs 'born of the earth', and are destined to become leaders of an animal herd or group. These eggs should not be disturbed or harvested. If a *silaaq* is killed, the weather will turn bad. (Ashevak Palituaq, BB286; Ipellie Qillaq, BB300)

...on land, if you see an egg all white in colour, we were always told not to break these eggs. I also had an occasion to see an egg standing up on the sandy beach – apparently it was called "Silaaqsuq", and apparently it was going to become a sea mammal, that's why it was so close to the sea. And the *Silaaq* that are found in the mainland will turn to land mammals once they hatch. ...No matter what the *Silaaq*/earth's egg will become, whether it will become a caribou or other land mammal, and the egg near the sea whether it will become a beluga, seal or whatever, the earth/sila loves these eggs. That is why we have always been told never to break earth's egg.... [Ashevak Palituaq, CR/ws] BB286

### 3.2.2 The Value of the Bowhead Whale to Ancestral Inuit<sup>29</sup>

Among all the wildlife available to the Inuit, the bowhead whale was certainly one of the most sought after. The bowhead whale was an important part of the Inuit traditional way of life. The Inuit ancestors would follow all the traditional laws, in order to ensure that the whales stayed around. They would hunt the whale with respect and would share their catch with everyone in the camp. No part of the whale was wasted. Every part was used immediately or saved for future use.

...once a bowhead whale was harvested, the hunters and Inuit in that camp all felt relaxed, reassured that there will be food for the entire year. That's the reason why bowhead whales were harvested and every part of the bowhead whale was utilized, from the meat, *maktak* and bones. [John Kaunak, RB] HB208



The maktak and the meat were very good food as well as the blubber, which was also used as a dip for dried meat (Martha Ittimangnak, HB161). During these earlier times, there were more dog teams than nowadays. The bowhead meat also provided food for the dogs, which were essential to the Inuit.

The blubber was not only an important source of food, but also an excellent source of oil for light and heat.

*...The blubber of the bowhead whale is very excellent. If we were to go out on the land and build two igloos, and my igloo had seal oil for my lamp, and your igloo had bowhead oil for your lamp, in the morning when we start to get ready to go again*

*on our trip my igloo would have blackened snow. Your igloo would remain pure white. This is the reason why the oil from the bowhead is an excellent oil. As long as the lamp is lit properly smoke will not rise from the oil lamp of a bowhead whale. The light also is very high. [Mathias Awa, PI] BB471*

The elders interviewed did not provide much information regarding medicinal uses of bowhead products. One informant said that the blubber could be used as a Band-Aid for deep cuts. They would have to chew the blubber first to completely get rid of the liquid (Mathias Awa, BB471). Another informant described the benefits of eating bowhead maktak:

*...I will use as an example – we see on TV, Qallunaat advertising the effectiveness of the cough syrup and once he takes it he/she is feeling wonderful. Some years ago I observed an older person, as I was visiting him when he ate some maktak. ...when he started to eat maktak his face was pouring with sweat and right then and there I knew he was going to get better. It was just like the commercial on cough medicine... [Jackie Nanordluk, RB/ws] HB201*

Although it does not seem that there were many specific uses of bowhead as a medicine, bowhead food was considered excellent for general health.

*...The older people consider the bowhead whale meat as a delicacy, and they crave for the bowhead whale meat. After the older people have eaten something they have not eaten for a long time, their spirits seem to lift up; and they seem to be more alive. [Joseph Keenainak, PA] BB396*

The bones were also very useful. They were utilized to make various tools such as the ulu (semi-circular woman's knife), scraper, scraping platform

and skin softener (Pauloosie Angmarlik, BB426). As the bones aged, Inuit would have recourse to the ribs and the jawbones to build frames for sod houses and tents. The jawbones were also used for sled runners. They would make very smooth runners, so people would have to avoid going on the rocks with them (Naleopa Kadlak, HB98). These runners made out of jawbones would be preferably used in the winter (Jackie Napayok, HB288). After they spent some years lying on the land, the bones would be dry and clean, suitable for carving as well.

The baleen was also valuable to Inuit. Since the baleen was flexible but not elastic, Inuit used it to make ties, by splitting the baleen plates. They were utilized to tie kayak frames and dog sleds (*qamutiik*), and to make harpoon lines, drags and floats and other equipment. Some informants mentioned that baleen could be used to tie up husky dog booties in the spring (Nauja Tassugat, BB316).

*...I think the suqqaq [baleen] used to have significant uses and it was used for ties [for harpoons, drags, and floats] and other hunting equipment. The jawbones were used for the sled runners. ...The ribs were used for the structure of sod houses and tents. The meat was also used by humans and dog teams. [some kids used baleen to make toys.] [Lazarus Aola, AB/ws] BB261*

### 3.2.3 Whaling

#### *i) Ancestral (pre-commercial) Inuit whaling*<sup>30</sup>

Through oral tradition, many informants have a good knowledge of bowhead whale hunting by their ancestors. This section gives a brief outline of Inuit whaling prior to the arrival of the commercial whalers.

The bowhead whale hunt was an important part of Inuit culture and tradition and played a vital role in the survival of the Inuit. One whale could provide enough food, oil and building material for an entire camp, for the whole year.

Hunting a bowhead whale required a good knowledge of the animal's behaviour, combined with excellent hunting skills and techniques on the part of the hunters. They also needed the ability and skills to read the weather and ice conditions, which could affect the hunt.



Whaling activities, Pangnirtung, NWT. A.G. McKinnon/National Archives of Canada/PA-101938



...The hunters knew the weather, thus when the weather is in a certain condition then it was time to harvest a bowhead whale. It also depends on which way the wind is blowing from – say that the wind is blowing towards the land, then it was the right time to harvest a bowhead whale, as once it's killed the wind would blow it towards the land. [Mikitok Bruce, CH/ws] HB91

The ancestors of the Inuit would also have to make their own hunting equipment taking advantage of the resources available to them. They were very good craftsmen. Their knowledge and skills allowed them to make sharp weapons and harpoon heads, especially designed to kill and retrieve the bowhead whale. The weapons were made of animal bones, ivory and stone.

...the harpoon head would be made out of caribou antler or walrus tusk or narwhal tusk, and the sharp part [blade] of the harpoon head would be made out of stone, this is how it used to be. [Philip Qamanirq, AB] BB270

Although Inuit had the *umiaq* (large skin boat), they would use kayaks to hunt the whale. Making a kayak for whale hunting would require special care (Felix Pisuk, HB265). The hunters had to manoeuvre their kayak very quietly and would approach the whale as it surfaced. They used to go around the head and avoided the main part of the body (Rebecca Arnardjuaq, FB67). They harpooned the whale with large weapons, and they used floats and drags to slow it down and to enable following it to make the kill.

...As the men would hunt the bowhead whale, they would go to the bowhead whale as it surfaced above water. There would be no more than one kayak [near the whale]... The rest of the kayakers would watch out for the one that would go to the bowhead whale. ...As one man would go to the bowhead whale, he would aim at the head and the neck area because this would be the only spot that was exposed above the water. The man would harpoon the whale with a large harpoon-type weapon. ...As the bowhead whale would be harpooned, the kayak would quickly go away because they were afraid they might get capsized by the movement of the bowhead whale. As they go away, an *avataq* [seal skin float] would be attached to the whale. This is what my mother would tell me. [Martha Kutiutikku, PB] HB167

The most common float used was the *avataq*. It was used as a marker and to slow down the whale. The *avataq* was made of sealskin [usually from a yearling seal] and was attached to the harpoon line. The line was short

so the float would not reach the tail [Pauloosie Kooneeliusie, BB522]. In the *Sullualuk*/Hudson Strait and *Tinnujivik*/Cumberland Sound areas, some hunters used rocks instead of floats. Attaching rocks [to the harpoon line] would make the whale go into very shallow water and/or encourage it to stay at the surface to compensate for being pulled down by the rock (Eqaluk Nungutsuitok, HS90). Informants also mentioned the use of the circular drag called '*niutaq*' (Anon. 30, HB185). However, some people referred to the drag as '*kiniutaq*' (Nauja Tassugat, BB322).

Once the whale was harpooned with floats and drags, it could go under water for a long time. When it surfaced, the hunters used penetrating lances, called *anguvigaq*, *qalugiaq* or *iputujuq*, to kill the animal. The hunters would walk on top of the whale and lance it through the vital organs.

...Then when the bowhead had already been harpooned with floats and the draggers put on, then it would go under water for a long time, then when it comes up for air, it will not go down again, for sure. Then the people who would do the kill would prepare themselves, they would go to the bowhead whale, which had already been struck with floats; when they reached it, the kayakers would gather together to tie the bowhead whale using their

oars throwing the ropes on top of the bowhead, and some of the Inuit would be walking on top of the bowhead whale to kill the bowhead, at first they would tie their kayakers to themselves before they killed the bowhead whale, by using penetrating lances to stab it... They would kill them through the vital organs, like through the lungs, because even if you stab it all over the meat it will not die quickly unless you hit it on the lungs... ..by making holes on them you kill them, like when you shoot a beluga through the lungs, they die. That is how the bowhead whales are too, they stab them at the lungs. [Pauloosie Kooneeliusie, QK] BB522

After the whale was dead, the kayakers would line up and would drag the whale towards the land. Once ashore, the Inuit would climb on top of the whale and butcher it by cutting the skin and blubber in strips:

... they would butcher the bowhead whale with these types of knives that were made from animal bones. They would use polar bear bones for knives as well so as they cut the skin of the bowhead whale they would make sure that [each piece] was as big as the snow block that would be used to build igloos. It would



Jaco Evic and Simeonie Keenainak, displaying shoulder gun used in the bowhead hunt at *Oikiqtan/Kekerten* Island, July 1998. Photo by Keith Hay





be the same size unless they cut it. They would cut towards the ground, so as they cut a piece, it would fall off down to the ground, and because the bowhead whale is such a large animal, the men would get on top of each other and climb up on top of the bowhead whale... [Martha Kutiutikku, PB] HB167

Inuit would often establish their camps where they killed a whale, even if they had to move from a previous location (Joseph Keenainak, BB397). Old sod houses (*qarmait*) containing whale bones are widely distributed on islands and on the mainland. Inuit hunters used to hunt bowhead whales mostly in the summer months when open water permitted the use of kayaks and *umiak*.

The Inuit ancestors were probably not successful in harvesting a whale every year. Their impact on the bowhead whale population was likely negligible in comparison to commercial whaling.

### ii) Commercial whaling <sup>31</sup>

The commercial whaling era is well documented in numerous books and articles. Consequently, this section provides an overview of commercial whaling as it was reported by the elders who were interviewed. Eber (1989) documented the stories and reminiscences of the elderly descendants of the Inuit whalers who worked with the commercial whalers around the turn of the century.

With the arrival of the Qallunaat whalers and their sophisticated equipment, the number of whales harvested increased dramatically. Inuit were involved in the later years of commercial whaling (generally after 1850). A few informants had witnessed or participated in bowhead hunts during the last years of commercial whaling (e.g., Pauloosie Angmarlik, BB423; Aksayuk Etuangat, BB345; Naki Ekho, HS130). However, several informants were able to provide interesting information that was passed to them by oral tradition (Atsiak Alasuaq, HS87; Ben Ell, HS105; Andre Tautu, HB128; Pauloosie Arnakak, BB331; Abraham Pijamini, BB339).

During the time of the bowhead commercial whaling, the Arctic was invaded by ships from several different countries. The whalers initially used large sailing ships made of wood. Later, after 1850, steam-powered



"Whale Hunter's Boat," Pudlo Pudlat, Cape Dorset

whaling ships came into use. Inuit were hired for their knowledge of the area and to hunt and process the bowhead whales. When a whale was killed, the Qallunaaq leader would get credit for the hunt and the Inuit would get paid with hunting equipment (rifles, boats, knives, binoculars, ammunition, etc.) and various commodities (tobacco, flour, needles, clothing, etc.). The whalers were mainly interested in the blubber and the baleen and occasionally, the bones. The meat and the maktak would be given to the Inuit, but

much of the bowhead was still wasted. Before Inuit became involved in commercial whaling, the whalers cast adrift the whole carcass after processing. The whale could be towed for a long time to the ship or the shore, resulting in spoilage of the meat. The fact that the whalers were using explosive guns also contributed to the loss of some meat. Lots of meat was left behind since so many whales were killed.

By the time Inuit got involved in commercial whaling (about 1850), most whaling was conducted from shore stations and over-wintering ships. Whaling started in early spring, at the floe edge, and lasted until late summer. Some of the informants talked about the whaling that occurred at the floe edge (Pauloosie Kooneeliusie, BB526; Pauloosie Arnakak, BB331). Others referred mainly to whaling stations, and how the whalers used shelters made out of stones on top of the hills to spot whales (Martha Kutiutikku, HB166). Many elders gave details on how the whaling was done from small sailboats. They said that the whalers were well prepared and very well organized. Everyone involved had a specific task. When a whale was spotted, the whalers would go after it in a small sailboat and attempt to harpoon it. As soon as the whale was harpooned, they would take the sail down. The harpoon line, made of rope, would be kept cool by continuously pouring sea water on it, to prevent it from smoking or catching on fire as it spun around the post in the bow of the boat. They would have to tie on a second line if the first line became entirely used up. This was because the whale could dive deeply and drag the boat very fast, sometimes for a very long distance.

...the boat would start to travel towards the water. Their hair was flying in the air and the boat would be almost upright like it had a motor. [Philip Kripanik, RB] HB254

The whale could stay under water for up to 3 or 4 hours. The whalers would kill the whale when it surfaced, using an explosive harpoon gun or



darting gun. This shot was usually taken from a second boat. In later years, it was more common to use the explosive harpoon gun or darting gun, in the initial strike of the whale. The whalers would do the butchering beside the ship, on the shore, or at the floe edge.

Because of their efficient equipment and the help of Inuit hunters, the Qallunaat whalers over-hunted the bowhead whale populations in the Eastern Arctic. The Inuit have emphasized that they were not responsible for the decline of this species. (See section 3.1.1. i for more details on this topic.)

*iii) Post-commercial Inuit whaling: specific hunts and techniques*<sup>32</sup>

After the end of commercial whaling, the Inuit kept hunting the bowhead sporadically until about 1975. In 1979, the Canadian government formally protected bowheads. Bowheads were designated endangered in 1980 by the Committee on the Status of Endangered Wildlife in Canada. The bowhead is protected under the International Convention for the Regulation of Whaling, by the International Whaling Commission of which Canada was a member until 1982.

Many informants, through the oral tradition, direct observation, or participation, reported on specific bowhead hunts undertaken by Inuit since the end of commercial whaling. Many post-commercial Inuit hunts were documented by Mitchell and Reeves (1982) from historical, archival, and other written records. However, these authors, as they surmised, did not document all post-commercial Inuit hunts. Inuit testimony in our Study has provided evidence of 12 Inuit bowhead hunts in Nunavut since about 1915, not reported in Mitchell and Reeves (1982). These hunts are documented in section 3.3.

Informants also provided comments regarding hunting methods adopted by Inuit since the end of the commercial whaling. It is interesting to see how the ancestral way of whaling has been combined with new techniques and the modern equipment available to the hunters.

*...Apparently my grandfather and my father harvested a bowhead whale way after the Whalers had left the North, this harvest took place at Qayukvik/Cape Martineau, between Gore Bay and Lyon Inlet in northwest Hudson Bay.*

*However, at this time they used the modern hunting equipment, such equipment as whale guns and other modern equipment – of course they used traditional equipment, i.e. harpoons, floats and the mainline [rope]. Apparently the time they caught the bowhead whale was during the year I was born, during the summer of 1941. [John Kaunak, RB] HB207*

**3.2.4 The Bowhead Whale and Inuit Society, Today and Tomorrow**

*i) Concern about losing Inuit knowledge of the bowhead*<sup>33</sup>

The bowhead whale was very important to the ancestors of today's Inuit. They were very knowledgeable about it. Nowadays, Inuit do not look at the bowhead with such great elation as their ancestors probably did. Nowadays, they do not pay any particular attention to the bowhead. This lack of interest and attention is attributed to the fact that Inuit have not hunted the bowhead whale for a long time. As a result, many Inuit fear that people now possess less-detailed ecological and behavioural knowledge about the bowhead, and that eventually there could be an overall diminution or loss of knowledge about the species.



Whale boats landing at Pangnirtung, NWT. A.G. McKinnon/National Archives of Canada/PA-101936

*...the Inuit are not studying the bowhead today, even the elders are not paying attention to them, because we do not even deal with them today; because we were not allowed to hunt them, we did not even pay attention to the population growth, because we were not allowed to hunt them period, even when we still wanted to hunt them... [Ben Ell, IQ] HS35*

*...The community structure is such that we no longer live in Outpost Camps, thus we don't get around as much. ... And we really haven't been observing bowhead whales, where they are now going that they never used to go – this lack of knowledge is due to that we haven't been allowed to harvest [bowheads] for a long time. [Tooma Netser, CH/ws] HB14*

*...during my ancestors' time it [bowhead] was considered very important. Today the older people are almost gone and when the Qallunaat introduced their regulations and hunting regulations, we sort of lost the traditional importance and cultural importance of this. [Jackie Napayok, WC] HB287*



*ii) The importance of resuming the bowhead whale hunt\**

The bowhead hunt was an important part of Inuit culture and traditions. The whale was a vital element of Inuit survival.

