

**Annual Assessment of Subsistence Bowhead Whaling Near  
Cross Island, 2001 and 2002: ANIMIDA Task 4  
Final Report**

**Contract Number 1435-01-99-CT-30998, TO 10904  
Final Report**

Prepared for:  
U.S. Department of the Interior  
Minerals Management Service  
Alaska Outer Continental Shelf Region  
Anchorage, AK

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U.S. Department of the Interior  
Minerals Management Service  
Alaska Outer Continental Shelf Region



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Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The **MMS Royalty Management Program** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

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for:

U.S. Department of the Interior  
Minerals Management Service  
Alaska Outer Continental Shelf Region  
Anchorage, AK

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The opinions, findings, conclusions, or recommendations expressed in this report are those of the authors and do not necessarily reflect the views of the U.S. Department of the Interior, nor does mention of trade names or commercial products constitute endorsement or recommendation for use by the Federal Government.

August, 2004

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## Note on Organization of the Report

This report has become much more voluminous and bulky than initially planned, as the graphic display of the GPS data requires many pages. Due to the experience of producing the internal annual reports for 2001 and 2002, where this information was printed, that material is handled in this report as attached electronic appendices. This was only one of many helpful suggestions from the Scientific Review Board and the sponsor. Due to the number of electronic appendices, this note is intended as a simple guide to the report and its accompanying CD-ROM.

The basic description of the project's purpose, methods, data to be collected, mode of data presentation, and general discussion compose the body of the printed report. Only summary or examples of more detailed data are included in the body of the report. The electronic appendices on the labeled CD-ROM include the processed data collected, as well as other materials. This CD-ROM contains the following files:

File Name	Description or Contents and Format
CrossIs_Final	Main descriptive body of the final report, in PDF format
AnRpt2001	Annual report for the 2001 field season, with detailed data appendices (complete daily report forms, complete figures of daily individual boat GPS tracks), in PDF format
AnRpt2002	Annual report for the 2002 field season, with detailed data appendices (complete daily report forms, complete figures of daily individual boat GPS tracks), in PDF format
Trak01_m.zip	Complete track and waypoint files for the 2001 field season for all individual scouting trips, in Mapsource (mps) format, archived in a zip file
Trak01_d.zip	Complete track and waypoint files for the 2001 field season for all individual scouting trips, in DFX format, archived in a zip file
Trak02_m.zip	Complete track and waypoint files for the 2002 field season for all individual scouting trips, in Mapsource (mps) format, archived in a zip file
Trak02_d.zip	Complete track and waypoint files for the 2002 field season for all individual scouting trips, in DFX format, archived in a zip file
CI2002WF	Time series of weather readings from the weather station for the 2002 field season, in Excel spreadsheet form
Days2001.zip	Composite track and waypoint files for each day on which scouting occurred during the 2001 field season (for all boats that went scouting that day), in PDF format, archived in a zip file
Days2002.zip	Composite track and waypoint files for each day on which scouting occurred during the 2001 field season (for all boats that went scouting that day), in PDF, archived in a zip file

## Acknowledgments

This work would not have been possible without the assistance of a great number of people. Foremost among them must be the whalers and other residents of Nuiqsut. While it is unfair to single out individuals when all provided essential information and support in what is after all a communal and cooperative undertaking, I would be remiss if I did not explicitly thank those whaling captains and their crews who extended me the hospitality of their cabins. Paul Kittick, as my host for the first year when the project was still an unknown quantity to the whalers, has my utmost appreciation. Archie Ahkiviana and his crew hosted me the second year, and also have my profound thanks. I of course am also grateful to the other crews who were out on Cross Island for the 2001 and 2002 seasons (Napageak and Nukapigak), and David Pausanna for all the help he gave me over the phone and while I was in Nuiqsut. I cannot begin to list the other residents of Nuiqsut who shared much more of their time and knowledge than I had any reason to expect. Maggie Ahmaogak of the AEWK must also be cited for her advice, support, and cooperation.

Industry also provided a good deal of help in various forms, from advice to more concrete logistical support. Ray Jakubczak, and Concie Rock at BPXA were especially notable in this regard, and several individuals at Alaska Clean Seas were also very helpful. BPXA is also assisting with the transformation of the GPS track information into more usable figures for this report, and thanks are due to their cartography department.

MMS, as the sponsor of the project, also deserves a formal “Thank you.” Dick Prentki has been an ideal COTR, even though the course of the project has not always been smooth, nor progress uninterrupted.

The Scientific Review Board provided many helpful comments and suggestions, most of which have been incorporated into, and greatly improved, this final report. These included the full range of possible concerns – editorial, stylistic, organizational, and substantive. While it has not been possible to incorporate pictures into the text of the document, the public presentation (PowerPoint97) of the final report is attached as an electronic appendix.

Lastly, the entities for which ASR performed this work as a subcontractor, LGL Alaska Research Associates, Inc., and Batelle of Boston, must be thanked for their willingness to trust that the work would be accomplished with a minimum of oversight on their part. The budget for this limited task would not support a good deal of administrative overhead, and both worked with me to make it work. I am especially grateful to Dale Funk at LGL. Dr. Funk is listed as the second author in recognition of his and LGL’s role in this project.

The above notwithstanding, all errors and shortcomings of this report are the responsibility of Michael Galginaitis and ASR. Please advise MMS or ASR of as many as you find, so that continuing monitoring effort can bear as much fruit as possible. In this regard, a third year of fieldwork (2003) was funded by MMS, and their intent is to continue the collection of this information into the future as well (2004-2006). Data and results from 2003 are not included in this report, but will be contained in a separate annual report. I am very grateful to Billy Oyagak and his crew for allowing me to share their cabin for the 2003 whaling season.



## Executive Summary

This Task Order, funded by the Minerals Management Service (MMS) describes subsistence whaling as currently conducted near Cross Island by residents of Nuiqsut. While “traditional” subsistence whaling has been well documented in a number of locations, contemporary subsistence whaling is not as well documented, especially in terms of change over time. This effort is designed to measure basic parameters of Cross Island whaling so that observed changes (if any) can in the future be analyzed in relation to such factors as oil and gas activities, weather and ice conditions, or other variables. Observations, and the narrative annual report summarizing them, focus on descriptive measures of activities associated with whaling. Special attention is devoted to geospatial information through the sharing of GIS information by participating whaling crews. Project reports are only for the purposes of reporting information collected, with no analysis of the information either as a self-contained database or in conjunction with the many pertinent external databases (for example, weather records, sea ice condition remote sensing photographs, AEWC historical bowhead whale harvest records). Also, the project is designed as a collaborative effort of MMS and its contractor, Applied Sociocultural Research (ASR), the subsistence whalers from Nuiqsut, and the Alaska Eskimo Whaling Commission (AEWC). Beyond the goal of two (now expanded to six) years of descriptive information on Cross Island subsistence whaling activities, the project will develop a system for collecting such information that local whalers themselves can adopt, adapt, and maintain.

Three methods of information collection were employed – systematic observations, collection of daily vessel locational information from handheld GPS units, and whalers’ self-reports and perceptions. Emphasis has been placed on such measures as:

- Number of crews actively whaling (observation)
- Size and composition of crews, and fluctuation over the whaling season (observation)
- Number of whales harvested (observation, self-report)
- Days spent whaling, and days prevented from whaling (observation, self-report)
- Days suitable for whaling when whaling did not occur (observation, self-report)
- Subsistence activities occurring other than whaling (self-report, observation)
- Location of whale searching, whale sightings, and whale harvest (GPS, self-report)
- Local weather and ice conditions (observation, self-report)
- Bowhead whale behavior in the Cross Island area, and differences from past experience (self-report)
- Changes in access or other issues related to the whale hunt, such as increased effort for the same (or reduced) harvest, increased risk, increased cost (self-report)

In 2001, four whaling crews from Nuiqsut whaled from Cross Island. At least 1 boat went whaling on 12 different days. Whalers were on Cross Island a total of 24 days (counting day of arrival and day of departure). Weather prevented whaling on 7-8 days, 3 days were devoted to butchering a whale taken the prior day, and 2 days were devoted to travel. Three whales were harvested. The report and attached daily vessel trip forms present information on boat crew size (3 to 6 per boat per day) and daily trip characteristics (duration, GPS track, marked points, self-report of sightings and other perceptions). In 2002, three whaling crews from Nuiqsut whaled from Cross Island. At least 1 boat went whaling on 15 different days. Whalers were on Cross Island a total of 24 days (counting day of arrival and day of departure). Weather prevented whaling on 3 to 5 days, 3 days were devoted to butchering a whale taken the prior day, and 2 days were devoted to travel. Four whales were harvested, and one was struck and lost. Two of the harvested whales sank when killed, and were recovered later as “stinkers”. The report and attached daily vessel trip forms present information on boat crew size (2 to 6 per boat per day, most commonly 3 to 5) and daily trip characteristics (duration, GPS track, marked points, self-report of significant sightings and other perceptions). The report also summarizes Nuiqsut whalers’ observations and perceptions on how whale behavior in 2001 and 2002 was different from that of other years, and the implications of those differences for subsistence whaling.