The majority of informants in this Study indicated that they would like the bowhead hunt to be resumed in order to preserve this aspect of Inuit culture for future generations. There are also many people who would like to satisfy the wishes of elders to be able to taste bowhead whale one more time before they die. Many elders were raised on the maktak and meat of the bowhead whale, and still crave for it. Many informants believe that a renewed harvest could also have positive social and cultural implications for Inuit.



Crew, whaleboat and Era at Fullerton, NWT, 1903-04. A.P. Low/National Archives of Canada/PA-053568

There are some uses for future-harvested whales, especially as food. The Inuit think that it is physically and mentally beneficial to eat food from the bowhead. The hunt should be resumed as soon as possible to take advantage of the knowledge and skills of the few remaining elders.

**The bowhead hunt: a vital element of Inuit culture**<sup>34</sup>

Many Inuit pointed out that their forefathers survived in large part because they were able to harvest bowheads. Thus, they believe that bowhead whales and whaling are important aspects of Inuit culture and tradition. For this reason, they would like to see the tradition of bowhead hunting renewed. They would like future generations to have a taste of the bowhead whale:

*...I would support the hunting of the bowhead whale. It was used as food by our ancestors and I would like Inuit to continue to use it as food. I do not want them to forget how the bowhead whale maktak and the meat taste like. [Tookilkee Kiguktak, GF] BB341*

\* Since all interviews and most workshops were completed prior to the initiation of a bowhead hunt in Nunavut in August 1996, transcripts usually referred to a hunt being initiated or resumed in Nunavut. However, there have been two bowhead hunts conducted in Nunavut under authority of a Total Allowable Harvest (TAH) established by the Nunavut Wildlife Management Board: 1996 in Repulse Bay, and 1998 in Pangnirtung.

A renewed bowhead hunt would also be a means of showing respect to the Inuit ancestors whose whaling activities and hence very survival enabled the perpetuation of Inuit life and culture in the arctic.

*...I feel that the bowhead whale is very important to the Inuit, for our ancestors, even before we were born, survived from the bowhead and in turn that is why we are here today. ...[because of] their hard work and endurance, and for their survival from the animals, way back then. So therefore the bowhead whale is very important to the Inuit, and our elders had survived from them also, so it is very important to our culture, and that should be known, by especially the future generation. [Markosie Audlakiak, QK] BB516*

In order for the hunting of bowhead whales to be successfully resumed and maintained, it will be necessary to tap the knowledge of the

elders and to involve Inuit youth in the planning, carrying out, and follow-up of bowhead hunts.

**Wishes of the elders**<sup>35</sup>

Many elders who were involved in bowhead whaling in the past crave to eat bowhead maktak once again. In Inuit culture, it is customary to acknowledge and respect elders who have accumulated knowledge and wisdom about Inuit cultural values and beliefs, and/or have extensive and detailed knowledge about specific cultural practices. Many informants declared their desire to see bowhead harvesting resumed in order to satisfy the wishes of the elders and as a means of showing renewed respect and affection to the elders in a society whose values and activities have changed greatly in recent decades.

*...The elders of today are living and always longing to eat what they were raised with. For example, we had a grandmother who was very old and she used to repeat saying "I wish a bowhead whale could be harvested while I am still alive" and this was because she missed the maktak of bowhead whale, but she died before a bowhead whale was ever harvested. And my feeling has always been that if she was able to eat maktak of the bowhead whale I am sure that she would have lived longer. Elders must be respected and provided with food that they had grown up with... [John Kaunak, RB] HB208*

*...I'm sure that they [the elders] are craving for it [bowhead] since they grew up on it, and I'm sure that they love to eat it again while they are still alive, so,*



we Inuit think that they should try and harvest one as soon as possible. Especially the elders think like that, the elders who are left would like to have bowhead whale meat again before they die, they should be given their wishes... [Nauja Tassugat, CR] BB324

**Modern day utility of the bowhead** <sup>36</sup>

At the time of the Inuit ancestors, all parts from a harvested bowhead were useful. Today, new materials and technology have replaced the bones, the blubber and the baleen. However, there are some valuable uses for the products of future harvests, which would certainly provide Inuit with a highly valued source of country food.

...The sea mammals and all the animals are good for us. They are good nutritious food for us. They give us good blood, and they keep us healthy. [Anon. 23, PA] BB364

In the old days, almost everything (other than the bones and baleen) from the whale was considered as food by the Inuit or as food for their dogs. Nowadays, the people are most interested in the meat and especially crave for maktak (Arsene Paniuq, HB75). Extra meat could be used for dog teams which are becoming more evident in many arctic communities (Mucktar Akumalik, BB265).

Some informants recommended that sled runners could be made from bowhead bones instead of plastic, which tends to wear out very quickly (John Tongak, BB458). However, many informants suggested that the bones could be mainly used by carvers, after they had dried for a few years.

...and today I am sure that Inuit could utilize the bones for carvings. As the bones are quite large like the head and other large parts, carvers nowadays have very sophisticated tools that they would use them for carving. For sure the bones would not be discarded. [Ashevak Ezekial, CD] HS86

It was also mentioned that the bowhead could be used for educational purposes:

...they [the bones] could be used in the schools for educational purposes. ...If we could put it [the bowhead] together... I have often thought about other animals too like the caribou and the polar bear. If we could have these in a

museum I would definitely like to see the bones of the bowhead whale if it was put together like this. ...For the things that we are not aware of, if people could come to learn what they could be used for. This could be very interesting for our younger generation and for the children today [referring to various parts of the bowhead for educational and scientific purposes]. [Tony Manernaluk, RI] HB276

**Nutritive value, edibility, and taste** <sup>37</sup>

The ancestors of today's Inuit considered that almost all the soft parts of the bowhead were edible. None of these parts were considered distasteful. The meat, maktak, blubber, heart, tongue, liver, stomach and intestines were used as food. The cartilage at the base of the baleen was eaten, as well as the upper palate cartilage. This cartilage was considered very delicious especially for anyone who had a full set of teeth (Anon. 30, HB147). Some informants declared that the only parts not edible were the kidneys and the anal passage (Lucassie Nutaraaluk, HS114).

Bowhead whale meat is apparently better-tasting than beluga meat, which could taste a bit like the cod on which they feed. Bowhead meat is not black like narwhal meat (Arsene Paniuq, HB73). In the past, the tendons and muscles around the joints made very good food once they were fermented and eaten with blubber (Jacobie Panipak, BB306). In order to age the meat it was stored in a closed seal bag which was left in a cache for several months.

...By storing it [bowhead maktak and meat] into these [seal] skins

they [Inuit] would age the meat and make it fermented. When the people would come and get the meat out of the skin bags, they would say that it looked very much like cooked meat being taken out of the pot, and they say this makes very good food and very good meat. [Levi Nutaraluk, QK] BB512

...when it [aged meat] looks really yucky, when it starts to seep old blood and oil, that's when it tastes the best. [Mosesie Qappik, QK] BB521

The maktak was certainly one of the favourite parts as well as the tongue (Octave Sivanertok, HB213). The maktak is quite thick (compared to that of the beluga and narwhal) and has a soft inner tissue (possibly the inner-most dermis layer which is quite tough to eat in narwhal and beluga) (Lucassie Nutaraaluk, HS111).



People consuming flipper of bowhead harvested at Oikiqtan/Kekerten Island, July 1998. Photo by Keith Hay



...What the elders stated was very true; the first time you bite the whale skin, it will have a strong taste to it. The second time you eat it, it will be all right. The third time you eat it, the true taste will finally come out, it will be delicious. [Kooneloosie Nutarak, Sr., PI] BB470

But the maktak is not for everybody...

...I was given some of the maktak after the men in Igloolik killed a bowhead whale [in 1994]; it tasted awful to me. They are very tough, if you have no teeth. [Simon Akpaliapik, PI] BB482

Informants suggested that one should eat an equal amount of blubber and maktak to avoid constipation (Arsene Paniuq, HB75; Noah Piugattuk, FB99). The maktak boiled with the blubber is considered to be delicious (Atsiaq Alasuaq, HS87). Even if it is fresh, the elders say that it is not possible to get tired of eating maktak (Napatchie Pitsiulak, HS150).

...the maktak of the bowhead whale certainly is better than narwhal maktak. It tastes better. [Simon Inuksaq, PB] HB174

Bowhead blubber by itself is very good too. After boiling, the liquefied blubber is discarded, and the Inuit would only eat the solids (Andrew Oyukuluk, BB242). The blubber also makes very good food when it is dried, after the liquid had been pounded out of it.

...after the blubber was pounded it was hung up over the oil lamps to dry... then they said it makes very good food. ...When they prepare the blubber this way they call it qurlursiaq. [Martha Ittimangnak, PB] HB161

### *iii) Dissent or ambivalence with respect to resuming the bowhead hunt*<sup>38</sup>

Although acknowledging the traditional value and importance of the bowhead to past generations of Inuit, some informants did not see its relevance to today's Inuit:

...looking at the present situation, young people today may not be particularly concerned with bowhead whales as our elders are. ... Presently elders are in favour of harvesting bowhead whales and they miss eating maktak – but the

present generation of Inuit I feel are not going to be concerned with bowhead whales. [Simon Iyyirriaq, IG] FB105

Some informants were ambivalent regarding the resumption of bowhead whale hunting. They said that it could be good for future generations but does not seem necessary today, as whaling has not been carried out for a long time and Inuit societal values, objectives, and practices have changed a lot.

...We do not kill bowhead whales. I cannot tell you how important it really is. If the bowhead whale is killed and hunted, then it would be considered very important. The Qallunaat put a freeze on the bowhead whale... therefore, we cannot hunt the bowhead whale and I cannot say that it's culturally and traditionally important to the Inuit. [Joe Issaluk, CI] HB132

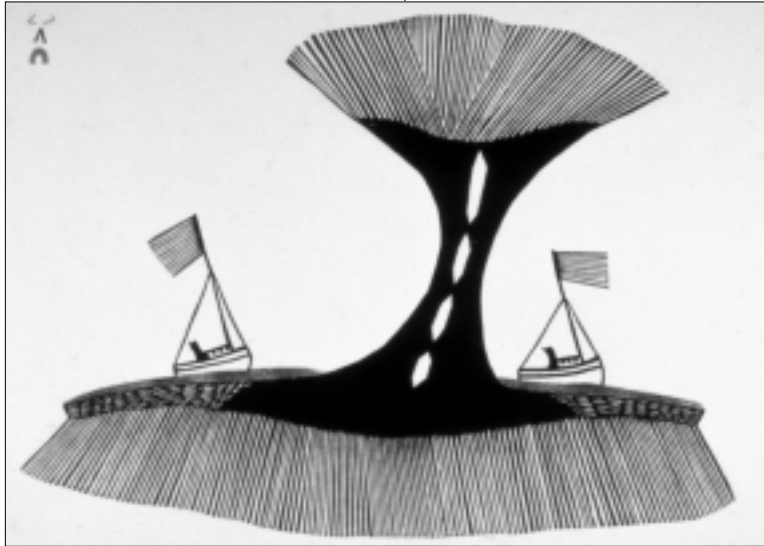
Some informants stated that they would like to see the hunt resumed but only under certain conditions. Because the hunt

has been forbidden for so long, they are concerned that today's Inuit do not possess the knowledge and skills to hunt the whale.

...perhaps in some ways we are getting behind with our knowledge on bowhead whales, simply because we have not been involved with bowhead whale harvesting for a long time and we don't talk about it often enough. It is unfortunate that this workshop is only starting now... [because] Inuit who are knowledgeable in whaling are no longer with us – they could have relayed information on what is needed and what needs to be done when actually harvesting a bowhead whale. As there was a special technique when harvesting a bowhead whale unlike when hunting for common wildlife. Because of their large size and [as] they were hunted traditionally where it could not be killed just like that, there were specific areas in the body that were targeted to kill the bowhead whale. [Jaco Evic, PA/ws] BB387

There is a common conviction that to resume bowhead hunting, it would be necessary to obtain some help and training in order to re-learn how to hunt the whale successfully.

... we are not bowhead hunters, although we were born in the time of bowhead hunting, but when one is a child at that time it is hard to know about them too much, we only know about what we have heard... I do not think the Inuit should say that they are professional bowhead whale hunters, the bowhead whale is such a large mammal and they are not easy to kill when you do not know them, so that is why I would like to see some kind of training before we



"A Whaler's Dream," Pudlo Pudlat, Cape Dorset



can actually go out and hunt one for the first time, perhaps getting people from different communities to hunt for the bowhead.... [Ben Ell, IQ] HS10

### 3.2.5 Traditional Inuit Customs and Legends relating to Bowhead Hunting<sup>39</sup>

Bowhead whales were an integral part of the traditional way of life of the Inuit. Inuit life was intimately linked to the bowhead whale. Bowheads had a vital influence on Inuit survival, culture and traditions. Inuit had special laws, rules and customs related to hunting the bowhead whale. They had to respect these traditions in order to increase their chances of having a successful hunt. They also had several beliefs that had to be honoured.

One important belief was that whales would always be available if they were harvested with respect. As already discussed (see section 3.2.1), Inuit believed that all wildlife species were put on earth to be utilized. Not harvesting wildlife, including the bowhead, might cause a species to decrease in number and eventually disappear.

...The bowhead whale too, if it is not hunted anymore will become less and less. With regards to the one that was recently killed [at Igloodik in 1994], people are saying some of the maktak was very rough and it didn't seem to be very healthy. People say that the animals have to be hunted continuously... [Sabina Issigaitok, HB] FB70

Hunting a bowhead whale required much courage on the part of the hunters. However, hunters were not supposed to praise themselves or think that they were especially powerful (Kooneloosie Nutarak Sr., BB467).

The bowhead was considered to be a strong animal and difficult to hunt. Several rituals and customs were meant to increase the chances of a successful hunt.

...Inuit had a lot of rituals and these were mainly to ease the work required, and perhaps that ritual [when they are hunting for bowhead whales in kayaks, that they had to undo their kamik [boot] laces to relax the bowhead whale] was also to ease the hunt. [Participant CH/ws] HB110

In the Hudson Bay area, according to traditional custom, the women had to lie down in their tents and not move while a bowhead was being hunted. They would have to do this to ensure that the whale would not be too strong so that the hunters, their husbands among them, would be successful (Martha Kutiutikku, HB167; Simon Inuksaq, HB170; Participant/ws, HB103). This custom, among others, is reminiscent of customs which are part of traditional Inupiat (Alaskan) bowhead hunting (see Lowenstein 1993).

...there is a person who came from Labrador, whose name was Joe; when he killed a bowhead whale by kayak, at the time of the commercial whalers, when

he started to kill the bowhead whale, at the time when they were still following the traditional law, the wife started to sew land caribou skin socks, while her husband was killing the bowhead whale, which was a taboo to do, such that she can kill her husband by doing that; perhaps she thought he was too mighty, and sometimes the men would have protection against such things; and then after he landed the bowhead whale, with the help of others, and the wife who wanted her husband dead, would look like she liked him; and then they went to sleep but she never woke up the next day and they didn't know what killed her so instantly, so they used a shaman to investigate, and the shaman found out what had caused her death. That is what happened to her when she wanted her husband dead on purpose, by sewing a land animal, like the caribou skin, for her husband, while he was killing the bowhead whale. But instead it back-fired on her because of the [husband's] protection, and at that time when the men were hunting bowhead whales they had to follow many traditional laws, by not being allowed to do certain things, and this went on just until recently. [Felix Pisuk, RI] HB264

When it was time to harpoon the whale, it was believed that the bowhead could be very selective regarding the hunter who was chosen. The bowheads would manifest their preferences regarding the hunter designated to harpoon them. Their wishes had to be respected (Joanasie Kakka/ws, BB503).

Another belief was that happiness or joy should not be expressed during the hunt, until the whale is dead and landed, otherwise the whale could be lost (Participant /ws, HB231; Philip Kripanik/ws, HB243).

Some informants mentioned that showing too much happiness before the whale is dead could result in a 'pelurqtuuq' [or 'pilluktuk'] (Participant/ws, HB221; Abraham Tagornak, HB178). 'Pelurqtuuq' is a transformation of one species into another. Traditional Inuit believed that bowhead whales could sometimes turn into narwhals (Participant/ws, HB222).

...The bowhead whale was harpooned right in front of our camp by my father, as my father was still using kayaks back then. The three kayaks consisted of my father, Kuttig and Javagiq. We could see the whale being harpooned and the float was set onto the water. Then they started going after it – waiting for it to surface, then going after it, more or less trying to keep up with the whale, and they used anguviak (round shaped drag) [anguvigaq = lance or spear], and finally when they were able to go right up to it they started to jab it with spears [lances]. After it was jabbed with anguvigaq (lance) it went under and after a little while it surfaced again as a little young narwhal with a small tusk... [Participant, RB/ws] HB221

Inuit culture possesses numerous legends that have been passed from generation to generation through the oral tradition. The following story, which has many variants, is one example of those stories handed down from the past:

...before my parents were ever born there were lots of bowhead whales. ...there was a very capable man [in many versions of this story his name is



Tapatai]... – I think he was physically well built and strong, and during the summer months when the wind was blowing from the open water he used to travel [by kayak] towards the open water before the wind got too strong and stayed for sometime, apparently he wanted to harvest a bowhead whale... He was away for quite sometime and by the time he arrived back at the camp it was quite windy. ...When he arrives he goes to bed and stayed in bed for most of the day – the wind was blowing strongly from the open sea. ...As the afternoon falls he started saying “avatajuk qinniktauqataklii taimma tiktaunajaktuq tammaunga” (“Look for the float, it should be floating this way”). As it turns out, the float (made from young ringed seal) was attached to a dead bowhead whale. Meanwhile he remained in bed as he was quite tired and by the time he started to get better people sighted the float. When the float was sighted he got up and beached the bowhead whale and cut it up. [Noah Piugattuk, IG] FB97

Legends often had a moral value. The stories told would generally provide a message or a lesson...

...The wildlife are very sacred to us and we had to respect them. I have heard of one incident in which someone found a raven caught in a fox trap. [the hunter got upset at the raven for taking the bait] Then he proceeded to take the feathers off the raven, but he left the feathers on the wings, and let it take off into the air without any feathers with the exception of the wings. When the fox hunting season came, instead of foxes he was catching ravens, and he got upset over that, and later on in time we hear that one of his children died from losing all of his body [skin] and consequently he [the child] died as a result. Those things were told to us to help us understand that we have to respect the wildlife the way we respect other people. [Joanasie Arreak, PI/ws] BB451

...There was also an occasion hunters harvested a bowhead whale out in the open sea and they were cutting up the bowhead whale out in the open seas in front of Arviqsiurvik [near Hall Beach] – he [the hunter] was pushed into the water and kept there till he died – this may have been related to some other person trying to get his wife. Quligaujak was the bowhead whale harvester who was pushed into the water and he was the provider for the camp. Panisuaq was the one who pushed him into the water while they were cutting up the bowhead whale in the open water in front of Arviqsiurvik. From that day on the bowhead whales left the seas and there were no more bowhead whales to be seen and this was the result of someone using the bowhead whale for wrongful

reasons and the consequence was that there were no more bowhead whales in our entire waters. Wildlife of the seas should never be used to take vengeance, or to be harmed for no purpose. [Noah Piugattuk, IG] FB97

### 3.3 INUIT HUNTS OF BOWHEADS AFTER 1915 <sup>40</sup>

Inuit informants provided details of many bowhead hunts conducted during the decades following the end of commercial whaling (see section 3.2.3.iii). Although in many cases the years reported by Inuit were somewhat at variance, many of these hunts could be confidently matched with hunts reported in Mitchell and Reeves (1982) who obtained their data from the historical and archival literature. Their Table 1 indicates that 18 bowheads were harvested and/or found dead by Inuit in Northern Hudson Bay/Foxe Basin between 1919 and 1975, while six bowheads were harvested and/or found dead by Inuit in the Baffin Bay/Davis Strait region between 1922 and 1975. The Mitchell and Reeves (1982) compilation indicates that most post-commercial harvests of bowheads were in Northern Hudson Bay until about 1940, while after 1960 most catches were in Northern Foxe Basin. This accords well with the notable increase in the number of bowheads frequenting Northern Foxe Basin in the early 1960s (section 3.1.1).

Informants provided much additional information on the hunts tabulated in Mitchell and Reeves (1982), including hunting techniques, names of hunters involved, disposition of the harvest, etc. See section 3.2.3.iii which provides an overview of post-commercial Inuit whaling and a list of quotation numbers which refer to post-commercial Inuit bowhead hunts quoted in the ‘Source Book of Quotations’. Where possible, the quotations are cross-referenced to the corresponding hunt as given by Mitchell and Reeves’ (1982) Table 1. A few other hunts could not be confidently matched nor definitely recognized as ‘new’ hunts. However, we believe that our Study has revealed 12 ‘new’ hunts (eight bowheads landed) documented by Inuit that are not in the Mitchell and Reeves compilation. It is highly likely that there have been other post-commercial Inuit hunts, in addition to those compiled by Mitchell and Reeves and besides the 12 ‘new’ hunts which are summarized in Table 1.



Cutting up bowhead harvested at *Oikiqtani/Kekerten* Island, July 1998. Photo by Johnny Nowdlak



## RESULTS AND DISCUSSION

Table 1. Summary of Inuit hunts of bowhead whales from about 1917 to 1975 in Nunavut, as revealed by informants in this Study, but not in the compilation of Mitchell and Reeves (1982).

Number landed/ Number struck	Year(s)	Location	Hunted by	Details/Comments (with quotation references)
1/1	Ca. 1917-1918	<i>Igarjuaq</i> (Mount Herodier), near Pond Inlet (summer, open-water season)	Inuit of Pond Inlet	Workshop participants from Arctic Bay and Pond Inlet agreed closely on this hunt – there were two Inuit bowhead hunts earlier in the century. Bowhead was small. Nutaraajuk and Pauloosie Akumalik harpooned it from kayaks, then the whale stranded on a sandbar where it was killed. It may have initially been driven close to shore by killer whales. The whale was well-utilized. (BB77, 259, 262, 266, 444, 460, 466, 468, 475)
1/1	Ca. 1920	<i>Qivittuq/Kivitoo</i> (North of Qikiqtarjuaq)	Inuit of Kivitoo	Initially wounded and driven shoreward by killer whales. Killed by Naujarbic with whalers' equipment. (One informant said the Inuit used guns). (FB50; BB278, 417, 420, 529)
3/3	Ca. 1939 – 1942	<i>Kuuk</i> , a camp between Leyson and Seahorse Points, SE Southampton Island	Inuit of Southampton Island (Mikitok Bruce and others)	All fall (September) kills. Generally used explosive harpoons/darting guns. According to M. Bruce (HB95), there were 3 successive harvests, one per year over a 3-year period. Another whale may have been lost due to harpoon line breakage (HB93). (HB5, 73, 93, 94, 95, 97, 100, 101, 104, 113, 114, 116, 123)
1/1	Ca. 1947	<i>Tajarniit</i> /Beach Point, Repulse Bay	Katuquq of Repulse Bay	Whale harpooned but lost (line broke due to ice); carcass drifted and was recovered by Mikitok Bruce at <i>Arviaktalik</i> /Cape Bylot (near <i>Aqiarunnaq</i> /Duke of York Bay, N. Southampton Island); harpoon head returned to Katuquq. (HB5, 91, 134, 288, 303)
0/1	'recently' when hunting was not allowed	Kimmirut area, near <i>Kangarjuaq</i>	Inuit of Kimmirut	Many boats involved; springtime; whale shot with rifles but no blood seen. It had been harpooned twice using 5 gallon drums for floats but the line kept breaking; the whale escaped. (HS140, 153)
0/1	Uncertain, but likely some time after 1960	At the community of Cape Dorset	Usuittuqpaujaq, Usutsiaq Pudlat, and Mangitak Kellypalik	Young bowhead near shore, perhaps scared by killer whales; harpooned and possibly lanced many times; whale lost/escaped. (HS19)
0/1	Likely in the 1940s or 1950s	<i>Nursarnaajuk</i> /Foster Bay (north of Hall Beach)	Grandfather of Mary Nangmalik of Whale Cove	Whale harpooned and killed, but lost (HB289)
1/1	Unknown (possibly in the 1940s)	Repulse Bay area	Angutinguaq of Repulse Bay along with Prime Okalik (now of Whale Cove)	Darting gun was used, whale killed with a shot to the head (HB301)
1/1	Unknown (probably before 1960)	Near Pangnirtung	Hunters from an outpost camp ( <i>Iqalulik</i> )	Bowhead calf shot, killed, and sank. Observed by Mosesie Qappik as a child (BB231)
0/1	1975	<i>Arviarjuaq</i> , near Arviat	Hunters of Arviat	Bowhead shot by hunters; it escaped but its fate was unknown (BB446)





Interview and workshop transcript excerpts in support of some of these 12 hunts are given below, region-by-region. Quotation reference numbers in Table 1 will refer the reader to these excerpts or to the longer, more-detailed quotations in the **Source Book of Quotations**.

### FOX E BASIN

The most recent bowhead hunt (not licensed) occurred in September 1994 at Igloodik, where Inuit harvested a young, 9-metre female using rifles, harpoons, and lances. Approximately 200 kg of maktak was utilized and shared among the three regions of Nunavut. Some meat was used for local dog teams, and the baleen was collected.

*I have seen and heard of one bowhead whale that was killed in Hall Beach [at a place called Nursarnaajuk/Foster Bay]. This was when I was a child. I'm the oldest in my family and my grandfather had harpooned and killed a bowhead whale near Hall Beach, but something happened and they were not able to get the bowhead whale. Perhaps the harpoon line broke and the whale escaped or drowned. [does not appear to be in the Mitchell and Reeves 1982 compilation; this would probably be in the 1940s or 1950s, considering the year of birth of this informant] [Mary Nangmalik, WC] HB289*

### HUDSON BAY

The most recent hunt (approved by the Nunavut Wildlife Management Board and licensed by the Federal Department of Fisheries and Oceans) occurred in mid August 1996 at Repulse Bay, where Inuit hunters took a 16-metre male bowhead whale using rifles and harpoons. Most of the maktak was utilized and shared among the three regions of Nunavut. None of the meat was utilized because the wounded whale dove during the hunt and the carcass did not surface until two days later, by which time it had bloated. The baleen was collected.

*How the bowhead whale died was simply by someone harpooning it [1947 harvest – see Table 1], and obviously no one should shoot a bowhead whale if they don't intend to harvest it – for one basic fundamental reason, once the meat has been damaged, no matter how small, it will eventually die from the wound. In this particular situation no explosives were used – he just harpooned the bowhead whale and the harpoon head did touch the meat and consequently it died from the wound. The meat of the bowhead whale should never be touched by any means – if you only wound it by the blubber I don't think it would do any real damage, but if you wound it by the meat it will die. [Mikitok Bruce, CH] HB5*

*...Actually we used to use explosive-tipped harpoons to harvest bowhead whales. There was an incident where Samson's father harpooned a bowhead whale with an explosive-tipped harpoon and he forgot to set the trigger in the harpoon and it failed to explode inside the bowhead whale... When it finally died we started to drag-float the whale but it got pretty windy from the sea – and we decided to let it go – believing that the wind would blow it towards the land, and it was very windy the next day so we didn't bother trying to salvage*

*it. The next day the wind had died down, it was found floating and we cut the front portion off the bowhead whale as the two boats were loaded to the till and we left it. [Mikitok Bruce, CH] HB5*

*As we lived in the Aqiarunnaq/Duke of York Bay, they [Inuit] had gone to hunt for the Bowhead Whale. But they were not successful. [may or may not be a 'new hunt', not enough information] [Rhoda Karetak, RI] HB79*

*...I did attempt to harvest one in 1964-65 [near Coral Harbour] but due to too much wind I was not able to harvest one... ..since then the prohibition on bowhead whales has been in place, thus I never attempted to get another one. [the whale was not struck – Coral Harbour Workshop, 1996] [Mikitok Bruce, CH] HB90*

*The only ones that were involved with bowhead whale hunting were the people that I grew up with, people like Qajagiuq, Aulanaaq [John Ell], Pamiulik and my father. Including myself and Satiana, there used to be only six of us that did actual bowhead whale hunting, using two boats. [Mikitok Bruce, CH] HB96*

*We had attempted to get one at the floe edge [near Coral Harbour] but the bowhead whale got wise and left before we had a chance to do anything. This would have been around 1975. ...at that time I readied my equipment for the harvest that was not successful. [Tooma said that the whale was not struck] [in the Mitchell and Reeves 1982 Table 1, there is reference to Coral Harbour Inuit striking and losing at least one whale in the vicinity of Coral Harbour in 1975.] [Tooma Netser, CH/ws] HB119*

*...I had this weapon [a darting gun with explosive device, given to me by my father-in-law] but Angutinguaq from Repulse Bay used it on a bowhead whale and the bowhead whale drowned.... ..the harpoon line got tangled with the very heavy dart gun and as it got tangled it broke the harpoon line. ...the whale drowned just before it was facing the boat. ...it was shared among everybody in the camp. During those times, that was the only food that they had so they shared the animal that was killed. The meat of the bowhead whale was also used as food. If you butcher the bowhead whale shortly after it is killed, the meat will not spoil ...I remember eating some of the bowhead whale... ..It was very delicious. [this occurred in the Repulse Bay area; given the year of birth of the informant and the fact that the darting gun was used, it does not appear to be in Mitchell and Reeves 1982] [Prime Okalik, WC] HB301*

### BAFFIN BAY

The most recent licensed hunt occurred on July 21, 1998, at Qikiqtan/Kekerten Island in Tinnujivik/Cumberland Sound, carried out by hunters from Pangnirtung. Harpoons and a shoulder gun were used in this hunt. The maktak, meat, and tongue were utilized and shared with other communities in Nunavut. The baleen and most of the skeleton were collected.

*...[as a child] we were still living in our outpost camp near Pangnirtung called "Iqalulik" [on outer headland between Kangilo and Nettilling Fiords]. ...when*



we were near Pangnirtung, they saw a bowhead calf [no mother] from the land. ...the men left the women on the land and the men went rowing down to the calf by the boat, it was really close... ..it was a very small calf. ...the Inuit tried to catch the calf, by shooting it but it just sank. ... it died right away when it was shot [Mosesie Qappik, QK] BB231

I have also heard in Qivittuuq/Kivitoo when people were living there, I have heard killer whales went after a bowhead whale and quit before they killed it – and Inuit harvested it [bowhead] with guns. [this happened around 1920 at Kivitoo] [Pauloosie Angmarlik, PA/ws] BB417

### 3.4 MANAGEMENT AND POSSIBLE FUTURE RATES OF HARVESTING OF BOWHEAD WHALES <sup>41</sup>

Informants expressed concern that bowhead populations should be carefully and properly managed, so that the number of bowheads in Nunavut's waters may continue to increase well into the future. This will require strict control and management of any future harvesting. However, they also believe that bowheads are sufficiently numerous at this time to sustain a limited but on-going harvest. Generally, one harvested bowhead would not provide for the needs of all Inuit in Nunavut, and regionally-based harvesting (with meat and maktak provided only to one region) would be preferable.

Suggestions for an appropriate rate of harvesting, considering both regional needs and the current abundance of bowheads, varied from a high of three bowheads per year (one per region) to one every second year. The most frequent suggestions were: one per year or one per two years (three informants); one per year with the regions alternating (three informants); and two per year, one for each of Baffin and Kivalliq (four informants). Informants believed that these rates of harvesting would be sustainable, given the abundance of bowheads nowadays and the increase in bowhead numbers in recent decades.

...and they (bowhead population) will not be affected if we were to catch one, due to the bowhead stock becoming healthy like it was back then here in our land, they are increasing... [Ben Ell, IQ] HS36

...each year a regionally-based community [should] harvest a bowhead whale... ..each region [should] take turns harvesting a bowhead whale every year. I also find important the need to establish and maintain the management of bowhead whales, that way harvesting of bowhead whales could go on for a long time... [Donat Milortok, RB] HB41

...one bowhead whale is going to be killed [at Repulse Bay in 1996], so the people [of Nunavut] will share it amongst themselves, but there's not going to be enough. [Leo Mimialik, CI] HB133

...it wouldn't make any difference to me if there is no quota for Netilikmeot [east Kitikmeot] communities, I fully support a quota for Baffin Region or Keewatin/Kivalliq because elders in those regions are craving for maktak. Since the bowhead whale population has increased, I don't think one whale would really hurt the population. [Jose Angutingungniq, PB] HB156

It would be so nice if the Baffin Region and the Keewatin Region would be given one bowhead whale each to kill because there would be enough to go around then. [Mary Nangmalik, WC] HB292

I would be in support of the hunting of the bowhead whale to be managed properly. ...if they hunt one bowhead whale every year, then I cannot see the bowhead whale declining. If the bowhead whale could be hunted every year I would be in support of this, or even if it could be hunted every two years... [Jaycopie Audlakiak, QK] BB499







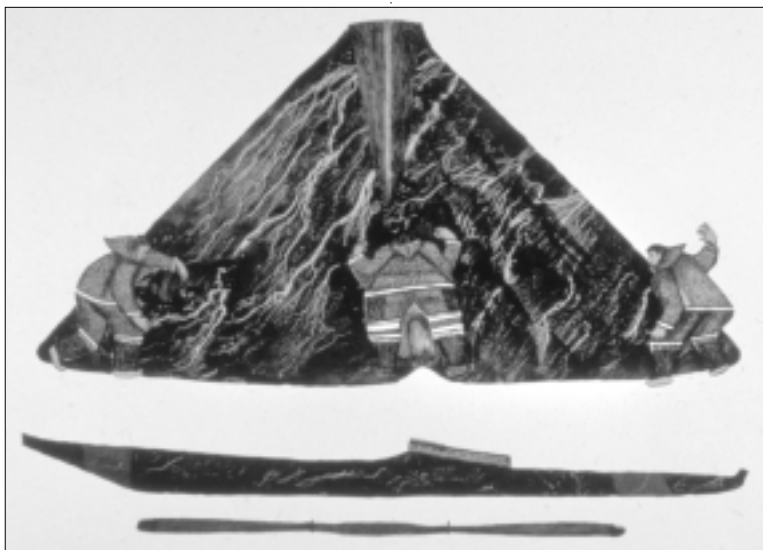
# Summary and Conclusions

## 4.1 INUIT KNOWLEDGE OF POPULATION ECOLOGY OF BOWHEADS

1. Inuit recognize that bowhead whales were numerous prior to commercial whaling, citing as evidence the abundance of old whale bones in many localities where ancestral Inuit whaled and made their homes. They believe that ancestral Inuit whaling did not have any significant impact on bowhead whale populations. Many elders (e.g., the late Aksayuk Etuangat of Pangnirtung) testified that bowheads were very scarce in the decades following the cessation of commercial whaling, and many others reported hearing about this from their elders as well. Inuit, realizing that commercial whaling depleted these stocks, pointed out that Inuit were not responsible for over-harvesting. They believe that the infrequent harvesting of bowheads by Inuit after about 1915 reflected both the low abundance of bowhead whales as well as a common notion that a ban on the taking of bowheads was in effect. Inuit stated that they generally refrained from harvesting bowheads after the end of commercial whaling in spite of at least some continuing opportunities to do so.