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## **Introduction and Objectives of the Task Order**

This Task Order, funded by the Minerals management Service (MMS) has as its broad objective the description of subsistence whaling as currently conducted near Cross Island by residents of Nuiqsut. While “traditional” subsistence whaling has been well documented in a number of locations, contemporary subsistence whaling is not as well documented, and changes in contemporary subsistence whaling have not been well documented. This effort is designed to measure basic parameters of Cross Island whaling so that observed changes (if any) can in the future be analyzed in relation to such factors as oil and gas activities, weather and ice conditions, or other variables. Observations, and the narrative annual report summarizing them, focused on descriptive measures of activities associated with whaling. Special attention is devoted to geospatial information through the sharing of GIS information by participating whaling crews. Project reports are only for the purposes of reporting information collected, with no analysis of the information either as a self-contained database or in conjunction with external databases. Among the many external databases of potential pertinence to the descriptive information collected under this task order are the Human Activities Database (another MMS project) and remote sensing information on ice cover or other geophysical parameters. Other linkages for future analysis (AEWC records, untranscribed IHLC tapes, etc.) also exist.

As a second broad objective, the project was designed as a collaborative effort among MMS (and its contractor, Applied Sociocultural Research), the subsistence whalers from Nuiqsut, and the Alaska Eskimo Whaling Commission (AEWC). Beyond the initial goal of two (now expanded to three and possibly more) years of descriptive information on Cross Island subsistence whaling activities, the project will develop a system for collecting information that local whalers themselves can adopt, adapt, and maintain.

This report discusses project activities over the span of four years. Consultation trips to the North Slope were conducted in all years. Initially fieldwork was planned for each of the first three years, but the timing of the contract award precluded a field effort in the first project year (2000). Thus, the major effort during the first year of the project was to gain local support for the research effort and to organize the logistics required for its implementation. Successful field collection efforts were mounted in 2001 and 2002, and brief annual reports for each summarized this information (these reports are included as digital appendices to this report). This is the final overall report, produced during the last year (2003) of the project. Field work for the 2003 whaling season was added to the project as a contract amendment. This has delayed the production of this final report, even though the 2003 information is not included in it. The data collected in 2003 will be summarized in its own annual report (in preparation).

This report presents a synthesis and summary of the results from the 2001 and 2002 field seasons. More detailed information for those years can be found in the digital appendices attached to or provided with this document. These electronic appendices include the revised annual reports for 2001 and 2002 (with boat report forms and daily GPS boat tracks), MapSource files of all boat tracks for 2001 and 2002, and the data logger file from the weather station used on Cross Island for the 2002 whaling season.

## **An Overview of Contemporary Subsistence Whaling in Alaska**

The Inupiat of the North Slope maintain and live a vital culture -- with kinship, dependence on hunting wildlife resources, and a respectful relationship to the land as fundamental values. Hunting provides most of the meat consumed by Inupiat. Whaling not only provides a significant part of this food, but is also a key social organizational activity for North Slope Inupiat. Whaling is also a central ideological idiom for the expression of key cultural values, and an important vehicle for the transmission of those values (Worl 1980, Rexford 1997). Subsistence whaling has been (and continues to be) a key focus for Inupiat and Yupik culture and society (Bering Straits area, Northern coastal Alaska) for at least 1,000 to 1,500 years (Dumond 1984, Krupnik and Stoker 1993, McCartney 1994). However, nothing more than a brief orientation to contemporary subsistence whaling in Alaska is attempted in this report, and references are illustrative, not exhaustive. This discussion provides only a general description of some key aspects of the organization of subsistence whaling, within the context of its management regime, that are important for an understanding of this project's methods and results. This discussion proceeds from the general to the more specific.

In Alaska, ten coastal communities currently field whaling crews and are members of the Alaska Eskimo Whaling Commission (AEWC). The AEWK was formed in 1977 in direct response to the International Whaling Commission's (IWC) decision to ban the Alaskan subsistence bowhead whale hunt. The IWC had two main concerns – that the bowhead whale population was too small to sustain a regular harvest, and that subsistence hunting methods were too wasteful (too many animals were killed but then “lost”). As a result of a complicated series of negotiations, the United States and the AEWK convinced the IWC to allocate an initially small quota of bowheads that could be harvested in 1978. This quota was accompanied by an data collection program to measure and monitor the bowhead whale population and the efficiency of subsistence whaling harvest. This has resulted in an increased confidence in the robust size of the bowhead whale population and an ever-increasing quota of animals available for harvest. It has also created an incentive for the reduction of “struck and lost” whales which has been quite successful. Currently AEWK co-manages the Alaskan subsistence bowhead whale hunt with the United States Government, and this management regime is consistently cited as one of the most successful examples of such management. Huntington 1992 provides a useful analytical discussion of these developments. The original decision documents for the 1978 IWC action (U.S. Department of Commerce 1978, FEIS) also contain much of interest.

The IWC sets an overall quota for the hunt, and the AEWK in turn allocates that quota among the whaling communities. Each whaling community is represented by a local Whaling Captains Association (WCA) at the AEWK, and each local WCA is responsible for managing the hunt in its respective community. Nuiqsut initially received an allocation of one whale or one strike (whichever occurred first) for 1978. Its current allocation is three whales or three strikes. Unused strikes and quota can be transferred between communities, quota is now allocated in multi-year blocks, and there can be some “roll-over” of quota from one year to the next. Thus, the harvest in some years for any given community may be greater than the “normal” quota allocated.

Subsistence whaling in Alaska occurs in the spring (generally April-May) and the fall (generally September-October), when the bowhead whale migration brings them reasonably close to the whaling communities. In the spring, bowhead whales migrate north through the Bering Straits

and then, in Alaskan waters, east of Point Barrow into Canadian waters, where they spend the summer (some also go west into Russian waters). In the fall they reverse this course. Spring whaling differs from fall whaling. In the spring whales are migrating through relatively narrow open leads in the ice whereas in the fall the water is generally more open (although there is often thick floating ice). Spring leads do not open up close enough to Nuiqsut or Kaktovik to allow these communities to whale in the spring. In the fall, because whales are not confined by leads, it is difficult in most years for whaling communities south of Barrow to whale (although St. Lawrence Island and Wainwright whalers have taken a few whales in the fall), since the whales are so far offshore at those points. Thus most whaling communities whale in the spring. Barrow whales in both the spring and the fall. Nuiqsut and Kaktovik whale only in the fall. Spring whalers have traditionally and historically used only skin boats (until recently), whereas fall whalers use more durable wood, aluminum, and fiberglass boats. This is related to three general seasonal differences: the greater need to avoid unnecessary noise in the spring, the harsher environmental conditions of fall whaling (rougher seas, more floating ice), and the greater need for speed in the fall to find and pursue whales in more open water. Recent changes in spring whaling, especially in Barrow, have been described and discussed in Wohlforth (2004), and interested readers are referred to that source. This report concentrates on fall whaling by Nuiqsut residents, currently conducted from and near Cross Island.

Subsistence whalers use essentially the same technology used by commercial whalers at the time of contact. Although aboriginal Alaskan whalers used toggle harpoons made from bone or ivory, commercial whalers first used a toggle iron harpoon in 1848. The Inupiat quickly adopted this material improvement on the technology. The whale bomb, shot from a shoulder gun, was invented around 1850. While effective in increasing the number of whales taken, many still escaped into nearby ice. The darting gun, designed to attach a harpoon, line, and float to the whale at the same time as shooting it with a bomb, was invented in 1865. Subsistence whalers also quickly adopted these innovations, and still use these weapons essentially as they were invented (Bockstoe 1986:61-64 further illustration on pages 65-69).

The Management Plan of the AEWG provides definitions, rules or guidelines of conduct, and management mechanisms for subsistence whaling. Only those most pertinent for this report are discussed here. The AEWG requires that subsistence whalers must use “traditional weapons.” As defined by the AEWG:

“[T]raditional weapons” means a harpoon with line attached, darting gun, shoulder gun, lance or any other weapon approved by the AEWG as such a weapon in order to improve the efficiency of the bowhead whale harvest. “[H]arpoon with line attached” means a harpoon with a rotating head which is attached to a line and float and which has no explosive charge. ... “[D]arting gun harpoon” means a harpoon with an explosive charge and with a line and float attached. ... “[S]houlder gun” means a whaling gun, adapted from the era of commercial whaling in the 19<sup>th</sup> century, which has an explosive charge and which has no attached line and float. “[L]ance means a non-explosive sharply pointed weapon without a harpoon head. “[E]xplosive charge” ... means for initial strikes a penthrite-based explosive charge developed, approved, and issued to a whaling captain by the AEWG, unless such explosive charge has not been issued or is not compatible with the darting gun harpoon ... (AEWG 1995:3-4).

In practice, most whalers still use black powder explosive bombs rather than penthrite-based bombs, which are still under development and have so far only been used on an experimental basis in Barrow. Whalers assemble these bombs themselves with black powder, fuse, and primer.

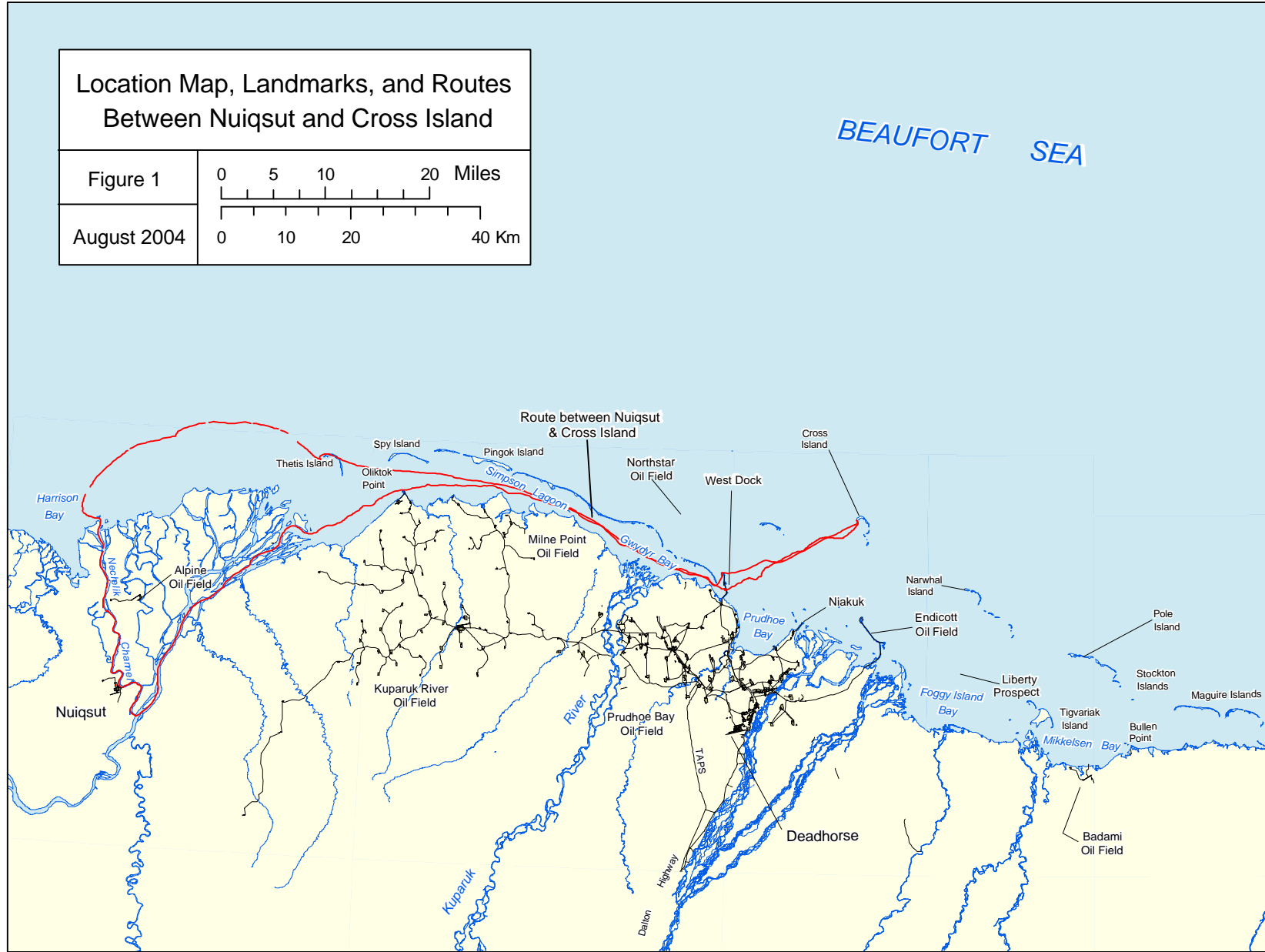
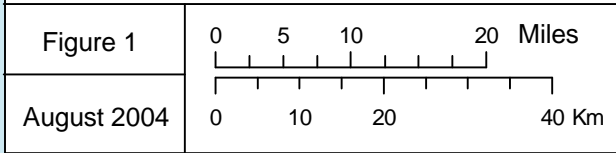
The AEWG defines a “whaling crew” as “...those persons who participate directly in the harvest or attempted harvest of the bowhead whale and are under the supervision of a captain” (AEWG 1995:4). This will be distinguished in this report from “boat crew,” since it is not uncommon for Nuiqsut whaling crews to consist of several boat crews, all under the supervision of a single captain. “Boat crew” is thus a subset or a part of a larger whaling crew. When “crew” is used with no modification in this report it will refer to the whaling crew. For this report, “whaling crew” refers to all those persons on Cross Island directly under the supervision of a whaling captain. Note that not all such persons will necessarily actively scout for or hunt whales on the water, but all will help in butchering and other support activities and are important for the success of Cross Island whaling. “Boat crew” will refer to those persons who actually go out in a given boat on a given day, and will generally be a subset of a whaling crew, even for those whaling crews with only one boat. Boat crews can, and do, vary from day to day, although they tend to be stable in at least the primary skill positions (driver and harpooner). The number and composition of the other people on a boat crew on a given day can be much more variable, and is more variable for some Nuiqsut whaling crews than for others. Whaling crews also change over time, as people do sometimes leave or arrive at Cross Island separate from the rest of the crew. In recent years most Nuiqsut whaling crews have used more than one boat, although this was evidently not as common in the past when more whaling captains (and crews) were active.

The AEWG Management plan states that all subsistence whaling must be conducted in “the traditional harvesting manner”, meaning that only traditional weapons may be used. The first strike on a bowhead whale must be made with a harpoon or a darting gun with line and float attached. A shoulder gun may be used only after a line has been secured to a whale, or when pursuing a wounded whale with a float already attached to it. A lance may be used after a line has been secured to the whale (AEWG 1995:7).

## **The Historical Context of Cross Island Whaling**

The present community of Nuiqsut has a relatively short history, having been resettled in 1973. However, Inupiat use and occupation of the Nuiqsut area has a very long history, which is the basis for Nuiqsut’s status as a village recognized under the Alaska Native Claims Settlement Act (ANCSA). Nuiqsut is located about 12 miles inland on the Colville River (Figure 1), which is not a typical location for a whaling community. However, its residents trace their ancestry to people who whaled in the mid-Beaufort Sea (including near Cross Island) in the first half of the twentieth century, as well as prior to that time. Treatments of the complex and dynamic history of the North Slope region in general, and the Nuiqsut area in particular, can be found in Brown 1979, Galginaitis et al. 1984, Hoffman et al. 1987, Galginaitis 1990, and Long 1996. These sources are the basis for the information in this section. Figure 1 shows the location of Nuiqsut on the Colville River, and Cross Island in the Beaufort Sea, as well as typical routes between Nuiqsut and Cross Island and some significant landmarks in between. Cross Island is about 73 miles northeast of Nuiqsut “as the crow flies” and from 92 to 109 miles away by boat, depending

Location Map, Landmarks, and Routes  
Between Nuiqsut and Cross Island



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on which channel of the Colville River can be used to reach the ocean. When the water level in the river is high, the more direct route can be used. When the water level is low, the more direct river channel is too shallow for most boats, so the longer route is used. Cross Island itself is about eleven miles offshore, but more importantly from a logistical point of view is ten miles from the Endicott causeway and fifteen miles from West Dock.

Prehistoric use of Cross Island has not been well documented or investigated archaeologically, but documentation for more recent use is quite extensive. Families who lived on and used Cross Island seasonally during the first half of the twentieth century included the Woods, Pausanna, Saavgaq, Ulaaq, Ahsoak, Ahgook, Ikpikuk, Ahvakana, Akpik, Sovalik, Kaigelak, Tigulak, Ahsogeak, Ahkivgak, Ekolook, and Ekowana (Smith 1980). Perhaps most important in terms of whaling was Taaqpak, who used Cross Island as a whaling base from the early twentieth century through the late 1940s. Documentation for his whaling harvests is quite incomplete, but include accounts of whales taken near Cross Island in 1922, 1927, 1928, and 1938. Many of today's active whalers learned from Taaqpak or those who were on his crews. In turn, Taaqpak maintained that Inupiat had hunted whales near Cross Island for centuries (Carnahan 1979:21-31). Thus whaling near Cross Island has a strong cultural continuity.