2. Many elders, who are still active in hunting and traveling, and some senior hunters from throughout the Study Area testified that, when they were children or younger adults, they saw bowheads only rarely or in very small numbers, but in recent years or decades they have seen greater numbers of bowheads.

In northern **Foxe Basin** (particularly in the mouth of *Ikiq/Fury* and Hecla Strait), Inuit provided evidence for an increase in the number of bowhead whales during recent decades, particularly since about the mid 1960s, when several bowheads were harvested in this area. Elderly informants and senior hunters, as children or younger adults, reported seeing few bowheads; in recent decades, they have seen greater numbers. Some reported that the increase since the 1960s has been fairly steady.



"Measuring the Whale's Tail," Oshoochiak Pudlat, Cape Dorset

In the **Hudson Strait** area, informants reported that sightings of bowheads have increased in comparison with earlier times. However, some informants were uncertain if this reflects a real population increase, suggesting instead that increased hunter mobility and redistribution of bowheads might be contributing factors. The testimony suggests that the increase in sightings in the *Sullualuk/Hudson Strait* area is

not as marked as the increases observed in other parts of Nunavut.

In the **Hudson Bay** area, Repulse Bay and Chesterfield Inlet residents also noted changes in the number of bowheads they have sighted in recent years or decades as compared to when they were children or younger adults. Bowhead numbers began to increase in the Repulse Bay area around 1965. Prior to that time, the residents of small settlements

outside Repulse Bay took especial note of any bowhead sightings, expressing surprise or a feeling of awe.

In the **Baffin Bay** region, many Arctic Bay elders related that bowheads were rarely seen during their childhood and early adulthood, but that bowhead sightings have been increasingly frequent in recent decades, particularly since the early 1960s. Some informants provided other dates for noticing an increase: 1973-1974 with an accelerating rate of increase in the 1990s; the 1970s; or the early 1990s. A bowhead sighting before the 1960s tended to elicit much excitement and curiosity, but not so nowadays. One informant suggested that the increasing abundance of bowheads near Arctic Bay may be due to changes in their distribution.

Elders from Clyde River pointed out that bowheads were rarely seen near their settlements (e.g., Igaliqtuuq/Isabella Bay) prior to re-settlement at Clyde River in the early 1960s. At that time, sightings of bowheads started to become more frequent throughout the Clyde River resource-use area.

In recent decades, Inuit have noticed more bowheads at the floe edge (in May/June) south of Pangnirtung. At the time of their childhood or young adulthood, elders saw whales only infrequently, but in recent decades they have sighted more and more whales in Tinnujivik/Cumberland Sound. The testimony suggests that bowheads were still scarce in the Sound during the 1960s, with the increase becoming detectable by the 1980s.

As children or younger adults, Pond Inlet informants saw bowheads infrequently, but in recent years or decades they have seen bowheads in larger numbers. While the rarity of a sighting had created much excitement among the people, this is not so nowadays. At the Pond Inlet floe edge, sightings have increased, especially from about 1942. The reported time when the increase in sightings of bowheads in the Pond Inlet area became detectable varied widely (1942 to 1992) among informants, with most suggesting that this occurred in the late 1960s to mid 1970s.

Elders of Qikiqtarjuaq also reported increased numbers of bowhead whales in recent times as compared to when they were children or younger adults. At least one person, however, wondered if there had been a real population increase or merely a change in feeding distribution.

3. Many elders testified that, as children or younger adults, they saw bowheads only rarely or in very small numbers, but have heard from other hunters that bowheads have become more numerous in recent decades. These elderly informants, no longer active in hunting and traveling in recent years, have relied largely on information from active hunters.

In the **Hudson Strait** region, several informants provided testimony of this general nature.

From **Hudson Bay**, Coral Harbour informants reported that they rarely saw bowheads at the floe edge in the past, and that hunters now relate to them that bowheads are abundant at the floe edge during May and June. This increase in sightings at the floe edge began in the late 1980s. Informants from Chesterfield Inlet reported that bowheads were scarce or absent in the area until about 1950, but hunters have been seeing more bowheads in recent years. As children or younger adults, Repulse Bay informants infrequently saw bowheads; they have heard that hunters have been seeing more bowheads in recent years, beginning in the 1970s, especially at the floe edge. Prior to the 1960s and the extensive utilization of motorboats, hunters traveled extensively by sail boat, yet reported seeing few bowheads. One informant, maintaining that bowhead numbers have increased, also suggested that increased frequency of sightings could be attributed to changes in bowhead distribution and/or increased hunter mobility.

In the **Baffin Bay** region, one elder from Arctic Bay saw very few bowheads when she was a young woman, and related that hunters nowadays frequently see bowheads at the floe edge. While suggesting that increased sightings may partly reflect modern, faster transportation methods, she concluded that the bowhead population is increasing. Another informant, recalling that bowheads were frequently seen at the floe edge during the late 1930s, stated that *“The hunters say there are more bowhead whales now than there have been in past times when I would go out and camp with my family”*.

Aksayuk Etuangat of Pangnirtung was born about 1900 and was raised at Qikiqtan/Kekerten Island in Tinnujivik/Cumberland Sound. He was involved with the final phase of commercial whaling there around 1918-1920, and reported that at that time bowheads were infrequently seen and harvested at Kekerten. He has heard from hunters about the increased numbers of bowheads in recent times at Qikiqtan/Kekerten. The scarcity of whales at Qikiqtan/Kekerten by 1920 was confirmed by Pauloosie Angmarlik. This testimony, combined with that of Inuit with lifetime experience regarding bowheads (section 3.1.1.iii), along with recent observations of bowheads by hunters (section 3.1.1.vi), provides strong evidence for a post-commercial increase of bowheads in Cumberland Sound.

Kooneeloosie Nutarak, Sr. of Pond Inlet contrasted his infrequent childhood observations of bowheads with hunters' recent reports of abundance of bowheads in the Clyde River and Pond Inlet areas.

4. Active hunters from throughout the Study Area have reported seeing large numbers of bowhead whales within their communities' resource-use areas. In spite of not having the benefit of their own base-line observations from earlier parts of the 1900s, many have concluded that bowhead populations have increased in numbers over the past few



decades. However, many of these same hunters do refer, in other parts of their testimony, to elders' observations of the scarcity of bowheads in earlier times.

In **Foxe Basin**, hunters from Igloolik have sighted large concentrations of bowheads near their community in recent decades, and they believe that the bowhead population has been increasing.

In **Hudson Strait**, informants from Cape Dorset and Kimmirut report sightings of large numbers of bowheads in their respective areas.

In **Hudson Bay**, Ben Ell (now residing in Iqaluit) witnessed an abundance of bowheads (in groups of 10 to 20) in the Coral Harbour area when he resided there in 1955-56. People see good numbers of bowheads every summer in the Chesterfield Inlet area nowadays, as compared to elders' accounts of the absence of bowheads at the end of the commercial whaling period.

Bowheads are numerous in the Repulse Bay area from spring to fall, and the population has increased according to informants. John Kaunak noted that whales are concentrated and numerous at the floe edge in June, but that after ice break-up, they disperse and are seen in smaller numbers. Whales then gather inshore in August.

In the **Baffin Bay** region, Arctic Bay hunters have reported an abundance of bowhead whales in their community's resource-use area, and they believe that the population has increased.

Clyde River informants mentioned the large numbers of bowheads seasonally occurring and migrating/feeding within the community's marine-use area, including the large feeding aggregation that occurs at Igaliqtuuq/Isabella Bay in late summer and fall. Considering the large number of whales that they see, some informants believe that the bowhead population in this area has grown.

Many informants from Pangnirtung emphasized that they frequently sight large numbers of whales. The floe edge southwest and south of Pangnirtung (off Qikiqtan/Kekerten Island) has been occupied by increasing numbers of bowheads in recent decades during the months of May and June (sometimes as early as March and April), and the bowheads tend to be concentrated or occur in large groups. After ice break-up, the whales disperse widely in small groups, so that the overall rate of sightings decreases during the summer. Based on reports of elders (some of whom were present at the whaling stations of Qikiqtan/Kekerten and Ummanagjuaq/Blacklead Island during or just after the last days of whaling) that bowheads were sighted infrequently several decades ago, many informants have concluded that the population of bowhead whales in Tinnujivik/Cumberland Sound has increased since the end of commercial whaling.

One informant from Pond Inlet reported an annual occurrence of bowheads at the floe edges off Pond Inlet, Navy Board Inlet, and Tallurutiit/Lancaster Sound. Others have reported that bowhead whales occur in large numbers in the Pond Inlet area during summer. One informant reported that his wife counted a minimum of 74 bowheads on migration in Navy Board Inlet during summer 1996. Some informants reported that their elders had seen very few bowheads in the Pond Inlet area at the conclusion of commercial whaling in the early 1900s.

Many informants from Qikiqtarjuaq reported seeing large numbers of bowheads in summer and fall within the community's resource-use area. As a child many years ago, Jaycopie Audlakiak observed, in the vicinity of Palligvik/Padloping Island and near Qivittuuq/Kivitoo, "so many bowheads you could hardly see the water." Hunters reported many more bowhead whales in Qikiqtarjuaq's waters in summer/fall of 1994 than in 1993. In 1994, bowheads occurred in large numbers at the spring floe edge, and in summer/fall they were numerous in nearshore waters in many localities. Killer whales came into Qikiqtarjuaq's waters also in the summer of 1994. Some informants believe, on the basis of the large numbers of whales seen in the area in recent years, that the bowhead whale population has been increasing.

5. Several informants did not provide their own observations of bowhead abundance and/or changes in abundance, and instead have cited the observations of other hunters that bowheads are very numerous nowadays, or that bowhead numbers have increased in recent years/decades. Informants from Igloolik and Hall Beach have heard from other hunters about the abundance of bowhead whales in northern **Foxe Basin**. In **Hudson Strait**, informants have heard about the large numbers of bowheads that seasonally visit their areas. While they suggested that the bowhead population is increasing, their testimony indicates that increases have been quite modest in the Sullualuk/Hudson Strait area. In **Hudson Bay**, informants from Coral Harbour, Chesterfield Inlet, Repulse Bay, and Whale Cove stated that hunters have recently sighted many bowheads in their respective community areas. As a result, they have also concluded that bowhead numbers have increased since the end of commercial whaling. In the **Baffin Bay** region, some informants from Arctic Bay, Clyde River, Pangnirtung, Pond Inlet, and Qikiqtarjuaq have heard about the large numbers of bowheads encountered by local hunters in recent years. Many related these observations to population increase. One Pond Inlet informant related that an elder from Clyde River noticed that the increase in bowhead numbers began in the 1950s.

6. Seven active hunters, representing all four regions of the Study Area, testified that they have observed, in recent years, steady increases in bowhead numbers from year to year.



7. Many informants from all regions associated the large numbers of bowheads seen in recent times with the effective cessation of whaling after 1900. Although many merely assumed that bowhead numbers must have increased because of the absence of whaling, many of these same informants did provide substantial evidence of bowhead abundance and/or increase in population size.

8. A fair number of informants from all four regions of the Study Area believe that bowhead numbers have increased in recent times, but they did not provide substantiating evidence in the immediate context of their remarks. However, many of the same informants, in other parts of their testimony, have provided more substantial evidence for population growth of bowheads.

9. One informant from the **Hudson Bay** region provided evidence of a local decrease in bowhead numbers. This informant, an elder from Coral Harbour, reported that bowheads seem less numerous nowadays at Nuvualuk/Terror Point (on southeastern Southampton Island) compared to the 1960s. In the **Baffin Bay** region, an elder from Pangnirtung stated that bowheads were numerous in 1946 (when a bowhead whale was harvested); but after 1946, killer whales began to appear in Tinnujivik/Cumberland Sound and the bowhead population declined. Another elder from Pangnirtung also related a recent decline and/or dispersal of bowheads and other marine mammals in Cumberland Sound to the presence of killer whales, especially in Isuittuq/Clearwater Fiord. He also related that bowheads were plentiful at the time Inuit (including his parents) worked with the commercial whalers, and that the population later declined. Several informants reported that bowhead numbers and their distribution may fluctuate from year to year within the marine-use regions of their communities, but that such fluctuations are normal aspects of bowhead population ecology.

10. A small number of informants from **Hudson Strait**, **Hudson Bay**, and **Baffin Bay** suggested that bowhead numbers have been stable over recent decades. One informant stated that bowhead whales are infrequently sighted near Uqsuriaq/Marble Island (off the mouth of Rankin Inlet), and suggested that bowhead whales have not greatly increased in numbers in the Kivalliq/Keewatin region.

11. Although they may see bowheads frequently, many informants from all four regions could not comment on changes in their abundance. In **Foxe Basin**, one informant thought that increased numbers of bowheads in the area could be due to immigration or a population increase. Some informants deemed themselves unable to comment on population changes because they did not know what population numbers were in the past. Because bowheads are not hunted and hunters tend to focus their efforts on other species, some informants stated that they were not able to comment on population changes. In **Hudson Strait**, a few informants from Cape Dorset and Kimmirut attributed their lack of knowledge of bowhead population changes to a relative scarcity of bowheads in the

region. In **Baffin Bay**, informants from Grise Fiord could not comment on population changes, perhaps because this community was only recently established, i.e. in the early 1950s.

12. Several informants stated that they had heard through the local community radio station, portable CB radio, and/or other sources, that bowhead numbers have increased or that bowheads are now quite numerous, in certain parts of Nunavut. The abundance of bowheads near Igloolik in summer and fall is well known to many informants. Two elderly informants from Repulse Bay had spent their childhood/early adulthood in the Igloolik area, and had rarely seen bowheads there. One believed that recent bowhead abundance near Igloolik is due to an immigration of bowheads as they are trying to get away from killer whales. Two Arctic Bay informants expressed the opinion that the abundance of bowheads near Igloolik in recent years is due to emigration from the Arctic Bay area, in particular because of disturbance at the Tununirusiup Kangiq&ua/Admiralty Inlet floe edge by hunters shooting narwhals. One of the informants from Arctic Bay suggested that this influx of bowheads into the Igloolik region began after the 1950s. Similarly, two Pond Inlet informants suggested that bowheads have moved from Pond Inlet to the Igloolik area, because of either better feeding opportunities or the disturbance due to commercial whaling in the Pond Inlet region earlier in the century. One in fact stated that Igloolik hosts many more bowheads than Pond Inlet and that bowheads have increased in numbers in the Igloolik region.

Clyde River and nearby Igaliquuq/Isabella Bay are well known for hosting relatively large numbers of bowheads; informants have attributed these large numbers to population growth. An informant from Kimmirut stated that bowheads are not as numerous in south Baffin Island as in the Clyde River area.

Many informants referred more generally to the high frequency of sightings of bowheads throughout eastern and central Nunavut, which they attributed to population growth. An informant from Kugaruk noted that this population growth seems to have become noticeable in the late 1950s. Inuit informants from **Hudson Strait** frequently mentioned increases in numbers of bowheads in other areas, such as Clyde River and Igloolik.

Informants referred mainly to Clyde River, Igloolik, and Pangnirtung as places of significant bowhead abundance, with fewer mentioning Qikiqtarjuaq, Repulse Bay, and Coral Harbour. They generally attributed this abundance to growth of the bowhead population.

13. Informants from nearly all communities provided detailed observations and comments on the seasonal distribution, migrations, and behaviour of bowhead whales in the Study Area. These transcribed



observations (section 3.1.2.i) are complementary to the six maps of seasonal distribution and migration (section 3.1.2.iv), which are composites of the mapped data contributed by all informants in the Study.

In **Foxe Basin**, bowheads tend to concentrate during summer in the mouth of *Ikiq/Fury* and Hecla Strait after aggregating at the floe edge off Igloolik and Hall Beach.

In **Hudson Strait**, informants' observations and remarks give the impression that bowheads are not very numerous in this region. Bowheads apparently use the south Baffin Island coast mainly as a migration route. This, and a possible offshore distribution of migrants, could partly explain the irregularity and/or scarcity of sightings.

In **Hudson Bay**, *Repulse Bay* informants sight bowheads in small numbers in summer, only one to three at a time. The testimony of informants from *Chesterfield Inlet* suggests that bowheads are regularly sighted every year in their area, but only in small numbers. Informants from *Rankin Inlet* and *Whale Cove* apparently do not sight many bowheads in their communities' hunting territories.