When Nuiqsut was resettled in 1973, many of the original settlers traveled from Barrow with the supplies necessary for their life in tents for a year or more. They used a variety of means – sleds towed by a small Cat (a tractor with tracks), snow machines, and weasels (another sort of tracked vehicle, of WW II vintage). One of these original founders took the first whale for Nuiqsut that fall, while on his way to Kaktovik to obtain some muktuk and meat to take back to the village. He and his crew had been looking for whales and had been out about six weeks. They had not seen any whales in that time, although they had seen a great number of seals, which was about their only source of food after the third week of their trip. By the sixth week the whaling captain had concluded that they were too late – that the whales had either passed them by or were too far from the shore. On the chance that Kaktovik whalers had been more successful, he decided to go to Kaktovik to obtain some muktuk and meat to take back to Nuiqsut. They then came upon a whale in the Brownlow Point/Flaxman Island area, in shallow water. They took this whale, butchered it, and returned to Nuiqsut with as much as possible.

Most of the six members of this 1973 crew are now active Nuiqsut whalers, and the captain remains one of the most active Nuiqsut whalers. In the years after 1973 relatively few crews whaled from Nuiqsut, with relatively infrequent success. Nuiqsut whalers regularly went to other communities in the spring to participate in spring whaling (a pattern that some continue up through the present – Pausanna, personal communication). The next Nuiqsut whale was not taken until 1982, although crews whaled from various locations between 1973 and 1982 – Pingok Island, Narwhal Island, and Cross Island among them. A summary of whale harvest by Nuiqsut crews is presented in Table 1 below. Nuiqsut whalers attribute at least part of their relative lack of success in the 1970s and 1980s to interference from oil and gas exploration, as well as poor weather and ice conditions in some years, and a difficult logistical situation. These factors are also evident in the three years with the greatest incidence of “struck and lost” whales (1989- 1991 or 1992). Once Cross Island was established as a logistical center for Nuiqsut whaling, and Nuiqsut whalers gained experience there, harvest success became much more regular – although another factor is more moderate ice conditions.



**Table 1: Recent Harvest of Bowhead Whales Near Cross Island**

Year	Whales			Notes
	Quota	Landed	Struck & Lost	
1973	NA	1	0	
1982	1	1	0	
1986		1	0	
1987		1	0	
1989		2	2	Oil industry vessel disturbance noted
1990		0	1	Oil industry disturbance, also rough seas
1991	3	1	2	Poor weather, bad ice conditions
1992	3	2	1	
1993	3	3	0	Very favorable conditions
1995	4	4	0	
1996	4	2	0	
1997	4	3	1	
1998	4	4	1	
1999	4	3	0	
2000	4	4	0	Very favorable conditions
2001	4	3	0	
2002	4	4	1	
2003	4	4	0	

Notes: Years of no harvest and no “struck and lost” are not listed. This does not imply that no whaling effort was made that year. “Quota” was not applicable in 1973.  
Source: Compiled from AWC records, personal communications from Nuiqsut whalers, and field notes from the 2001-2003 whaling seasons

Cross Island is a low sandy barrier island with an artificial higher area built from gravel. This higher area was constructed for past oil and gas exploratory drilling. Cross Island is about 3 miles long and 150 yards wide, and is constantly changing due to erosion and redeposition. Especially in the earlier years logistical support for whaling on Cross Island was very difficult. Whalers had to haul or find their own gas and water, and hunted and fished to provide most or all of their food. There was at most one cabin for however many people were whaling. Since the mid-1980s, with the advent of the Oil-Whalers Agreement (OWA) in 1986 between the oil industry and fall whalers (primarily Nuiqsut and Kaktovik, with little participation from Barrow whalers), logistical considerations have become somewhat easier. The oil and gas industry (and especially BPXA) has been providing logistical support of various sorts to Nuiqsut whalers as a mitigation measure for potentially disrupting subsistence whaling by seismic or development activities.

At the most basic level, the OWA provides for the constant communication between industry and the whalers about all of their respective ongoing activities, so that each can avoid interfering with the other. The mechanism for this mutual communication is the Whaling Communication Center (WCC – also referred to as the Conflict Avoidance Communication Center or the Oil/Whalers Communications Center) in Deadhorse. The WCC operates during each fall whaling season and

is staffed by bilingual radio operators, with at least one from Nuiqsut and one from Kaktovik. All industry and whaling vessels are required to report their activities to the WCC in real time (purpose, time left, time returned, significant events as they occur), and the WCC maintains a log of these reports which is archived by the AEW. This provides a record of activities as they take place, and also documents to some extent the whaling activities. It also allows the WCC to advise industry of planned industry activities that may interfere with ongoing whaling, or to suggest windows of opportunity (when whaling is not taking place) when industry activity may have minimal potential effects. Unfortunately, vessel activity not associated with the oil and gas industry (for example, commercial barge traffic) need not coordinate with the WCC in the same way, so that this is not a totally effective mechanism for mitigation. Other sorts of logistical support have been supplied at least in part by industry. These have included low-cost connex units (converted into seasonal cabins on Cross Island); a winch to help haul whales up at Cross Island; assistance with a steadier supply of gasoline; a generator system to supply electricity to the cabins during the whaling season; diesel fuel (for the winch and generator); water, and other supplies; help with transporting the butchered whale to Nuiqsut; at least limited phone service for one or two crews; help with mobilization and demobilization; and the assurance of available emergency assistance.

Preparations for whaling, in one form or another, take place during the entire year. This report focuses on the activities during the harvest season. The final preparation of boats and equipment happens in August, and a meeting of the NWCA is conducted to set a date for the start of the hunting effort and to review the rules and regulations. Labor Day is the normative date for whaling crews to go to Cross Island, but it is not unusual for individual crews to go out earlier, especially if Labor Day is "late." In 2002, one crew went out in August. Crews prefer to go out together, for safety. One day is spent in transit to and from Cross Island. Once on Cross Island the focus is on whaling. Boats go scouting for whales on all possible days unless a whale was taken the prior day, in which case butchering usually has priority. When a whale is taken, it is towed to Cross Island, hauled up on the gravel beach, and butchered. Select parts of the whale are sent to Nuiqsut via whaling boat the same or the next day "to feed the village." The rest of the meat, muktuk, organs, and baleen is packed into plastic fish totes and transported to West Dock and then to Nuiqsut (most recently via ACS barge and air freight). What is left of the whale is taken to the bone yard. Once the quota is taken or conditions threaten to prevent returning to Nuiqsut (formation of ice), the whalers clean up the island, pack, and leave. Most will return to Nuiqsut together. Captains who have taken whales that season will fly their flags. Whaling will generally be completed by mid- to late-September.

Nuiqsut whalers first used wood boats and relatively small motors. Although they remember these vessels with fondness, and long for the economy of those motors, they also remember that they were limited in terms of speed and towing capability. Currently Nuiqsut whalers all use aluminum or fiberglass boats, 18 to 24 feet long, with motors of 80 to 225 horsepower. It is possible that a 16-foot boat may be used as a whale boat on occasion, but it would not be considered a primary boat. A few boats have cabins, but most are open. Boats typically scout for whales with a complement of three or four people, although some boat crews are as small as two and as big as six.

In the recent past, Nuiqsut had as many as eleven active whaling captains. Currently, the number is smaller than that. Some captains who do not expect to go whaling do not register with the AEWG each year, and others have retired. When eight or more crews went out whaling there was little reason for captains to run multiple boats. When relatively few (three or four) captains go whaling, the number of boats available to assist in chasing and towing the whale are too limited unless some crews use multiple boats. Also, the only way that a whaler who is not registered as a whaling captain can take his boat out whaling is as the boat (usually a second or third boat) for a registered captain. Thus part of the reason that most crews in 2001 and 2002 ran multiple boats was no doubt due to the fact that only four crews whaled in 2001, and only three in 2002. Although single boats do take whales on occasion, it is not encouraged and Nuiqsut boats almost always scout for whales in pairs, in case of mechanical break downs or other emergencies. Whaling crews with two or three boats are willing to whale on their own, but it is commonly agreed that five to seven boats is a preferable number to have available for whaling on a given day. More boats would be useful, and the availability of fewer boats decreases the efficiency, safety, and overall chance for success of the hunt.

### **Whale Harvest Summary, 2001 and 2002**

For both the 2001 and 2002 field seasons, Galginaitis accompanied a whaling crew to and from Cross Island. However, he was not on Cross Island for the totality of the whaling season either year, as not all crews go out to Cross Island or return to Nuiqsut at the same time. Galginaitis “missed” the harvest of the first whale each year, although arriving in time to collect information about the whale and recover some additional information (GPS tracks and so on). Galginaitis was present on Cross Island though the end of each of these seasons, although one crew stayed one more day on Cross Island for 2002 than any of the other crews (including the one Galginaitis accompanied).

Table 2 summarizes some information about the whales struck by the Cross Island whalers in 2001 and 2002 (Tables 3 and 4, discussed below in the “Results” section, are more detailed day-by-day presentation of daily whaling activity for each Cross Island whaling season). For 2001, Nuiqsut whalers struck and harvested three whales, from a quota of four. In 2001 Nuiqsut whalers saw fewer whales than expected (based on their historical experience) and left Cross Island when it appeared that freezeup could be imminent. The unused strike for 2001 went into the AEWG “bank” for use by another community or in another year. Whales were taken on 9/05/01 by the Napageak crew, and on 9/10/01 and 9/22/01 by the Ahkiviana crew. Weather prevented whaling on eight of 24 days (33 percent of the available days).

For 2002, four whales were taken and one was struck and lost (Nuiqsut whalers were given one strike above their normal quota from the AEWG “bank”). On 9/05/02, two whales were struck. The Napageak crew struck and lost a whale in the morning, while the Nukapigak crew struck and landed a whale in the afternoon. The Nukapigak crew struck their second whale on 9/12/02, but it sank (lose of buoyancy) and the float came off. When whales sink, they typically resurface in one to three days, due to the generation of internal gases. Such whales are called “stinkers” because of these gases, and in most cases only the muktuk and baleen are recovered, as the meat is spoiled for most purposes. Although crews did search for this whale, it was not found until the 9/18/02 and was not recovered until the 9/19/02. It had drifted 19 to 21 miles south southeast of

**Table 2: Summary Characteristics<sup>1</sup> of Whales Struck Near Cross Island, 2001-2002**

Date	Time Struck	Length	Sex	Whale ID	Miles from Cross Island	Bearing from Cross Island	Notes
9/05/01	5:40 PM	40'8"	F	01N1	18.6	41° true	Napageak crew
9/10/01	3:44 PM	38'	F	01N2	21.9	92° true	Ahkiviana crew
9/22/01	1:42 PM	41'6"	M	01N3	17.9	58° true	Ahkiviana crew
9/05/02	9:45 AM	Small	?	none <sup>2</sup>	16.5	21° true	Struck and Lost – Napageak crew
9/05/02	2:47 PM	29'	M	02N1	15.1	59° true	Struck and Landed – Nukapigak crew
9/12/02	1:46 PM	38'7"	M	02N2	10.3	83° true	Sank 2:45 PM, 10.4 miles from Cross Island; recovered 9/19, initially found on Tigvariak Island on 9/18 – Nukapigak crew
9/13/02	5:07 PM	28'	M	02N3	18.1	92° true	Struck with harpoon and float, killed with shoulder gun, landed – Nukapigak crew
9/15/02	12:20 PM	46'6"	F	02N4	7.0	82° true	Sank 2:04 PM, 6.9 miles from Cross Island; recovered 9/17, 8.25 miles due east of Cross Island – Napageak crew

<sup>1</sup>All characteristics are from direct observations or GPS records made on the day of the activity, other than the WhaleID number. WhaleID numbers are assigned by the North Slope Borough Department of Wildlife Management (NSB DW). Times are approximate and are derived from the recorded GPS tracks and/or radio logs, combined with whalers' accounts, as are the distances from Cross Island.

<sup>2</sup>Whales that are struck and lost are not assigned WhaleID numbers by the NSB DWM.

where it had sunk, and was actually sighted by a barge in the area of Tigvariak Island. Nuiqsut whalers went out to recover this whale on the 9/18/02 in marginal sea conditions, but had to cut the tow short due to deteriorating conditions and safety considerations, and beached the whale at Narwhal Island. A barge from Alaska Clean Seas towed this whale from Narwhal to Cross Island the next day (the 9/19/02), when butchering started. The Nukapigak crew struck a third whale on the 9/13/02, which was landed and butchered that day and the next. The Napageak crew struck their second whale on 9/15/02, but it sank and the float came off. It was found and recovered by Cross Island whalers on 9/17/02, and butchered that day and the next. As would be the case with the other “stinker”, only the muktuk and baleen were taken from this whale. Weather prevented whaling on only 3 days in 2002 (13 percent of the available days).

## Methodology

Each component of the project will be discussed in terms of methods, with emphasis on the actual collection of descriptive information. Project components are defined primarily by the three main types of information to be collected – systematic GPS observations, systematic daily protocols, and narrative observations from whalers. Each will be discussed below. First, however, it is important to address the issue of “hypothesis testing” in relation to the products of this research effort, and then to discuss the descriptive data categories required to test those hypotheses.

### Hypotheses Guiding Data Collection

MMS explicitly required, as part of the proposal submission, the formulation of several hypotheses related to potential changes in Cross Island subsistence whaling. These hypotheses can then eventually be tested using the information collected by this research effort. Several such hypotheses were formulated. As examples:

- H1: Subsistence whaling activity and behaviors in the vicinity of Cross Island are significantly changed by offshore oil developments at Northstar and/or Liberty, and
- H2: General subsistence activities on/near Cross Island are significantly changed by oil and gas activities associated with Northstar and/or Liberty.

These hypotheses were initially stated in the null hypothesis form, but were revised into more conventional language due to unfamiliarity with this scientific convention among the North Slope project participants.

The hypotheses have been formulated as examples of possible relationships that are testable after empirical (and ideally quantitative) measures of Cross Island whaling have been compiled for a number of years. The hypotheses thus guide the practical methods of collecting and archiving the information, to ensure that they will be useful for testing these hypotheses (as well as others as they are developed).

It was explicitly recognized that the contracted effort would not be able to test these hypotheses. Such tests will require more data (in terms of longer time series) and significant effort devoted to analysis. The continuation of this effort as part of the cANIMIDA program will provide for the collection of at least three more years of data, as well as a final synthetic report incorporating information from 2001-2006.

## Descriptive Data Categories

The primary goal of data collection is the compilation of quantified measures of subsistence whaling behavior. Emphasis for the first field season was placed on such measures as:

- Number of whaling crews actively whaling
- Size and composition of whaling crews
- Size and composition of boat crews (as components of whaling crews)
- Fluctuations in active crew (both types) size and composition over the whaling season
- Number of whales harvested
- Days spent whaling
- Days prevented from whaling (weather, equipment failure or repair, etc.)
- Days suitable for whaling when whaling did not occur
- Subsistence activities occurring other than whaling
- Location of whale sightings and whale harvest (distance and bearing from Cross Island)
- Location of whale searching (GPS track)
- Local weather and ice conditions

These measures are a mixture of descriptive characteristics suggested by MMS and factors derived from or related to the perceptions of whalers on how and why whale behavior has changed, requiring that whalers change their behavior in hunting whales. For instance, size and composition of whaling crews are fundamental descriptive characteristics that probably have some relationship with the availability of whales. That is, the greater the perceived availability of whales and the greater the probability of taking a whale, the more likely it would seem that more crews would be mobilized and the larger that such crews would be. However, crew characteristics also depend on the alternative (non-Cross Island) activities available to the crew members (such as alternative subsistence activities, wage labor and education opportunities, and so on), as well as on personal whaling captain and crew member characteristics and preferences. Because of the focus on Cross Island activities, information on the “full” range of factors that may be affecting the data collected was not compiled, but the range of possibilities was generally elicited from whalers during discussions of topics such as crew composition or crew recruitment. In this sense, these generally descriptive measures are thus also characteristics identified by Nuiqsut whalers as potentially significant and variable measures from year-to-year. The locations of whale sightings, harvests, and general whale searching behavior are all important in the examination of whether whales can be found in the same locations every season, or if this changes from year-to-year. If the latter, the causes of such shifts in location are important. Nuiqsut whalers have experienced such variation and have suggested a number of factors to account for it (for example, ice conditions, industry activities, killer whale activity, global warming). This project develops information to examine these questions about variation and changes in Cross Island whaling behavior. For instance, this information will allow for a preliminary examination of “catch per unit effort” as well as factors associated with the distance whalers need to travel from Cross Island to whale.

Nuiqsut whalers generally agreed the suggested measures were significant and pertinent to the issues to be addressed, and should be retained for the second and all subsequent field seasons. During and after the first field season Nuiqsut whalers also wanted to ensure that their more general perceptions and observations of whale behavior, and especially changes in whale

behavior that had implications for hunting success or safety, were adequately noted. Such perceptions are also the most likely way for Nuiqsut whalers to contribute to future hypothesis formation and testing. Thus, information categories were added to ensure that whalers' perceptions and observations were noted concerning:

- Bowhead whale behavior in the Cross Island area, and indicated differences from past experience; and
- Changes in access or other issues related to the whale hunt, such as increased effort for the same (or reduced) harvest, increased risk, increased cost, and so on.

Whalers had no additional suggestions after the second field season.