Informants from all **Baffin Bay** communities provided a wealth of information on the seasonal distribution, migrations, and activities of bowhead whales in their marine-use areas. Bowheads are very rarely seen in winter, but they are often seen in spring at the floe edge, where large aggregations may occur (e.g., at *Pangnirtung*). During and after ice break-up, they move into nearshore waters where they engage in activities such as feeding, playing, mating, and occasionally calving. This inshore movement into shallow waters could also be related to avoidance of killer whales. In summer, bowheads tend to be more dispersed as they seek out the best feeding locations, although summer aggregations are also reported. In the fall, bowheads group up and begin their migrations back to wintering areas before or at the time of freeze-up. Superimposed on this general pattern, many informants reported annual variations in the occurrence, distribution, and number of bowhead whales in their communities' resource-use areas, which they generally attribute to variations in availability of the bowhead whales' food.

Informants also gave a great deal of information on the size/age composition and number of whales seen in groups at different seasons, and often attempted to relate this information to the behaviour and activities of the whales.

14. A small number of informants from **Hudson Bay** and **Baffin Bay** stated that bowheads return to the same locations every year for feeding and other activities. A few informants indicated that the same whales are involved and thus demonstrate site fidelity; e.g., the same whales return every year to *Igaliqtuuq/Isabella Bay*. Some informants speculated that the bowheads seen in spring at the floe edge are also seen later on (in

summer) along with smaller whales. Informants did not present observations or speculations on stock identity and discreteness.

15. Many informants from all regions reported the relatively new occurrence of bowheads in areas where they were not seen before, and this was often related to or attributed to an increase in the population. However, some informants raised the possibility that a new occurrence of bowheads in an area may reflect a re-distribution of animals and not an actual population increase. One informant suggested that Inuit may lack this kind of knowledge, since bowheads have not been harvested and utilized for a long time. Informants also suggested that killer whales may cause bowheads to temporarily abandon traditional and favoured areas. *Kugaaruk* residents sighted bowheads during the early 1990s in their hunting area, previous to which bowheads were apparently rarely seen in the area. All sightings from 1992 through 1994 have been in the same general area near *Kugaaruk*. However, one informant inferred that increased hunter mobility may be involved in the increase of reported sightings in the *Kugaaruk* region.

16. Only a very few informants explicitly reported an increase in group size of bowheads in recent years. Most of them related this to concurrent increases in frequency of sightings and in the overall numbers of bowheads. Several informants stated that in earlier times bowheads usually were solitary, but that they now occur in groups.

17. Informants from all four regions of the Study Area reported the occurrence of bowhead calves with their mothers. Many calves are seen near *Igloolik (Foxe Basin area)* in summer, suggesting that this is a nursery area for bowhead whales. One informant witnessed a female bowhead giving birth at *Siorat* in the *Igloolik* area, and believes that this could be a bowhead calving area. Another informant reported that mother/calf pairs were not seen in this area when he was young. In **Hudson Strait**, only a few sightings of bowhead calves were reported. One informant suggested that the lack of attention paid to bowheads nowadays accounts for the lack of sightings of calves and observations of trends in their abundance. Informants from **Hudson Bay** have reported calf sightings, especially around southeastern *Southampton Island* and in the *Repulse Bay* area. One informant suggested that *Repulse Bay* may be a bowhead nursery area. In the **Baffin Bay** region, only *Kugaaruk* informants did not report sightings of calves. Calves are frequently sighted in the vicinity of *Arctic Bay*, where the spring migration and arrival of mothers with calves occur later compared to other bowheads. In the *Clyde River* area, mothers with calves are occasionally seen in late summer/early fall at *Igaliqtuuq/Isabella Bay*, and some informants surmised that calving occurs here. A few informants have observed or otherwise provided evidence of calving in *Isabella Bay* and at other locations, while other informants reported not seeing calves at *Igaliqtuuq* or elsewhere. The locations of calving areas for the bowhead whales in this region seem to be unknown. Newborn calves are described as being reddish in colour, while solitary juveniles





(*ingutuit*) are also seen during fall at Isabella Bay. One informant reported that southbound, fall-migrating bowheads had many calves with them as they passed Isabella Bay. Near Pangnirtung, informants reported mother/calf sightings mostly in spring (when whales are concentrated at the floe edge) and early summer, rather than in late summer or fall; calving may occur in the area, as a few informants reported seeing the birth of a bowhead and/or direct evidence of a very recent birth. Similar to the situation at Clyde River, Pangnirtung informants reported the occurrence of red-coloured calves, probably newborns. Many informants also reported the occurrence of solitary *ingutuit*/yearlings in the Pangnirtung region. Pond Inlet informants reported seeing mother/calf pairs at the floe edge at Sanirut/Button Point, where it is believed that calving may occur. Informants also reported seeing a female bowhead with a newborn and an older calf. Qikiqtarjuaq informants reported seeing mother/calf pairs in the shallow waters off Qivittuuq/Kivitoo (which may be a calving area), and calving was also suggested to occur in the waters around Qikiqtarjuaq. One informant indicated that he had seen evidence of actual calving. As in other communities, the older, solitary *ingutuit* are also seen.

Although many informants from all regions reported the presence of calves and small juveniles, only a few informants representing all four regions commented on the connection between the presence of calves and juveniles and the growth of the bowhead population. Only one informant from Repulse Bay and two from Igloolik reported that more calves are seen nowadays compared to times past. As noted previously, the reduced interest and lack of attention paid nowadays to bowheads could be responsible for the paucity of information about increases in number of calves and other particulars about bowhead whales.

18. An important question with regard to increased sightings of bowheads in recent decades relates to possible changes in ‘observer effort’ over this time period. Many informants pointed out that Inuit knowledge of bowheads has been diminishing in recent years, especially regarding certain details such as presence of calves and changes in bowhead distribution. In good measure, this is because the bowhead has not been regularly harvested for many decades. Furthermore, Inuit no longer live in widely-dispersed settlements (as they did before the 1960s), and thus may have less opportunity today to observe these specific and more subtle changes. On the other hand, hunters nowadays can travel great distances by snowmobile or boat to reach various distant hunting areas (where the Inuit population used to live), and they could have the opportunity to observe bowheads, trends in their abundance, and other changes. However, the hunters tend to ignore bowheads because they are looking for other wildlife. ‘Observation effort’ is difficult to describe and quantify. The factors involved are many, and some of the most significant of these factors at either end of a particular time series (e.g., pre-1960 versus the present time) probably tend to balance out. Thus, the dispersed nature of Inuit settlement within a present-day community’s marine-use territory would tend to be offset by the ability of hunters and

their families to travel with speed to these outlying regions. The result may be a fairly constant level of ‘observer effort’ since the 1960s, when the move to new communities began.

19. Notwithstanding the quantification of ‘observer effort’ or changes in effort, it is not possible, from the Inuit testimony, to quantify the magnitude of bowhead population changes in any region of Nunavut. There is a tendency for increases in bowhead numbers to have become noticeable during the 1950s or later, especially the 1960s and early 1970s. Increases appear to be greatest in northern Foxe Basin (Igloolik and Hall Beach) and along the western coast of Baffin Bay (Clyde River, Pangnirtung, Qikiqtarjuaq, Pond Inlet, and Arctic Bay). Bowhead whales have been sighted in the Kugaaruk area in small numbers only since the early 1990s, while Grise Fiord residents have reported the summer/fall occurrence of small numbers of bowheads in their region. Inuit testimony from the Hudson Strait communities (Kimmirut, Cape Dorset, and Iqaluit) suggests that bowheads have increased in numbers only modestly in Frobisher Bay and along the northern shore of Sullualuk/Hudson Strait. In Hudson Bay, communities of the South Kivalliq region (Arviat, Whale Cove, Rankin Inlet, and Chesterfield Inlet) do not appear to host large numbers of bowhead whales. However, sightings have become more regular in the Chesterfield Inlet area in recent years, and some informants from this community believe that the bowhead population is growing. In northwestern Hudson Bay, informants from both Repulse Bay and Coral Harbour reported substantial increases in the numbers of bowheads, both at the floe edge in spring and in open water during summer. The collective testimony indicates that the number of bowhead whales seasonally visiting Nunavut’s nearshore waters has increased significantly since the end of commercial whaling, and especially since the 1950s and 1960s.

20. Inuit informants reported on the occurrence of killer whales during the summer in all regions of the Study Area. They have documented through observation and the oral tradition the interactions between killer whales and bowheads, including predation and the effects of killer whales on bowhead behaviour, distribution, and migrations. Stranded bowhead whales have been found by Inuit over the past few decades; in some of these cases the evidence suggests that killer whales were fundamentally responsible. Many informants reported on an inverse relationship between the occurrence of bowheads and killer whales. Sightings of killer whales have declined in some parts of the Study Area since the 1950s to 1960s, coincident with increased bowhead sightings in these areas. Bowheads and other marine mammals often exhibit a pronounced fright reaction to the presence of killer whales. This reaction, called ‘*aarlirjuk*’ in the South Baffin dialect of Inuktitut, involves the movement of marine mammals into areas of broken sea ice or shallow inshore waters, which may provide some measure of protection from the killer whales. Inuit hunters in the past



have taken advantage of this fright reaction, which enabled them to more easily harvest the frightened bowheads and other marine mammals.

Repulse Bay informants stated that there was an influx of killer whales into the Repulse Bay area in the mid 1960s, and a concurrent decrease in the bowhead population. In recent years, killer whales have been only rarely seen in the area, and bowheads are now more numerous. One informant from Repulse Bay suggested that the recent increase in the number of bowheads near Igloolik since the 1950s is due to two factors: growth of the population and an avoidance reaction to killer whales. On the other hand, some Arctic Bay and Pond Inlet informants suggested that the increase at Igloolik was actually due to an emigration of whales from their respective community areas. Killer whales were numerous and bowheads were scarce in Tinnujivik/Cumberland Sound in the 1950s and 1960s, but fewer killer whales have been visiting the Sound in recent decades, coincident with an increase in bowhead numbers. A similar situation has been reported for the area around Palligvik/Padloping Island on the east coast of Baffin Island. Killer whales appear to have a significant impact on the distribution of bowheads during summer and fall in much of eastern Nunavut, but their impact on the population numbers of bowhead whales is unknown.

21. Bowheads seem to prefer areas where there is some ice cover, or the edge of the ice or floe edge. Bowheads enter fiords and bays as the ice is breaking up, melting and dispersing in the spring. They leave Nunavut's nearshore waters and bays in late fall as fast ice begins to form, and they are infrequently sighted at the floe edge near communities during winter. Some informants interpret that sea ice does not seem to be a significant problem for the bowhead whale. However, bowheads avoid areas where the ice cover is very extensive or apparently continuous. Informants only infrequently reported on bowheads found dead due to ice-entrapment.

22. Informants from communities in the **Hudson Bay** and **Baffin Bay** regions reported on the foods and feeding of bowhead whales, noting also that bowheads and other marine mammals are strongly influenced by the tidal cycle. '*Piturnirtuq*' is the time around the full moon when tidal variation is greatest and the tidal currents are strongest. During *piturniq*, bowhead whales are very active and feed heavily in areas where the currents are strongest. Movements of bowheads are also related to the daily tidal cycle; whales move inshore as the tide rises and offshore as the tide ebbs. Feeding occurs throughout much of the Study Area during spring at the floe edge and during summer and early fall in nearshore waters. Although bowheads show strong fidelity to some specific inshore areas for feeding, they also exhibit year-to-year variation in their distribution and abundance which informants attribute to variation in the distribution of bowhead prey. Some informants have witnessed and described bowhead feeding behaviour. The prey of bowhead whales is predominately *igllirait*/copepods.

23. Informants expressed a diversity of observations and opinions regarding the effects of noise on bowhead whales. Many informants reported that bowheads do not seem to be adversely affected by canoes or small boats powered by outboard engines, even when hunters are shooting at other species. Because bowheads are no longer an object of hunting and hence not always closely observed, some informants were uncertain about impacts of noise on bowheads. As bowheads are not hunted any more, some informants believe that they may readily habituate to the presence of skidoos and boats. On the other hand, in the late commercial/post-commercial whaling days, bowhead hunters had to be very quiet and make no sudden noises in their sail boats or row boats when pursuing a whale, lest the whale hear the noise, submerge and flee.

However, some hunters perceive that bowheads can be disturbed by skidoos and/or small vessels, which cause the whales to flee the source of the noise or to move towards the shore. The use of outboard engines was given as a possible explanation for the relative scarcity of bowheads near Cape Dorset and in Frobisher Bay. Several informants perceive that marine mammals nowadays avoid the immediate vicinity of communities because of a variety of land- and marine-based noises.

Some Inuit believe that bowheads may be disturbed by large vessels which could displace them from important habitat into marginal areas where food may not be adequate. Other informants believe that, although sea mammals may have been disturbed by large ocean-going ships in the past (when large-vessel traffic first started to increase), due to habituation they may now not be very affected or disturbed by large ships. Although uncertain about the impacts of large vessel traffic on bowheads and other marine mammals, some elders do not worry a lot about this as most large ships are necessary for today's economy. In the **Hudson Bay** region as well as at Kugaaruk, ship traffic may not be a big concern because of the relatively low number of bowheads in these two areas. On the other hand, two Qikiqtarjuaq informants believe that increasing ship traffic is not a concern because there are so many bowheads now and they are increasing in numbers.

Inuit fear that oil spills (from oil tankers and drilling) could have negative impacts on bowheads and other marine mammals. They believe that bowheads and other marine mammals would have to leave the area of an oil spill, lest they be damaged or killed by contact with oil.

The bowhead and other marine mammals are sensitive to land-based and marine explosive (seismic) charges and may avoid areas of such disturbance.



General hunting activity could disturb bowhead whales. Some Arctic Bay hunters believe that, during the 1990s, some bowhead whales and narwhals were disturbed by hunting activity at the Tununirusiup Kangiq&ua/Admiralty Inlet floe edge and have re-located to the Igloodik area. One informant from Pond Inlet expressed the belief that the present-day abundance of bowheads near Igloodik is due to emigration from the Pond Inlet area where bowheads were heavily hunted until about 1910. During the late stages of commercial whaling in Tinnujivik/Cumberland Sound, bowhead hunters were not allowed to shoot into the water, make unnecessary noises, or even pursue a herd of migrating belugas, as bowheads were deemed certain to be coming behind the belugas.

24. Informants from several communities noted that collisions and/or near-collisions between hunters' boats and bowhead whales have occurred in recent years; however, there were no explicit indications that the incidence of actual collisions/near-collisions has changed over the years. Some informants reported that Inuit hunters are often fearful or anxious when boating through or near groups of whales, or are reluctant to go boating when bowheads are around. The frequencies of collisions/near-collisions and hunter anxiety seem to be greatest in northern Foxe Basin (Igloodik and Hall Beach) and along the western shore of Baffin Bay (Pangnirtung, Qikiqtarjuaq, Clyde River, Arctic Bay, and Pond Inlet). All these areas have reported more bowheads in recent decades. Although Hudson Bay (Coral Harbour and Repulse Bay) informants have reported increases in bowhead population, only a very few commented on bowheads as a hazard to small boats.

25. Inuit hunters traditionally recognized bowheads of two types with respect to ease or difficulty of hunting: those that tended to be aggressive, retaliatory and very difficult or dangerous to hunt, and those that tended to be more docile and easier or less dangerous to hunt. Inuit bowhead hunters usually sought out and pursued the more docile bowheads. The aggressive bowheads were identified by a high, pointed, prominent protuberance on top of the head on which the blowhole is located, while the more peaceful, docile bowheads have much less of a raised protuberance so that the blowhole is located on a rather flattened area on top of the head. The testimony suggests that these bodily and behavioural differences are age-related, with the aggressive whales being younger than the docile ones. Hunters also tended to avoid bowheads asleep at the surface; those that were splashing with their tail flukes; and those whose breathing had a noisy, cracking sound. Bowheads with these and other characteristics were considered to be aggressive and were not hunted.

26. In traditional times, female bowheads and their calves were usually avoided by Inuit hunters. If the hunters wanted to harvest a calf, the mother would have to be killed first. If a calf is hunted or killed first, the female bowhead may become very aggressive and vicious and attack the kayak or small boat from which the calf was hunted. The mothers are

very protective of their young. If the calf was killed or separated from its mother in any other way, the female bowhead would linger around the area where it lost contact with its calf. In the succeeding summer, the mother would return to this same general area and be seen to grieve the loss of its calf and emit sad-sounding mourns, cries, or calls suggesting that she was still looking for her calf. This elicited a great deal of sympathy from the Inuit and is one additional reason why Inuit did not hunt bowhead calves.

27. Inuit recognize and have specific names for several age/size categories of bowhead whales (*arviq*; *arviit* -plural), from newborn calves to large adults.

28. Workshop informants at Repulse Bay distinguished two categories of bowhead whales based on size, fatness, and tastiness or desirability of the maktak and meat. These categories are: *kivaaqi* (the larger, fatter animals) and *papijjuq* (the smaller, thinner specimens). The elders preferred the fatter *kivaaqi*. However, it should be noted that in the Pond Inlet area, *kivaaqi* refers to any large mature female bowhead, and *papijjuq* refers to any medium-sized bowhead. This distinction appears to be one based on size and age, with the larger, older, fatter animals (*kivaaqi*) being preferred for eating. At Igloodik, *kivaaqi* refers to any bowhead.

29. Some bowhead whales, when harpooned, will head toward the shore while others will head out to sea. The whale's behaviour, after being harpooned, is believed to depend on the identity of the particular harpooner. According to this belief, a bowhead may desire to select its hunter; if harpooned by an undesired hunter, it will struggle and resist and pull the kayak or boat at great speed.