MMS and the Scientific Review Board also had several suggestions for additional measures or the refinement of those already included during the first and/or second field seasons. Weather conditions were recorded during the first field season, but this met with limited success. A weather station was not obtained in time to be placed in the field. For the second field season a weather station was deployed in the field and was successful in collecting a time series of weather observations (with some gaps), and was perceived as very useful by the whalers during the whaling season. Whalers' weather and sea observations were also to be recorded, but were not implemented either year. This was due to a combination of the whalers' need to become more familiar with the research and the need for (and importance of) this information, with some inadequacies in the initial design of the form used to record the daily observations. The SRB suggested some revisions of this form after the second field season, and this revised form was used in the third field season. The SRB also suggested that "days spent whaling" was a very gross measure of level of hunting effort, and that more refined measures were desirable. The form was also modified with this goal in mind. This form is discussed below in the methodology section.

## Methods of Data Collection

Three types of data were collected during each of the field seasons. As listed above, these are GPS information; systematic observations of various components of subsistence whaling activity; and whalers' observations on whale behavior (and especially changes in such behavior). This last sort of information is often accompanied by perceptions of possible causes for such changes and the implications such changes may have for subsistence whaling activities. Each method of information collection will be discussed below, often in terms of the type of information sought, as the two are intimately related.

### *GPS Data*

GPS information – the location of whale strikes, whale kills, and other subsistence activities – was considered to be the most basic and fundamental data to be collected. Before (or early in) the first field season each participating Nuiqsut whaling boat was issued, through the whaling captain of the crew for which it was being used, a handheld GPS unit (Garmin 12) so that they could record these observations. These GPS units became the property of the whaling captains.

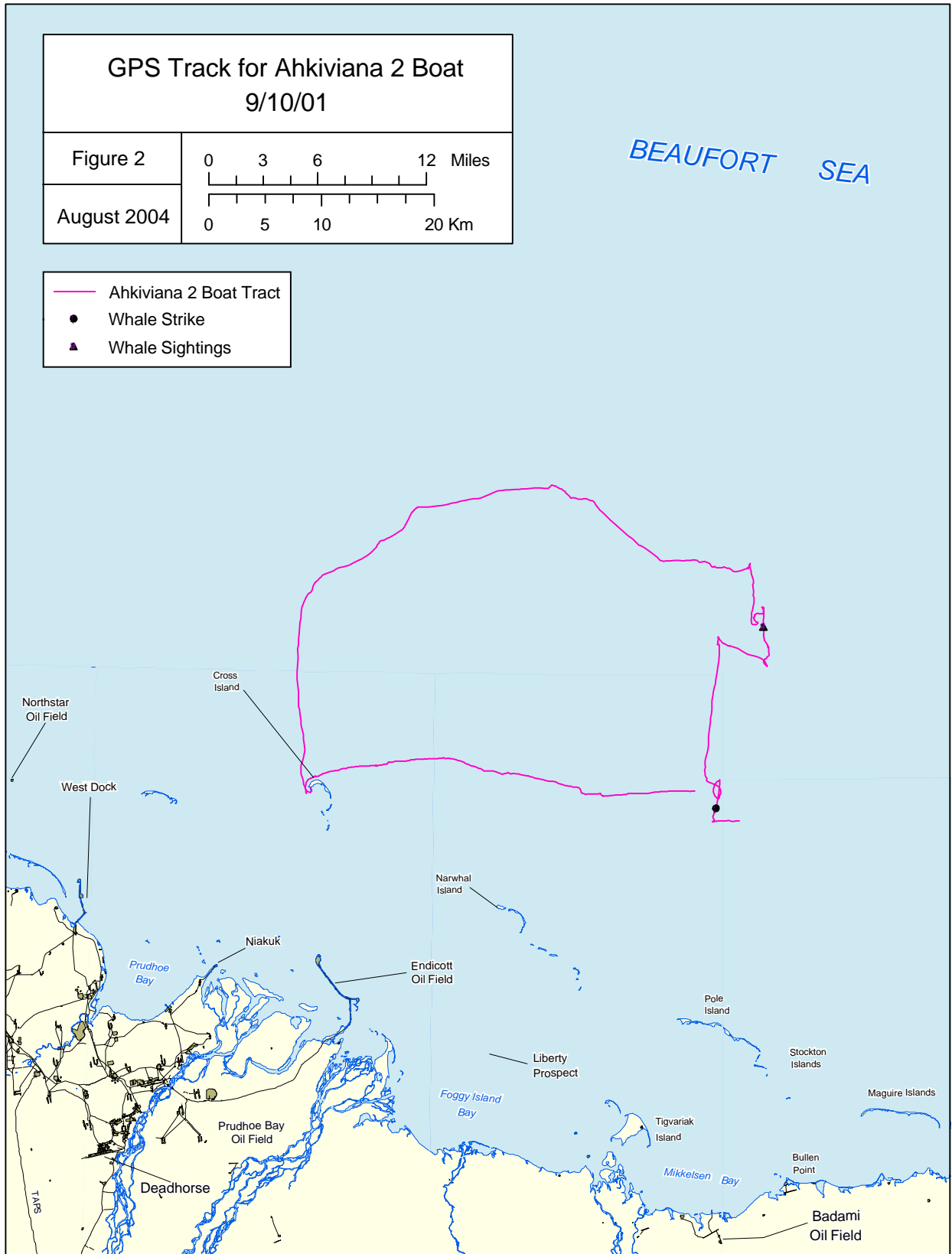
Three of four Nuiqsut whaling crews used more than one boat for whaling in 2001, so that three captains received more than one GPS unit, although in most cases only one boat actually belonged to the whaling captain. In such cases the GPS often became the property of the person who ran such a “number 2” or “number 3” boat for the whaling captain of the crew. In any event, these GPS were generally available for use in 2002. All whaling captains (crews) who whaled in 2002 had also whaled in 2001. However, they used several boats in 2002 that they had not in 2001. In part this was due to the absence in 2002 of one of the captains who whaled in 2001 (mechanical problems). Aside from the absence of this crew in 2002, crew membership displayed a great deal of continuity from 2001 to 2002.

Because of those boats that had not whaled in 2001, a few additional GPS units were required for the 2002 field season. The use of a single type of GPS unit was intended to ensure the compatibility of data and software. However, several crews had members who owned other types of GPS units (Garmin 3, Garmin Etrex, Magellan) and sometimes used them instead of the Garmin 12 each boat had been issued. For 2001, all boat crews were encouraged to use the Garmin 12 (or Garmin 3, compatible with the Garmin 12). For 2002 the researcher also had a data cable for the Garmin Etrex, allowing some boat crews to use the Etrex if they preferred to do so. This provided some redundancy for the GPS records for some boats.

Many boat crews had at least one member already familiar with GPS units, but not all crews used them as a matter of course prior to the project. By the end of the first third of the whaling season, all boat crews had agreed to carry these units. All boat crews were instructed to keep the “tracking” feature on, which recorded the path the boat traveled each time it went out. Example tracks from each season are provided below as Figures 2 and 3. However, often these daily travel records were incomplete or composed of several separate tracks. Possible causes included periods of inadequate satellite coverage or availability, the unit being turned off, depleted battery power, or loss of satellite coverage because of the GPS position or its being put in a pocket. Whalers were also instructed how to mark points, and told to mark the points where whales were seen, as well as other events such as “blows,” other animals (polar bears, seals) and key points in their trip (ice in an otherwise iceless trip, place where weather conditions change). Positions where whales were seen, struck, or killed were marked by a number of crews, but were seldom if ever labeled and so required additional discussion with the crew and additional processing of the “track” file. Points for other events were marked less often. As would be expected, the overall quality of GPS information for the second year was better than for the first. The whalers were more familiar with the GPS units and the research. Also, boat mounts and power cords for the GPS units improved their reliability.

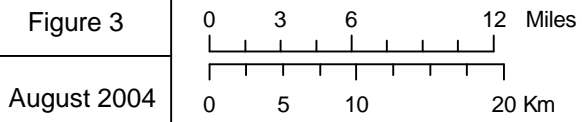
For both seasons the researcher visited each crew that had gone out whaling for the day, as soon after they came back as possible, in order to download the information from each boat crew’s GPS unit into a laptop computer (using MapSource, Garmin’s software package). This ensured that the GPS units were always available should the whaling crew decide to go out at short notice. This also enabled whaling crews to immediately see where they had been that day with the mapping software, and gave each boat crew an opportunity to discuss their trip with the researcher while it was very fresh in their minds. The utility of this information, as concretely mapped by the computer, was obvious to the whalers and appeared to be a major reason for the high degree of participation.





ms14953\_091001.mxd

GPS Track for Napageak 2 Boat  
9/15/02



BEAUFORT SEA

- Napageak 2 Boat Track
- Whale Strike
- ▲ Whale Sighting



ms14953\_091502.mxd

Hunters were also asked to report non-whaling subsistence efforts and results, in terms of time spent, species, number, and location in terms of GPS coordinates. Little such activity was reported for either year – two or three seals, and a polar bear shot each year on Cross Island itself. No GPS information was obtained for these activities.