30. Clyde River informants described the look-out or leader bowhead – *silaaq*. This very large and apparently old bowhead has much white on its body, and keeps watch over the remainder of the herd, in particular warning the group of the presence of killer whales. The *silaaq* of Igaliqtuuq/Isabella Bay was named *Aallaaluk* (the Stranger). For at least several decades and until about the late 1990s, *Aallaaluk* returned every year to Isabella Bay.

31. Informants reported the occurrence, since about 1950, of beached (stranded) and ice-entrapped dead bowhead whales in several locations in the Study Area. The deaths of stranded bowheads were often attributed to killer whales. In September-October 1999, four dead bowheads (three with body lengths ranging from 7.3 to 9.1 metres) were found by Inuit in northern Foxe Basin in the vicinity of Igloodik and Hall Beach. Inuit had previously reported the occurrence of killer whales in the area, and at least two of the carcasses had scratches or marks suggesting killer whale attacks. Informants reported only two stranded and one dead ice-entrapped whale in the Igloodik area in past years. Hudson Strait informants (most from Cape Dorset) reported a few instances of stranded bowheads in that region. Over the last few



decades, a few strandings have occurred in the **Hudson Bay** area, especially in the Coral Harbour and Repulse Bay regions. Since about 1965, approximately six stranded whales have been found in the Repulse Bay region, and all but one were described as being 'young' whales. Some informants suggested that killer whales were involved in the deaths of some of these bowheads, while others suggested that some whales may have died from other natural causes. A stranded bowhead (body length of 9.4 metres) was found at Native Point, Southampton Island, in September 1999. In **Baffin Bay**, ice entrapments of bowheads appear to occur very infrequently.

However, one bowhead was discovered entrapped on March 20, 1997 in a *polynya* (an area of open water maintained by rapid currents) in Easter Sound, which is at the head of Tununirusiup Kangiq&ua/ Admiralty Inlet. The whale was alive and in apparent good condition until the time of ice break-up, and is believed to have survived. Pond Inlet informants stated that they had not seen or heard of an ice-entrapped bowhead in their region. Ice entrapment appears to occur very rarely and is probably not a



A bowhead undulates through the water. Photo by Susannah Weins, Department of Fisheries and Oceans

significant source of mortality at the population level. Informants from the **Baffin Bay** study region (except those from Kugaaruk and Arctic Bay) reported occurrences of stranded bowheads over the past few decades, and they often implicated killer whales in these bowhead deaths. Elders from Clyde River and Pangnirtung have found beached bowhead carcasses with broken bones but no other wounds and attributed the deaths to killer whale attacks. Several stranded bowheads have been reported in the Pangnirtung area in recent decades, and at least two in the Pond Inlet area. Informants have observed or heard about dead, stranded bowheads in the Qikiqtarjuaq region as well. At the floe edge in Tinnujivik/Cumberland Sound, bowheads sometimes swim into nets set for belugas or narwhals (or fish) and they damage or carry the nets away. However, no bowhead deaths due to contact with nets have been reported.

32. A small number of informants from the **Baffin Bay** region commented on the interactions between bowheads and species other than their predators and prey. Narwhals and/or belugas are sometimes seen in the company of bowheads at the floe edge or moving into inlets at the time of ice break-up, or on migration to and from the summering areas.

## 4.2 CULTURAL AND TRADITIONAL IMPORTANCE OF BOWHEADS TO INUIT

In former times as now, Inuit survival and well-being depended on wildlife. The Inuit strongly believed that wildlife was put on the earth to be used by them. They had strict guidelines and laws regarding harvesting of wildlife. Their beliefs and values required them to respect the animals in order to ensure that the wildlife would always be available to them.

The bowhead whale was one of the most important species harvested by Inuit. As with all other species, the Inuit had to respect the whale. Whaling was an important part of Inuit life. The Inuit ancestors developed specific tools and techniques to hunt the bowhead. At that time, all parts of this marine mammal were used; there was no waste. With the arrival of the commercial whalers, Inuit lifestyles began to change. The commercial whalers were only interested in the blubber, baleen, and sometimes the bones of the bowhead whale.

With the help of Inuit, they over-hunted the bowhead whale populations. By the time the whalers left the Arctic, the Inuit way of life had totally changed. Their hunting techniques and equipment were no longer the same. Later on, since the whale populations were so low, the government prohibited the bowhead hunt. These developments deeply affected the Inuit traditional way of living, to the extent that it was originally based on whale hunting.

Most Inuit would like to see the bowhead hunt resumed on a limited but continuing basis. There is a concern about losing Inuit knowledge of the bowhead whale and techniques for hunting it. The Inuit have a strong desire to preserve their culture, so intimately linked with bowheads and whaling. Many Inuit would like to respect and satisfy the wishes of many elders to once again have access to bowhead maktak. The bones from any bowhead whales harvested in future would have some modern uses, such as providing raw material for carvings and jewelry. However, future harvests would mostly be providing a highly valued source of country food. Most of the soft parts of the bowhead whale are edible, tasty and nutritious.

A few Inuit are reluctant to endorse the resumption of bowhead whale hunting. They believe that today's Inuit, based on their modern life styles



and new goals, do not need to harvest bowheads, and that they no longer demonstrate particular interest in hunting them. In addition, there is general concern about the state of knowledge and ability to actually hunt the bowhead whale. Bowhead whales have not been hunted for so long that today's generation of hunters does not have specific expertise in the matter. Consequently, several elders recommended that hunters should get thorough training before further bowhead hunting occurs. This would involve obtaining the knowledge, expertise, and advice of the elders, coupled with confirmation of a deep interest and commitment on the part of younger hunters and youth. With the help of elders, the traditional and cultural importance of the bowhead whale and the whale hunt, and the underlying system of values and beliefs, could be made part of the educational system.



Inuit Bowhead Knowledge Study Workshop, Repulse Bay, February 1996. Photo by Keith Hay

Many informants believe that Inuit knowledge about bowhead whales and about techniques for hunting them is being eroded, in large part as a result of hunters no longer paying much attention to bowheads which have not been a regularly hunted species for several decades. Some informants are concerned that this lack of attention and erosion of knowledge could lead to a general lack of concern and respect for and valuation of the bowhead, which in turn could lead to situations promoting abuse of this animal. Some view a renewed, ongoing limited hunt as a means of enhancing and restoring concern and respect for, and intimate knowledge about, this species. In this way, a renewed, sustainable hunt for bowhead whales may comprise one important element of a successful conservation strategy for the bowhead whale in Nunavut. Some Inuit also consider that a renewed hunt would contribute to the re-vitalization and preservation of a vanishing part of Inuit culture and identity, and of Inuit socio-cultural values and functioning, in the face of significant external forces of change in recent decades.

### 4.3 INUIT HUNTS OF BOWHEADS AFTER 1915

From examination of historical and archival records and the literature, Mitchell and Reeves (1982) obtained evidence that 24 bowhead whales had been harvested and/or found dead by Inuit in the Hudson Bay/Foxe Basin and Baffin Bay/Davis Strait regions, between 1919 and 1975 (see their Table 1). Through the Inuit Bowhead Knowledge Study (IBKS),

good evidence has been obtained of 12 bowhead hunts (with eight animals landed) that are not included by Mitchell and Reeves (1982). We believe, along with Mitchell and Reeves (1982), that the hunts, kills, and strandings uncovered in the historical and archival literature and in the IBKS represent only a portion of all the hunts, kills and strandings of bowheads that have actually occurred in the post-commercial whaling period (up to 1979). The information documented by Mitchell and

Reeves (1982) and the IBKS indicates that most post-commercial Inuit whaling occurred in northern **Hudson Bay** until about 1940, and in northern **Foxe Basin** in later years.

The 12 'new' hunts documented from the IBKS were distributed regionally as follows: **Baffin Bay** (3), **Hudson Strait** (2), **Hudson Bay** (6), and **Foxe Basin** (1).

### 4.4 MANAGEMENT AND POSSIBLE FUTURE RATES OF HARVESTING OF BOWHEAD WHALES

Many Inuit expressed the view that a limited and on-going harvest of bowheads is feasible and would be sustainable, given the evidence of present abundance and growth of the bowhead population in recent decades. However, many Inuit also pointed out that one bowhead can not provide for the needs of all Inuit in Nunavut in any given year. A regionally-based system of harvesting is generally favoured, with meat and maktak from a particular region remaining within that region. Considering both regional needs and the currently-perceived abundance of bowheads, the most frequent suggestions for an appropriate rate of harvesting were: one per year; one per two years; and two per year, one for each of Baffin and Kivalliq regions. Inuit would like to see bowhead populations properly and carefully managed, in order to ensure population growth and sustainable hunting well into the future.





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# Acknowledgements

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A great number of individuals and organizations contributed in numerous ways to the Inuit Bowhead Knowledge Study (IBKS).

The Inuit Bowhead Knowledge Study Committee of the NWMB provided overall guidance and directed the Study. Our thanks are expressed to Andy Theriault, who was a member of the NWMB and of the IBKS Committee for the first year of the Study until his retirement from government service in 1995.

For help in planning and designing the Study, thanks are due to: David Aglukark, Andy Theriault and David Igutsaq (IBKS Committee Members), Joannie Ikkidluak and Meeka Kilabuk (Qikiqtaaluk Wildlife Board), Ovide Allakanuark (Kitikmeot Hunters and Trappers Association), George Kuskuk and Andreasi Siutinuak (Kivalliq Wildlife Federation), Dr. Stuart Innes and Laura Anderson (Department of Fisheries and Oceans, Winnipeg), and Dr. Mike Ferguson (Department of Sustainable Development, Government of Nunavut). Their contributions helped set the basic course for the Study. We also thank John MacDonald (Nunavut Research Institute, Igloolik) who provided several transcripts dealing with Inuit bowhead hunting, from the archives of the Igloolik Traditional Knowledge Project.

During the Study Coordinator's visit to Sanikiluaq in May 1995, Miriam McDonald, Brian Fleming, Lucassie Arragutainaq, and Zack Novalinga freely shared their knowledge and expertise relating to a large study they were conducting at the time, the Hudson Bay Traditional Ecological Knowledge and Management Systems Study. The information and training received and various discussions were very helpful to the ongoing interviews, workshops, data analysis and reporting of the IBKS.

The community-based interviewers are thanked for their efforts in carrying out individual interviews during 1995: Catherine Piugatuk (Igloolik), Eric Oogark (Kugaaruk), Beatrice Ikkidluak (Kimmirut), Gordon Kukkuvak (Repulse Bay), Seetee Paniloo (Clyde River), Ikkummak Ivvaluajuk (Coral Harbour), Noah Metuq (Pangnirtung), David Curley (Hall Beach), Johnny Manning (Cape Dorset), Jonah Audlakiak (Qikiqtarjuaq), and Nuvualia Davidee (Iqaluit). The Hunters

and Trappers Organizations (HTOs) assisted by selecting community interviewers and by providing a list of potential interviewees with knowledge of bowhead whales and whaling.

In 1996, Johnny Manning of Cape Dorset capably carried out all of the individual interviews on behalf of the NWMB, with the exception of those in Repulse Bay. He was assisted by a guide in each community selected by the Hunters and Trappers Organization which also selected the interviewees. We thank all the community HTOs for their cooperation, assistance, and support. Community guides in 1996 were: Mary Tatatoapik (Arctic Bay), Samson Erkloo (Pond Inlet), Lymieky Pijamini (Grise Fiord), Lino Amarok (Chesterfield Inlet), Catherine Okpatauyak (Rankin Inlet), Jimmy Qiyuk (Whale Cove), and Emil Arnalak (Arviat).

Community workshops were held in eight communities in 1996 and 1997. Thanks are extended to the HTOs and their Chairpersons for hosting and helping to organize workshops in their respective communities. The HTOs selected workshop participants and interpreters, all of whom are listed in Appendix II. IBKS Committee Members David Aglukark, Joannie Ikkidluak, and David Igutsaq each helped to facilitate one or more community workshops.

The work and assistance of Interpreter/Translators were vital to the IBKS. They included Mary Nashook, Nick Arnatsiaq, Nick Amautinuak and Juliana Boychuk who translated and transcribed interview and workshop tapes, and Blandina Tulugarjuk and Evie Amagoalik who carried out other translation duties. Evie diligently and patiently translated this report. We are deeply indebted to all these people.

We extend our appreciation to Gary Kohlruss and Johnny Manning for their diligent work in transferring and synthesizing individual informants' mapped information onto community and/or regional maps, prior to digitization of the information and the preparation of the maps in this report.



For valuable support and assistance in varied ways, thanks are extended to Ben Kovic, Dan Pike, Jim Noble, Dr. Michelle Wheatley, Carol Churchward, Johnny McPherson, Pierre Chartrand, Gordon Tomlinson, Malachi Arreak, Isabel Simpson and Leonie Erkidjuk, all of whom are present or former employees or Members of the NWMB. We are especially grateful to Dan, Jim, Ben, and Michelle for their support and encouragement.

We owe a special debt of gratitude to Catherine Fillion, who capably and diligently analysed and wrote up the section of the report dealing with the importance of the bowhead to Inuit culture (Section 3.2). Catherine was also an enduring source of support and encouragement.

Our gratitude is expressed to Drs. Milton Freeman and Marc Stevenson (Canadian Circumpolar Institute, University of Alberta, Edmonton), Dr. Tim D. Smith (Northeast Fisheries Science Center, Woods Hole, MA, USA), Drs. Stuart Innes and Sue Cosens (Department of Fisheries and Oceans, Winnipeg), and Dr. Peter Ewins and Sarah Climenhaga (World Wildlife Fund Canada, Toronto), all of whom had reviewed the 1995

interim report of the IBKS. Their comments, ideas, and suggestions helped the Study Coordinator to reflect on the Study to that point in time and to improve the conduct of the Study in subsequent years, as well as the analysis of Study transcripts and the writing of this Final Report.

A first draft of this report was kindly reviewed by Ben Kovic and Gordon Koshinsky, whose comments, criticisms, and suggestions have greatly improved the document.

Very special thanks go out to all Inuit who were interviewed or participated in the workshops, for sharing their personal knowledge, life experiences, and wisdom, which form the basis of this report. We owe a special debt of gratitude and respect to all Inuit who participated in the Study. Many if not most of them are named in this report. This is their report, and the Study Coordinator and the IBKS Committee assume responsibility for any errors of fact, omission, or interpretation.





# Appendices

## A P P E N D I X I

### STATISTICAL SUMMARY OF INDIVIDUAL INTERVIEWS AND WORKSHOPS

REGION:	BAFFIN BAY	FOX E BASIN	HUDSON BAY	HUDSON STRAIT
COMMUNITIES IN THE STUDY (NUMBER OF INDIVIDUAL INTERVIEWS TRANSCRIBED)	Grise Fiord (3)	Igloolik (12)	Repulse Bay (25)	Iqaluit (5)
	Kugaaruk (12)	Hall Beach (11)	Coral Harbour (4)	Kimmirut (14)
	Arctic Bay (5)		Chesterfield Inlet (5)	Cape Dorset (14)
	Pond Inlet (8)		Rankin Inlet (5)	
	Clyde River (14)		Whale Cove (5)	
	Qikiqtarjuaq (14)		Arviat (0)	
	Pangnirtung (19)			
COMMUNITIES HOSTING WORKSHOPS	Arctic Bay Pond Inlet Clyde River Qikiqtarjuaq Pangnirtung	Igloolik/Hall Beach	Repulse Bay Coral Harbour	

COMMUNITY	NO. INTERVIEWS	NO. TRANSCRIBED	INTERVIEW DATES
Arctic Bay	10	5	April 1996
Arviat	9	0	February 1996
Qikiqtarjuaq	20	14	March 1995
Cape Dorset	20	14	March – April 1995
Coral Harbour	4	4	March 1995 and February 1996
Chesterfield Inlet	10	5	February 1996
Clyde River	20	14	March – April 1995
Grise Fiord	5	3	April – May 1996
Hall Beach	15	11	March – April 1995
Igloolik	20	12	March – April 1995
Iqaluit	5	5	January – February 1995
Kimmirut	21	14	March 1995
Kugaaruk	19	12	March 1995
Pangnirtung	20	19	March 1995
Pond Inlet	15	8	April 1996
Repulse Bay	25	25	March – April 1995 and Feb. 1996
Rankin Inlet	9	5	February 1996
Whale Cove	10	5	February 1996
<b>TOTALS</b>	<b>257</b>	<b>175</b>	<b>January 1995 to May 1996</b>

**SCHEDULE OF WORKSHOPS:  
COMMUNITIES, DATES, AND PARTICIPANTS**

**ARCTIC BAY** (MARCH 21 – 22, 1997)

**PARTICIPANTS:**

Simon Qamanirq (Chairman); David Issuqangituaq (Day 2 only); Andrew Oyukuluk; Atagootak Ipellie; Koonoo Oyukuluk; Isaac Shooyuk; Mucktar Akumalik; Lazarus Aola; Keith Hay (NWMB)

**INTERPRETER:**

Mary Tatatuapik

**CLYDE RIVER** (MAY 2 – 3, 1996)

**PARTICIPANTS:**

Solomonie Natanine (Chairman); Ipellie Qillaq; Ashevak Palituaq; Elisapee Arreak; Nauja Tassugat; Ipellie Panipak; Seete Paniloo; David Igutsaq, Joannie Ikkidluak, Keith Hay (NWMB)