Daily boat report forms were used to capture this and other information. Forms for all days for all boats are included as appendices accompanying copies of the annual reports prepared after the 201 and 2002 field seasons, which are themselves included as digital appendices to this report. These forms are discussed, and examples provided, in the section below. Whaling boat activity is summarized and discussed in a separate section below, with indications for the boats and days for which GPS tracks were collected. Images of all the individual tracks that were collected are also provided as appendices in the electronically attached annual reports. These show the output from the MapSource GPS software (warts and all), whereas Figures 2 and 3 have been graphically enhanced. For figures 2 and 3, black triangles mark documented whale sightings and black dots mark whale strikes, and represents a simplification of the MapSource data. In the appendices of MapSource data, black boxes represent whale sightings made by the boat that made the track, while whale sightings or coordinates from another boat (since whalers exchange and record such coordinates while on the water) are represented by white or clear boxes. In the appendices the “fish” symbol marks a whale strike, and the “flag” symbol marks the location of a whale kill. The GPS point information obtained is presented both graphically and in tabular form in the “Results” section.

### *Systematic Daily Protocols*

Systematic daily protocols were developed as standardized recording forms (daily boat report forms) in order to capture key quantifiable measures of whaling activity. Examples of the daily boat report forms appear below as Figures 4-6. Figures 4 and 5 are the daily report forms use for 2001 and 2002, respectively, and correspond to the boats whose tracks are shown in Figures 2 and 3. The complete series of forms are included as components of the 2001 and 2002 Annual Reports, which are included as digital appendices to this document. These forms record notes on the measures discussed above, including which crews went scouting for whales each day. In most cases it was possible to note who went out in each boat. For both field seasons these observations were checked against the radio logs kept by the Whaling Communication Center, which were especially useful for those days when the researcher was not on Cross Island. These observations are the basis for the summary tables that appear in the “Results” section below, as well as the completed daily vessel activity forms. From this information it was possible to make a basic “census” of the crews on the island, and to track changes as people came to Cross Island and left. From these basic observations can be derived some of the most basic measures of subsistence whaling activity – number of active crews (and boats), size and composition of whaling crews, fluctuations in whaling and boat crew size and composition, and days spent whaling. This information is presented and discussed in the “Results” section below. Figure 6 presents the daily report form as it was modified for the 2003 field season, for the reasons discussed later in this section.

Very basic weather observations were made during the first field season (temperature, wind direction and strength, degree of fogginess or clarity, barometric pressure). This information was not as systematic as it could have been, due in part to the difficulty in locating affordable and transportable weather measurement devices. For the second field season a portable weather station was installed on Cross Island, with a remote data logger to record the information. The data logger functioned for the period 9/07/02 (2:10 PM) through 9/17/02 (8:57 AM), with readings every five minutes for temperature, wind speed, wind direction, barometric pressure, and relative humidity (file "CI2002WF.xls"). Prior to 9/07/02 weather observations are not systematic, and do not exist prior to 9/05/02 (the date the researcher arrived on Cross Island). The remote data logger ceased operation on 9/17/02, so that weather observations for 9/17-9/20/02 are not systematic, consisting of manual notations of weather readings made at irregular intervals. Manual notations could not be made at regular intervals due to the nature of participant observation. The weather station readings end on 9/20/02, when the it was packed for transport to Nuiqsut.

Since January 1, 2001 MMS has maintained a weather station at Endicott, which is close enough to Cross Island to be pertinent. The datalog is available at [www.resdat.com/mms](http://www.resdat.com/mms). This is another potential data set of interest for the analysis of the whaling data (MMS also maintains weather stations at Northstar, Badami, Milne Point, and Cottle Island). Other sources are the communications logs of the Whaling Communication Center. Since the researcher could not go out in the boat during whaling activities, he had little ability to judge the degree of ice cover, although the Nuiqsut whalers did report their observations in a general way. The daily report forms were modified for the 2003 field season to facilitate the collection of more detailed information on ice conditions. Reliable information on ice conditions may be obtainable from remote sensing sources or the MMS aerial bowhead survey program.

The need for more detailed, and ideally quantitative, information about environmental conditions affecting whaling prompted other revisions of the daily boat report form, to encourage the collection of richer information. These modifications provide prompts or reminders to collect specific information in a number of areas:

- Documentation of waypoints marked – reason for marking the point, and if a whale sighting, the number of animals, direction of travel, and behavioral observations;
- Description of the day's activity – prompts for the initial direction of travel for scouting, for a finer accounting (if possible) for activity time on the water, and more general notes on that day's whaling activities;
- Short answer blocks to record whalers' observations on visibility (fog, clouds, clear, and so on), wind direction and speed, percentage of ice coverage and type, and wave height. In addition, prompts for noting longer responses if volunteered are provided. These observations are generally made from the beach or on the water prior to embarking on a scouting trip, but may also include observations made out on the water – especially if different. Ice and fog conditions especially can vary depending on location (for 2001 and 2002 fog varied much more than ice cover, as not much ice was present)
- More general Cross Island weather conditions have been deleted from the daily boat report form and will be collected in a separate file. These observations will consist of the datalog record from the weather station and other limited personal observations.

Further refinements will be made in the form as data collection continues past 2003.

### Figure 4: Example Daily Boat Report Form (2001 Field Season)

ANIMIDA Task 4 Data Collection Form

Use one form for each vessel/day

Date: 09/10/01 Crew: Ahkiviana GPS Type: Garmin-12

Vessel	Type	Length	HP Motor	# crew aboard
Ahkiviana2	Fiberglass	18	130	4

Whaling today? Yes  If not, why not?

Time departed: 6:43 AM Time returned: 11:30 PM

#### Waypoints or Coordinates noted

Lat/Long	Way Point #	Time	Notes
N70 37 17.3 W146 54 05.2	AA2_91001a	12:51 PM	Whale Ahkiviana1 spotted and chased
N70 28 37.6 W147 00 51.8	AA2_91001b	3:44 PM	Mark for the whale they struck and killed

#### Weapons Used/Whales Struck/Whales Killed

Lat/Long	Way Point #	Time	Notes
N70 28 37.6 W147 00 51.8	AA2_91001b	3:44 PM	Mark for the whale they struck and killed (one shot)

#### Describe the day's activity (traveling, hours searching for whales)

Most if not all crews start looking where whale was missed 09/09 (26 miles NE of Cross Island). Whale struck by Ahkiviana2 (their waypoint 004) and all boats assisted before and/or after. Saw few whales, but struck and took whale at waypoint 004. About 92 miles total. Kill tow about 3:44 PM.

#### Weather, sea state, ice-conditions

Time	No weather observations – but seems very mild (36 F), slight west wind. BP 30.2 (not much change). Not as cloudy as yesterday – some blue skies. Only slight chop.					
Wind Speed						
Wind Direction						
Temperature (F)						
Wave Height						
% Ice Cover						
Barometric Pres.						

#### Engaged in any other subsistence activities?

If yes, describe

GPS track collected and downloaded? Yes GPS File Name: /2001\_Tracks/AA2\_0910.MPS

Notes:

### Figure 5: Example Daily Boat Report Form (2002 Field Season)

ANIMIDA Task 4 Data Collection Form

Use one form for each vessel/day

Date: 09/15/02 Crew: \_\_\_\_\_ GPS Type: GPS-12

Vessel	Type	Length	HP Motor	# crew aboard
Napageak2	fiberglass	18'	130 Honda	3

Whaling today?	Yes	If not, why not?	
----------------	-----	------------------	--

Time departed: 8:28 AM Time returned: 5:52 PM

#### Waypoints or Coordinates noted

Lat/Long	Way Point #	Time	Notes
N70 28 13.7 W147 36 20.4	NAP2_91502b	10:07 AM	Coordinates given by Ahkiviana1
N70 30 36.0 W147 43 12.0	NAP2_91502a	9:23 AM	Coordinates given by Ahkiviana1
N70 30 01.3 W147 38 12.6	NAP2_91502c	11:43 AM	Prior point used as "GoTo" coordinates
N70 30 29.6 W147 39 59.8	NAP2_91502d	12:11 PM	Whale seen
N70 3024.3 W147 39 34.1	NAP2_91502e	12:20 PM	Whale struck
N70 31 16.5 W147 40 27.1	NAP2_91502f	2:04 PM	Float comes off whale/whale sunk
N70 27 47.8 W147 33 14.4	NAP2_91502g	6:17 PM	UNK

#### Describe the day's activity (traveling, hours searching for whales)

Seas glassy and all available boats go out. ACS barge brings 20 drums of gas. Another whale was struck and sunk (position marked). Specifics for this boat:  
 Scouting for whales more north from Cross Island than other boats. Then head east and see a whale (actually 2 whales) 6.8 miles from Cross Island. Strike one, follow it, and kill it – but it sinks. After trying to pull it up, the float comes off. They mark the spot and then continue to scout for whales, but see no other whales. Total trip of about 60 miles.