**INTERPRETER:**

Jaypetee Arnakak

**CORAL HARBOUR** (FEBRUARY 7 – 8, 1996)

**PARTICIPANTS:**

Tooma Netser; Mikitok Bruce; Kanayuk Bruce; Louie Bruce; Keith Hay, Johnny Manning, David Aglukark (NWMB)

**INTERPRETERS:**

Emily Beardsall and Mona Netser

**IGLOOLIK and HALL BEACH** (MAY 29 – 30, 1996;  
the workshop was held in Igloolik)

**PARTICIPANTS:**

Igloolik: David Irgaut (Day 1 only -Workshop Chairman on Day 1); Abraham Ulayuruluk (Day 2 only – Workshop Chairman on Day 2); Eugene Ipanark; George Kappianaq; Rachel Uyarasuk. Hall Beach: Ammie Kipsigak; Jopie Kaermerk; Terry Irgittuaq; Keith Hay, Joannie Ikkidluak (NWMB)

**INTERPRETER:**

Nick Arnatsiaq

**VIDEO-TAPING:**

Pacome Qulaut (Igloolik Isuma Productions)

**PANGNIRTUNG** (MARCH 13-14, 1996)

**PARTICIPANTS:**

Adamee Veevee (Chairman); Pauloosie Angmarlik; Towkie Maniapik; Inusiq Nashalik; Peteroosie Karpik; Jaco Evic; Joannie Ikkidluak, Keith Hay (NWMB)

**INTERPRETER:**

Adamee Komoartok

**VIDEO-TAPING:**

David Poisey (Inuit Communications Systems Limited)

**POND INLET** (MARCH 17 – 18, 1997)

**PARTICIPANTS:**

Manasie Qamanirq (Chairman); Kooneeloosie Nutarak, Sr.; Joanase Arreak; Moses Koonark; Sam Arnakallak; Elijah Panipakoocho; Panoely Okango; Keith Hay, Malachi Arreak (NWMB)

**INTERPRETER:**

Titus Arnakallak

**QIKIQTARJUAQ** (MAY 6 – 7, 1996)

**PARTICIPANTS:**

Koalie Kooneeliusie (Chairman); Gamailee Nookiguak; Jacobie Koksiak; Jacopie Newkingnak; Joanase Kakka; Adamie Nookiguak; Joannie Ikkidluak, David Igutsaq, Keith Hay (NWMB)

**INTERPRETER:**

Billy Arnaquq

**REPULSE BAY** (FEBRUARY 12 – 13, 1996)

**PARTICIPANTS:**

David Tuktudjuk (Chairman); Jackie Nanordluk; Abraham Tagornak; John Tinashlu; Philip Kripanik; Michel Akkuardjuk; Semi Maliki; David Aglukark, Keith Hay (NWMB)

**INTERPRETER:**

Steve Mapsagak



THE INUIT SEASONS: EXAMPLE FOR HIGH ARCTIC\*

**Ukiuq (winter)**

- early January to mid-March
- extensive sea ice, continues to thicken and coalesce
- snow on land and ice
- short daylight, sun returning
- very cold

**Upirngassaaq (early spring)**

- mid-March to late May
- maximum sea ice cover and thickness
- snow on land and ice
- daylight period long and increasing

**Upirngaaq (spring)**

- late May to mid-July
- progressive snow melt on land
- widening of ice leads, disappearance of ice
- 24 hour daylight

**Aujaq (summer)**

- mid-July to early September
- open water, some drifting ice
- daylight period long but decreasing

**Ukiassaaq (early fall)**

- early September to late October
- open water
- ice starting to form late in the season along the shore
- snow on the land, lake ice, daylight period short and decreasing

**Ukiaq (fall)**

- late October to early January
- new ice hardens and thickens to form extensive areas of land-fast or drifting pack ice
- snow on land and ice
- 24 hour darkness

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
UKIUQ		UPIRNGASSAAQ			UPIRNGAAQ		AUJAAQ	UKIASSAAQ		UKIAQ	

\* After Stewart *et al.* (1995). Communities for this example include Hall Beach, Igloodik, Arctic Bay and Grise Fiord.



## QUESTIONNAIRE USED FOR INDIVIDUAL INTERVIEWS

### A. PERSONAL DATA

1. Interviewee ID \_\_\_\_\_
2. Interviewer \_\_\_\_\_
3. Community \_\_\_\_\_
4. Date of interview \_\_\_\_\_
5. Place of birth (mark on Map 'A') \_\_\_\_\_

INTERVIEWER: PLEASE USE MAP 'A' TO RECORD INUIT PLACE NAMES OF BAYS, FIORDS, POINTS, CAMPSITES, ETC. ALSO USE MAP 'A' TO MARK THE PLACE OF BIRTH OF EACH INFORMANT. USE ONLY ONE COPY OF MAP 'A' FOR ALL INFORMANTS FROM THIS COMMUNITY.

### B. BOWHEAD WHALING

*(Refer to Interviewer's Guide/Checklist)*

In this section of the questionnaire, we would like you to tell us about hunting of bowheads during three time periods : Inuit hunting before the Qallunaat whalers arrived; the commercial hunt of bowheads by the Qallunaat; and Inuit hunting of bowheads after the end of commercial whaling.

#### ***I) Inuit Hunting of Bowheads Before the Qallunaat Whalers Arrived***

1. Do you have knowledge (from your parents, grandparents, and other elders) of Inuit hunting of bowheads before the Qallunaat whalers arrived? Please tell me about your knowledge of Inuit hunting of bowheads before the Qallunaat whalers arrived.
- 1A. Do you know of anyone else in the community who might have knowledge of Inuit hunting of bowheads before the Qallunaat whalers arrived?

#### ***II) The Commercial Hunt of Bowheads by Qallunaat***

2. Do you have personal recollection of or knowledge (from your parents, grandparents and other elders) of the commercial

(Qallunaat) hunt of bowhead whales? Please tell me about your recollections and knowledge regarding the commercial (Qallunaat) hunt of bowhead whales.

- 2A. Do you know of anyone else in the community who might have information on hunting of bowheads by the commercial (Qallunaat) whalers?

#### ***III) Inuit Hunting of Bowheads After the End of Commercial Whaling***

3. Do you have personal recollection of or knowledge (from your parents, grandparents and other elders) of Inuit hunting of bowheads after the end of commercial (Qallunaat) whaling for bowheads? Indicate on Map 3 the location and year where whale hunts occurred, and provide any details about these hunts (success of hunt, loss of the whale, size and sex, utilization, etc.).
- 3A. Do you know of anyone else in the community who might have information on hunting of bowheads by Inuit after the end of commercial (Qallunaat) whaling?

### C. KNOWLEDGE OF BOWHEAD WHALES

*(Refer to Interviewer's Guide/Checklist)*

1. Please tell me about your observations of bowhead whales over your lifetime. Where are these whales located at different seasons, what are their migration routes and patterns, and what are the whales doing in these areas? Please use the maps provided.

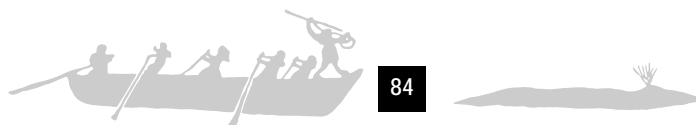


2. From the end of commercial whaling to the present time, describe the changes in numbers of bowheads, including the numbers of females with calves, that you have noticed:
  - a) What did you observe as a young person?
  - b) What did you observe in middle age?
  - c) What have you observed in recent years?
3. From the end of commercial whaling to the present time, describe any changes you have noticed in the locations where bowheads concentrate in your area. In recent years, have bowheads been sighted in locations where they are not normally sighted?
4. Have you noticed any changes in the number of whales in a group over the years?
5. Have you noticed year-to-year variation in numbers and/or location of bowheads, or in the time of year (season) that they appear in your area?
6. Please describe any attacks you have seen or heard about by killer whales or other animals on bowhead whales.
7. Have you observed any influence of the tidal and moon cycles on the bowhead whale? Please explain.
8. Do you have any concerns that bowheads could be affected by exploration for and development of non-renewable resources, including ship and tanker traffic? Please explain.
9. Can you please comment on the importance of the bowhead whale to Inuit culture and traditional values.
10. Do you have any further comments to make regarding bowhead whales?



**SECTION B** *Interviewer's Guide/Checklist*

	I) Inuit Hunting before Qallunaat Whaling	II) Commercial (Qallunaat) Whaling	III) Inuit Hunting after Qallunaat Whaling
1. Methods and techniques used in hunting bowheads (spotting, pursuing, killing, securing and towing)			
2. Equipment used in hunting bowheads (kinds of boats, killing, securing, towing, flensing, and butchering)			
3. Variation in hunting methods and equipment according to location and season			
4. Methods of sharing out various parts of the whale			
5. Uses of various edible and non-edible parts of the bowhead whale			
6. Storage of whale parts and methods of storage			
7. Seasons or months of hunting			
8. Description of hunts at the floe edge			
9. Locations where bowheads were hunted and landed	Map 1 – Black Pencil	Map 2 – Black Pencil	Map 3 – Black Pencil
10. Locations where bowhead bones were found on shore	Map 1 – Blue Pencil	Map 2 – Blue Pencil	Map 3 – Blue Pencil
11. Locations of bowhead whaling camps	Map 1 – Red Pencil	Map 2 – Red Pencil	Map 3 – Red Pencil



**SECTION C, Question 1** *Interviewer's Guide/Checklist*

	UKIUQ	UPIRNGASSAAQ	UPIRNGAAQ	AUJIAQ	UKIASSAAQ	UKIAQ
1. Location of bowheads	Use Map 4, red pencil	Use Map 5, red pencil	Use Map 6, red pencil	Use Map 7, red pencil	Use Map 8, red pencil	Use Map 9, red pencil
2. Migration routes	Use Map 4, blue pencil	Use Map 5, blue pencil	Use Map 6, blue pencil	Use Map 7, blue pencil	Use Map 8, blue pencil	Use Map 9, blue pencil
3. What do you see bowheads doing in these areas at this season?						
4. At this season have you seen: Bowheads with calves – Immatures – Adults –						

**INTERVIEWER:** ASK YOUR INTERVIEWEE TO CORRELATE THE INUIT SEASONS WITH THE CALENDAR MONTHS, ON THE PROVIDED CHART (OR TO CONFIRM/CORRECT THE CHART YOU SHOW THE INTERVIEWEE)





## AGENDA FOR WORKSHOPS

1. Opening prayer and introduction of participants
2. Introduction to the Workshop
3. Whaling Areas, Whale Bone Locations, and Whaling Camps
  - review maps based on last year's community interviews
4. Distribution and Migration
  - review seasonal maps based on last year's community interviews
  - update whale sighting locations and migrations
  - seasonal bowhead behaviour
5. Have bowhead populations changed in size since the end of commercial whaling?
  - changes in numbers of mothers with calves?
6. Changes in distribution of bowheads
  - are whales now seen in areas where they did not occur many years ago?
7. Changes in group size
  - do bowheads occur in larger groups now as opposed to a long time ago?
8. Factors affecting bowheads:
  - ice conditions and weather
  - currents and tides
  - food availability
  - killer whales
  - human activities ( motorboats, skidoos, ships, pollution, etc.)
9. Inuit Culture and Traditions
  - significance of the bowhead whale to Inuit culture
10. Place names (Map 1)
  - Inuit geographical place names (i.e.- bays, islands, fjords, camps, points, headlands)
11. Inuit hunting of bowheads in the past 80 years
  - location (Map 2) and year of hunt
  - hunt success, methods and equipment
  - how the whale was used
  - size and sex of the whale
  - location of old bones on shore (Map 2)
  - whaling camps after 1915 (Map 2)
12. Inuit names of seasons – correlate with months of the year
13. Open Discussion – any topics or issues of concern



**CONSENT FORM FOR INDIVIDUAL INTERVIEWS**

I have been fully informed of the objectives of this Study being conducted by the Nunavut Wildlife Management Board. I understand these objectives and consent to being interviewed for this Study, for the Inuit Bowhead Knowledge Study Committee.

**Consent to be interviewed and tape-recorded**

Name (please print): \_\_\_\_\_

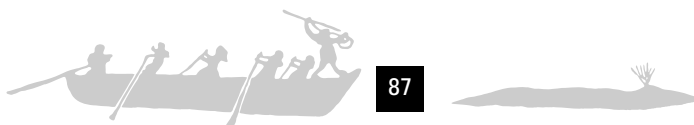
Signature: \_\_\_\_\_

Date: \_\_\_\_\_

I desire that my identity and the information I provide be confidential.

OR

I desire that my identity be non-confidential and that the information I provide be attributed to me.



**FOOTNOTE SOURCES PERTINENT TO SECTION 3:**

**RESULTS AND DISCUSSION**

(See document ‘Source Book of Quotations’ for unabridged informants’ quotations)

- <sup>1</sup> (FB1, 7, 27, 42); (HS3, 6, 7, 9, 12, 21, 23, 27, 30, 31, 34, 36, 37, 48, 49, 65, 127, 157); (HB12, 13, 15, 17, 22, 25, 32, 39, 43, 46, 49, 54, 65, 72, 85, 91, 127, 159, 163, 174, 227, 233, 266); (BB2, 27, 34, 35, 54, 56, 62, 68, 77, 78, 83, 103, 112, 115, 123, 124, 127, 140, 146, 150, 151, 153, 155, 156, 167, 170, 180, 181, 197, 202, 206, 224, 231, 232, 238, 277, 280, 323, 340, 343, 346, 350, 353, 362, 370, 373, 379, 411, 448, 462, 467, 497, 521, 525)
- <sup>2</sup> (HS14, 36); (HB12, 30, 70, 71, 81, 90, 123, 140, 216, 252); (BB77, 208, 377, 387, 393, 401)
- <sup>3</sup> (FB2, 3, 4, 17, 22, 23, 25, 27, 36, 41, 46, 47, 97, 99); (HS5, 15, 20, 38, 41); (HB19, 20, 22, 29, 41, 46, 48, 56, 65, 71, 259); (BB1, 4, 11, 12, 14, 18, 19, 20, 21, 22, 23, 25, 26, 27, 41, 54, 56, 59, 68, 72, 75, 87, 99, 100, 106, 113, 118, 121, 123, 127, 135, 141, 162, 165, 169, 170, 173, 174, 175, 183, 191, 192, 195, 197, 204, 213, 215, 219, 224, 395, 435)
- <sup>4</sup> (HS11, 13, 48, 64); (HB3, 4, 18, 23, 28, 30, 51, 52, 53); (BB10, 29, 101, 119, 168, 181, 346, 353, 411)
- <sup>5</sup> (FB4); (HS5, 38); (HB43, 64); (BB27, 175)
- <sup>6</sup> (FB26, 31, 37, 45, 85); (HS1, 8, 33, 40, 62); (HB20, 22, 33, 34, 39, 46, 48, 51, 64 ); (BB17, 18, 24, 26, 50, 53, 55, 57, 65, 91, 102, 104, 106, 108, 112, 114, 122, 123, 131, 133, 144, 163, 164, 167, 174, 177, 198, 202, 206, 209, 210, 211, 212, 217, 218, 219, 226, 228, 231, 234, 235, 362, 392)
- <sup>7</sup> (FB3, 16, 43); (HS18, 21, 24, 47, 49, 53); (HB11, 27, 37, 42, 45, 55, 59, 62, 63, 82, 85); (BB7, 29, 43, 59, 67, 68, 140, 180, 181, 196, 209)
- <sup>8</sup> (FB14, 18, 35); (HS 8, 18, 29, 31, 35, 36, 44, 48, 55, 65); (HB9, 23, 25, 49, 66, 70, 72, 85, 91); (BB14, 32, 34, 68, 78, 112, 123, 133, 157, 166, 168, 169, 181, 193, 204, 210, 212, 219, 226, 229)
- <sup>9</sup> (FB3, 12, 14, 21, 28, 32, 33, 38, 40, 43, 44); (HS13, 29, 31, 34, 44, 58); (HB5, 8, 15, 54, 60, 76, 78, 81); (BB2, 34, 38, 44, 73, 85, 88, 149, 155, 168, 208, 224, 231, 235, 238, 370)
- <sup>10</sup> (HB1, 2); (BB18, 129, 377, 400)
- <sup>11</sup> (HS2, 8); (HB74, 76); (BB30, 48, 57, 128)
- <sup>12</sup> (FB8, 9, 11); (HS10, 24, 51, 52, 57, 59, 60, 61, 63); (HB50, 70, 88); (BB29, 33, 35, 49, 61, 64, 66, 79, 93, 95, 106, 119, 157, 178, 184, 198, 205, 218, 225, 226, 234)

- <sup>13</sup> (FB10); (HS9, 44, 50, 53, 56, 62, 65); (HB 21, 22, 46, 52, 66, 70, 71, 80, 88, 265); (BB3, 5, 68, 140, 150, 152, 157, 158, 167, 168, 181, 184, 196, 211, 230)
- <sup>14</sup> (HS4, 9, 17, 19, 25, 33, 43, 54, 64, 65, 116); (HB5, 6, 20, 24, 25, 27, 30, 33, 42, 44, 48, 52, 54, 65, 72, 73, 79, 83, 85, 86, 87, 89, 187, 198, 234, 253); (BB3, 11, 14, 15, 17, 18, 26, 27, 28, 29, 31, 34, 37, 38, 42, 46, 48, 51, 55, 58, 59, 60, 61, 63, 64, 65, 66, 67, 70, 73, 79, 81, 83, 84, 85, 86, 90, 94, 102, 105, 108, 111, 116, 117, 118, 119, 120, 122, 125, 126, 127, 128, 130, 134, 136, 138, 139, 148, 154, 159, 167, 176, 178, 179, 188, 189, 190, 194, 199, 201, 202, 203, 206, 209, 210, 219, 221, 224, 225, 228, 229, 231, 232, 234, 280, 287, 297, 337, 358, 393, 397, 401, 509)
- <sup>15</sup> (HB39); (BB14, 38, 73, 74, 120, 121, 126, 137, 204, 216, 219, 234)
- <sup>16</sup> (FB8, 46); (HS5, 62); (HB10, 14, 27, 51, 61, 63, 87); (BB26, 27, 30, 61, 64, 87, 116, 121, 123, 124, 133, 137, 146, 147, 150, 151, 159, 175, 178, 181, 213)
- <sup>17</sup> (HB33); (BB27, 41, 67, 75, 118, 128, 162)
- <sup>18</sup> (FB 24, 25, 34, 99); (HS35, 42); (HB25, 38, 52, 54, 57, 58, 81, 85, 198); (BB15, 18, 27, 29, 31, 34, 49, 52, 56, 58, 61, 65, 66, 68, 70, 80, 82, 85, 89, 98, 105, 107, 111, 116, 117, 120, 122, 126, 128, 130, 134, 135, 136, 138, 142, 159, 160, 167, 178, 193, 198, 203, 204, 206, 209, 210, 211, 212, 219, 221, 224, 228, 229, 231, 232, 234, 239, 305)
- <sup>19</sup> (FB7, 8, 38); (HS35, 55, 65); (HB48, 66); (BB212,233)
- <sup>20</sup> (FB39, 62); (HS46, 50); (HB23, 26, 36, 42, 48, 55, 61, 65, 70, 81, 84, 179, 205, 208, 252, 265); (BB9, 25, 29, 32, 34, 37, 38, 40, 50, 64, 67, 71, 73, 81, 83, 91, 109, 112, 113, 114, 116, 118, 127, 129, 137, 143, 145, 179, 189, 192, 200, 202, 209, 210, 215, 217, 222, 226, 231, 234, 236, 377, 397, 417, 420, 434, 504, 505)
- <sup>21</sup> (HS28, 47, 135); (HB36, 115, 236); (BB13, 31, 59, 75, 85, 99, 116, 117, 130, 178, 231, 349, 489)
- <sup>22</sup> (HB40, 48, 65, 68, 85, 93, 144); (BB16, 18, 31, 34, 37, 38, 50, 58, 70, 73, 85, 86, 102, 106, 108, 110, 114, 117, 120, 126, 167, 173, 178, 179, 198, 200, 207, 216, 219, 224, 225, 229, 231, 239, 287, 429)
- <sup>23</sup> (FB48, 86, 88); (HS5, 15, 26,32, 44, 45, 50, 101, 126, 146, 147); (HB16, 48, 51, 75, 76, 77, 83, 91, 96, 164, 234, 253, 265); (BB3, 16, 38, 76, 92, 127, 132, 143, 150, 196, 197, 227, 233, 235, 273, 333, 360, 382, 403, 435, 453, 519)
- <sup>24</sup> (FB3, 4, 6, 8, 23, 25, 29, 30, 31, 36, 43, 46, 47, 48, 49); (HB46, 64, 87); (BB10, 19, 22, 29, 38, 43, 45, 85, 87, 89, 108, 112, 113, 114, 161, 170, 171, 193, 203, 227, 228, 234, 235, 380)



- <sup>25</sup> (HB81, 102, 104, 146, 148, 153, 162, 184, 196, 219, 234, 242, 251, 253, 268, 288, 293, 302); (BB13, 39, 49, 69, 71, 73, 74, 81, 91, 105, 107, 111, 130, 134, 138, 153, 170, 203, 223, 229, 231, 232, 237, 294, 347, 362, 372, 383, 403, 418, 434, 464, 473, 479, 484, 486, 496, 503, 507, 514, 521)
- <sup>26</sup> (FB46); (HS16, 78, 92, 115); (HB79, 100, 179, 181, 205, 208, 212, 236, 288, 303); (BB8, 32, 36, 64, 97, 109, 127, 144, 189, 202, 293, 410, 411, 433, 436, 439, 447, 448, 478, 509, 521)
- <sup>27</sup> (BB3, 6, 113, 122, 130, 134, 136, 167, 189, 194, 200)
- <sup>28</sup> Wildlife exist to be utilized: (FB35, 70, 73, 81); (HS34, 81, 126, 127, 132, 146); (HB25, 29, 140, 159, 177, 188, 195, 208, 209, 233, 247); (BB279, 305, 342, 382, 390)  
Minimum waste: (FB51, 52, 53, 58, 66, 67, 81, 91, 92, 106, 107); (HS69, 71, 73, 79, 92, 106, 109, 114, 116, 117, 122, 123, 137, 138, 143, 146, 148, 150, 156); (HB91, 106, 120, 135, 139, 144, 148, 152, 157, 158, 159, 167, 168, 169, 170, 178, 181, 187, 192, 197, 208, 213, 234, 260, 270, 271, 281, 283, 287, 290, 291, 297, 299); (BB248, 255, 263, 267, 270, 272, 274, 281, 284, 295, 296, 311, 314, 315, 338, 359, 362, 368, 397, 404, 437, 451, 474, 475, 502, 506, 508, 513, 523)  
Sharing: (FB51, 57, 59, 60, 67, 69, 83); (HS51, 66, 69, 82, 84, 94, 92, 114, 123, 132, 143); (HB101, 126, 132, 133, 137, 141, 143, 144, 163, 213, 214, 217, 233, 247, 271, 275, 278, 282, 289, 295, 296, 301); (BB166, 252, 268, 269, 270, 272, 284, 326, 330, 357, 368, 371, 372, 374, 391, 393, 422, 434, 455, 458, 461, 463, 490, 492, 512, 513)  
Populations healthy when respected: (FB35, 55, 56, 70, 71, 73, 78, 79, 81, 84, 87, 90, 95, 97, 100, 103, 109, 110); (HS17, 37, 111, 119, 132); (HB52, 133, 191, 205, 210, 217, 233, 247); (BB12, 19, 202, 273, 280, 313, 342, 382, 436, 451, 464, 513)  
Natural cycles: (FB9, 56, 87, 89, 93, 95, 102); (HS37, 39, 103, 107, 119); (HB23, 25, 50, 52, 59, 85, 87, 102, 133, 153, 234, 247, 259); (BB17, 27, 48, 57, 83, 84, 124, 159, 167, 178, 181, 184, 197, 198, 200, 206, 209, 212, 218, 219, 220, 228, 231, 513)  
'Silaaq': (BB286, 294, 300, 318, 335)
- <sup>29</sup> (FB51, 57, 58, 60, 62, 76, 77, 92, 97, 99); (HS71, 78, 79, 83, 85, 86, 88, 91, 98, 100, 109, 122, 132, 137, 139, 144, 146, 148, 150, 151, 152, 155, 156); (HB12, 32, 46, 73, 75, 79, 98, 101, 107, 120, 126, 127, 129, 130, 133, 134, 135, 139, 144, 147, 148, 150, 151, 152, 157, 161, 166, 167, 172, 177, 197, 201, 203, 205, 208, 211, 212, 213, 220, 230, 247, 255, 257, 260, 261, 263, 264, 265, 266, 270, 279, 283, 284, 288, 289, 290, 291, 296); (BB103, 242, 248, 249, 261, 264, 267, 269, 270, 271, 272, 276, 277, 280, 281, 285, 295, 299, 303, 304, 306, 309, 310, 311, 313, 314, 316, 322, 326, 329, 338, 348, 355, 356, 359, 362, 364, 365, 368, 370, 371, 372, 373, 375, 378, 379, 380, 397, 398, 401, 403, 404, 405, 408, 409, 410, 426, 433, 436, 438, 440, 441, 447, 450, 456, 458, 461, 463, 465, 471, 472, 474, 478, 480, 485, 488, 491, 495, 498, 499, 502, 506, 508, 510, 513, 515, 516, 518, 520, 521, 523, 524)

- <sup>30</sup> (FB67, 97); (HS3, 5, 14, 46, 48, 68, 70, 71, 75, 76, 80, 88, 90, 91, 92, 93, 98, 99, 100, 102, 103, 106, 111, 112, 113, 116, 121, 133, 134, 135, 136, 139, 157); (HB12, 26, 32, 51, 73, 91, 102, 121, 122, 126, 130, 135, 148, 153, 155, 160, 161, 162, 167, 170, 175, 178, 185, 197, 199, 206, 209, 213, 216, 225, 227, 232, 234, 242, 254, 262, 265, 268, 270, 273, 278, 281, 283, 290); (BB28, 69, 81, 112, 153, 232, 240, 257, 258, 267, 270, 278, 281, 282, 296, 298, 307, 312, 322, 329, 330, 340, 351, 354, 356, 357, 363, 365, 371, 373, 376, 394, 397, 400, 403, 404, 405, 406, 422, 448, 452, 453, 463, 469, 479, 480, 486, 497, 498, 503, 509, 515, 518, 522, 523, 525, 526)
- <sup>31</sup> Commercial whaling (witnessed/participated): (HS95, 125, 127, 130); (BB239, 345, 346, 349, 350, 353, 411, 421, 423, 424, 426)  
Commercial whaling (oral tradition): (FB1, 13, 57, 67, 106); (HS3, 6, 7, 22, 27, 30, 31, 36, 37, 43, 45, 46, 48, 49, 63, 65, 67, 72, 73, 74, 80, 81, 87, 89, 93, 94, 96, 105, 92, 106, 109, 113, 114, 118, 122, 124, 125, 127, 130, 132, 133, 135, 139, 150, 157); (HB15, 73, 75, 76, 89, 91, 122, 125, 128, 130, 158, 163, 166, 172, 178, 182, 185, 213, 233, 253, 254, 265, 266, 269, 272, 285, 288, 294); (BB36, 50, 103, 106, 112, 115, 123, 148, 151, 153, 179, 180, 181, 202, 217, 229, 237, 238, 243, 244, 246, 251, 256, 258, 260, 266, 273, 275, 277, 281, 283, 287, 288, 291, 292, 297, 306, 307, 308, 317, 319, 321, 322, 326, 328, 329, 331, 334, 337, 338, 339, 340, 343, 350, 351, 354, 362, 366, 369, 372, 376, 379, 381, 392, 397, 399, 400, 402, 403, 404, 407, 409, 411, 432, 448, 449, 455, 462, 464, 465, 467, 487, 497, 500, 509, 511, 514, 515, 517, 521, 523, 525, 526)
- <sup>32</sup> Specific hunts: (FB22, 25, 50, 57, 60, 66, 67, 69, 81, 97, 99, 101, 104); (HS17, 19, 74, 90, 91, 127, 128, 140, 153, 154); (HB5, 47, 50, 51, 73, 75, 79, 90, 91, 93, 94, 95, 96, 97, 100, 101, 104, 109, 113, 114, 116, 119, 123, 126, 131, 132, 134, 135, 136, 137, 141, 144, 145, 163, 178, 182, 183, 187, 193, 198, 200, 202, 204, 206, 207, 208, 212, 214, 216, 221, 234, 238, 239, 242, 244, 251, 252, 253, 258, 259, 266, 271, 278, 281, 282, 288, 289, 298, 300, 301, 303); (BB108, 125, 133, 231, 237, 247, 254, 256, 259, 262, 266, 270, 278, 279, 280, 302, 320, 347, 348, 349, 359, 367, 377, 387, 388, 393, 401, 403, 406, 411, 414, 417, 420, 423, 430, 431, 444, 446, 448, 451, 452, 458, 460, 461, 466, 468, 470, 473, 475, 482, 483, 488, 492, 501, 504, 509, 510, 514, 529, 521)  
Hunting techniques: (FB72, 99); (HS14, 36, 46, 74, 104, 112, 117, 122, 140, 153, 154); (HB3, 5, 35, 41, 47, 51, 65, 73, 75, 91, 92, 93, 94, 102, 104, 113, 114, 116, 119, 126, 134, 137, 144, 148, 160, 163, 167, 174, 178, 182, 183, 184, 185, 193, 200, 202, 204, 207, 212, 219, 221, 234, 242, 247, 250, 251, 252, 253, 264, 265, 268, 269, 272, 278, 279, 281, 282, 287, 289, 300, 301); (BB237, 254, 257, 278, 304, 312, 321, 348, 351, 352, 359, 365, 367, 377, 385, 393, 401, 405, 410, 412, 419, 444, 445, 453, 473, 475, 483, 492, 503, 511, 521, 529)
- <sup>33</sup> (FB74, 75, 77, 84, 96, 104, 105); (HS10, 14, 17, 34, 35, 51, 63, 73, 104, 145, 149, 153, 155); (HB14, 16, 19, 22, 25, 26, 58, 65, 91, 96, 105, 115, 122, 132, 139, 167, 180, 187, 190, 216, 286, 287, 290, 301); (BB12, 26,



98, 113, 172, 195, 198, 254, 275, 286, 305, 323, 327, 361, 370, 377, 387, 388, 390, 393, 395, 405, 406, 429, 442, 450, 461, 474, 489, 490, 491, 518, 521)

<sup>34</sup> (FB61, 78, 80, 83, 98, 104, 105, 111); (HS12, 29, 31, 34, 44, 86, 103, 152, 137, 141); (HB41, 52, 132, 133, 140, 150, 159, 165, 174, 176, 181, 186, 187, 195, 197, 208, 211, 224, 246, 247, 253, 255, 274, 290); (BB72, 108, 166, 250, 253, 269, 275, 280, 336, 340, 341, 342, 344, 358, 360, 370, 378, 395, 405, 428, 461, 474, 494, 498, 499, 513, 516, 528)

<sup>35</sup> (FB62, 63, 68, 76, 104, 105); (HS12, 29, 78, 86, 91, 97, 108, 132, 141, 144, 149, 151, 156); (HB12, 70, 126, 140, 141, 154, 156, 165, 174, 175, 181, 187, 197, 208, 210, 214, 215, 233, 246, 255, 256, 260, 261, 263, 272, 279, 284, 287, 290); (BB29, 112, 149, 253, 275, 279, 323, 324, 336, 341, 381, 396, 405, 458, 493, 513, 516, 520, 524, 528)

<sup>36</sup> (FB99, 112); (HS77, 78, 83, 85, 86, 97, 155); (HB75, 106, 107, 108, 112, 117, 137, 138, 140, 245, 257, 272, 276, 280, 287); (BB265, 271, 274, 275, 341, 356, 364, 395, 458, 461, 476, 477, 478)

<sup>37</sup> (FB57, 58, 64, 70, 76, 99, 106); (HS12, 14, 78, 87, 111, 132, 139, 142, 150, 155, 156); (HB73, 75, 99, 101, 111, 123, 124, 126, 135, 136, 144, 147, 148, 149, 152, 161, 165, 167, 168, 172, 173, 174, 183, 186, 190, 196, 200, 201, 210, 212, 213, 226, 230, 235, 244, 245, 246, 247, 249, 252, 255, 261, 264, 267, 270, 272, 275, 277, 282, 284, 287, 288, 289,

295, 301); (BB7, 29, 36, 108, 242, 255, 265, 268, 274, 277, 280, 284, 296, 301, 304, 305, 306, 308, 311, 326, 330, 331, 338, 340, 351, 359, 362, 364, 367, 370, 396, 402, 405, 418, 419, 425, 430, 431, 441, 443, 445, 447, 448, 456, 457, 461, 465, 470, 471, 482, 484, 485, 488, 490, 501, 508, 510, 512, 521, 523, 528, 529)

<sup>38</sup> (FB65, 82, 94, 96, 105); (HS10, 97); (HB132, 169) ; (BB323, 387, 389)

<sup>39</sup> Beliefs, customs & taboos: (FB27, 67, 70, 79, 81, 87, 95, 97); (HS103, 126, 132); (HB42, 96, 103, 109, 110, 118, 132, 134, 167, 170, 178, 191, 199, 218, 221, 222, 223, 231, 240, 243, 264, 267, 268, 290); (BB281, 394, 450, 453, 456, 464, 465, 467, 503) Legends: (FB67, 97); (HS87, 102, 134, 135); (HB89, 91, 114, 128, 135, 145, 148, 155, 162, 178, 218, 221, 235, 264, 270); (BB245, 517)

<sup>40</sup> (FB50); (HS19, 140, 153); (HB5, 73, 79, 90, 91, 93, 94, 95, 96, 97, 100, 101, 104, 113, 114, 116, 119, 123, 134, 288, 289, 301, 303); (BB77, 231, 237, 247, 259, 262, 266, 270, 278, 417, 420, 444, 446, 460, 466, 468, 475, 483, 529)

<sup>41</sup> (FB19, 95); (HS36); (HB31, 41, 127, 132, 133, 142, 156, 181, 186, 210, 211, 215, 255, 260, 274, 292); (BB62, 224, 269, 275, 391, 499, 513)