#### Weather, sea state, ice-conditions

Time	7:00 AM	8:04 AM	9:03 AM	2:02 PM	3:12 PM	5:26 PM
Fog/Clear/Clouds						
Wind Speed	0.0	0.1	3.9	4.2	6.6	9.9
Wind Direction	ENE	E	SE	SW	SW	SW
Temperature (F)	35.2	35.9	37.4	41.4	40.6	39.0
Relative Humidity	95%	95%	94%	81%	82%	87%
Barometric Pressure	29.26 S	29.26 S	29.26 S	29.29 S	29.32 S	29.32 S
Water Conditions						

Readings every 5 minutes available for 9/07 2:10 PM – 9/17 8:57 AM (with some missing values) – file "CI\_Weather0917.xls". Remote unit ceased functioning 9/17 for unknown reason.

7:14 PM weather readings: 38.8 F, rel. hum. 88%, BP 29.32, wind 5.4 mph from the WSW

Engaged in any other subsistence activities?

If yes, describe	
------------------	--

GPS track collected and downloaded? Yes GPS File Name: /2002\_TRACKS/NAP2\_0915.MPS

Notes:

# Figure 6: Daily Boat Report Form for 2003

ANIMIDA Task 4 Data Collection Form

Use one form for each vessel/day

Date: \_\_\_\_\_ Crew: \_\_\_\_\_ GPS Type: \_\_\_\_\_

Vessel	Type	Length	HP Motor	# crew aboard/notes

Whaling today?	If not, why not?

Time departed: \_\_\_\_\_ Time returned: \_\_\_\_\_

### Waypoints or Coordinates noted

Lat/Long	Way Point #	Time	Notes (if whale - # of animals, direction of travel, behavior)

### Describe the day's activity (traveling, hours searching for whales)

Direction of initial search (and explanation):	
Time spent actively scouting/# people looking:	
Time spent in travel/tow/assistance to other boats/on "break":	
Other notes:	

### Observations of Whaling Crew - weather, sea state, ice-conditions

Fog or clouds?		Atmospheric notes:	
Wind Direction:		Wind speed and other notes:	
% Ice Coverage:		Ice Type:	Other Notes:
Wave Height:		Other notes on sea conditions:	
Other pertinent notes:			

Note: Cross Island weather observations are compiled in a separate file (weather station + observer)

Engaged in any other subsistence activities? \_\_\_\_\_ If yes, describe below

--

GPS track collected and downloaded? \_\_\_\_\_ GPS File Name: \_\_\_\_\_  
 If not, why not?

## *Whalers' Observations*

Whalers would often make observations on whale behavior or give their thoughts on how and why whale behavior in the Cross Island area was different in 2001 and 2002 than it had been in the past. Much of this was recorded in the daily fieldnotes. Much is of limited immediate relevance to the central aims of this project. A summary of the most pertinent information is included in the "Results" section.

## Consultation

Consultation is more a process than a result. The goal is that through consultation and a collaborative effort, Nuiqsut whalers will wish to continue at least part of this program as their own. A great deal of time and effort has been devoted to the consultation process, but this final report will provide a summary rather than a blow-by-blow account. More detail is provided in the two annual reports, which are attached as digital appendices.

Telephone and Fax communications with the AEWCA and the Nuiqsut Whaling Captains Association (NWCA) were initiated in late 2000, after award of the contract and prior to consultation (face-to-face) trips. These contacts have continued through the present, both through "official" contacts and individual whalers and whaling captains. Contacts were also renewed with the Inupiat History, Language, and Culture (IHLC) Commission by telephone (and later in-person), in regard to tapes and transcripts related to Cross Island archived at their facility. Several tapes reportedly contain information on whaling from Cross Island in the 1930s and 1940s. They remain unprocessed at this date and are likely to remain so until funds for that specific purpose can be procured.

The first consultation trip was arranged for June 25-30, 2001. The main contacts in Barrow were with AEWCA and IHLC. Galginaitis continued on to Nuiqsut on June 27 and talked with a number of people (several whaling captains, city and corporate officials, and contacts from previous visits to Nuiqsut) about the project. However, the overall opinion was that it would be best to discuss this project in the context of all the whaling captains meeting together. Local experts suggested that this be accomplished at the Alaska Gas Producers Pipeline Team (AGPPT) meeting with the Nuiqsut and Kaktovik whaling captains, planned for July 6 at Service Area 10, and plans were modified to this effect.

The second consultation trip, to meet with Nuiqsut and Kaktovik whaling captains, took place July 5-7, 2001. The whaling captains delayed their departure for 30 minutes from their meeting to hear a presentation on the project and to ask some questions. The NWCA, through its officers, then invited Galginaitis to come to Cross Island. During the next several months, Galginaitis arranged to accompany the Kittick crew to Cross Island, through a series of phone calls with Thomas Napageak, Archie Ahkiviana, and Paul Kittick. Galginaitis arrived in Nuiqsut (via Barrow) 8/30/01, traveled to Cross Island with the Kittick crew 9/06/01, returned to Nuiqsut with the whalers on 9/26, and arrived back in Anchorage (again via Barrow) 9/29/01.



Consultation for the second field season built on that for the first. The 2002 effort included periodic phone calls (primarily to the Native Village of Nuiqsut and whaling captains), trips to Nuiqsut to present results and discuss the project during the periods 3/27-3/29 and 6/05-6/07, and phone calls to arrange for the final logistics of the actual field work. Galginaitis arrived in Nuiqsut 8/30/02 (via Deadhorse) and traveled to Cross Island with the Ahkiviana crew 9/05/02. He returned to Nuiqsut with most of the whalers on 9/20/02, and returned to Anchorage (via Deadhorse) 9/24/02. A trip to present the results of the 2002 field season was made to Barrow and Nuiqsut 6/28/03-7/02/03. Nuiqsut whaling captains suggested the incorporation of information for previous years into the final project report, and two trips were made to Barrow to use AEWEC records for this purpose (7/09-7/11/03 and 7/15-7/16/03). Much of this information is incorporated into the discussion of the historical context of Cross Island whaling above. A trip was also made to Fairbanks 7/18/03 to present the methodology and results of the project to the Commissioners of the AEWEC at their quarterly meeting, at the invitation of the Executive Director of the AEWEC. A final trip will be made to Barrow and Nuiqsut to present the final report for the project, once it is finalized. Consultation for the collection of data for future whaling seasons (as part of the cANIMIDA program) has also continued, but is not covered by this report.

## **Results**

Results are discussed in this section in terms of the quantitative observations designed as measures of subsistence whaling activity and the less quantifiable observations and perceptions of Nuiqsut whalers about how whale behavior in 2001 and 2002 differed from that of previous years. To a limited extent, the 2001 and 2002 whaling seasons are also compared with each other. These results are strictly preliminary, and are in no sense complete. The project was funded and implemented solely as a data gathering effort. Because this report has been delayed and data from the 2003 field season is available, some preliminary summary information from 2003 is included for comparative purposes. More detailed information for the 2003 Cross Island whaling season has not been incorporated into this document, and can be found in the 2003 draft annual report.

### **Quantitative Measures**

A day-by-day summary of basic descriptive information is presented for the 2001 and 2002 Cross Island whaling seasons in Tables 3 and 4, respectively. They, with the addition of Figures 7 and 8, address the primary descriptive characteristics of Cross Island subsistence whaling of most concern for MMS.

In 2001, four crews from Nuiqsut whaled from Cross Island. Three of these crews initially started with two whaling boats, and one had a third support vessel. The fourth crew used a single boat. The multi-boat crews were larger than the single-boat crew. Each of the multi-boat crews started whaling with a total crew of ten, and the other crew with five, although all crew members were not necessarily present at the start of whaling. Furthermore, as the whaling season progressed, crews tended to become smaller as individuals left Cross Island for Nuiqsut or other destinations, for a variety of reasons. Younger (20s and younger) crew members were much

more likely to leave before the end of whaling than were adult (25 and older) crew members. Adult crew members left primarily because of boat or equipment failure, whereas younger crew members left primarily from “homesickness” or health problems. All crews had a majority of adult members, but differed greatly in the age of the youngest member. One of the largest crews had no members younger than a high school graduate, and the smallest crew similarly was composed of three adults and two young adults. The other two crews each contained at least one member who was young (young teens or below) and delegated only limited duties. The crew with the largest number of adults also had the most sub-adult crew members.

In 2001, the Cross Island whaling season was 24 days long (from the arrival of the first crew at Cross Island to the departure of the last). Weather prevented scouting on 8 days, 2 days were devoted to butchering whales, and 2 days were spent in transit. Scouting for whales occurred on 12 separate days, with a total of 57 boat-days devoted to this activity (each boat scouting for any amount of time on any given day counts as 1 boat-day). The median number of boats scouting on each of these 12 days was 5, with an average of 4.75 boats. The average boat crew was 3.95 people, with a range of 3 to 6 people. Whales were struck an average of 19.5 miles from Cross Island. An average scouting trip lasted 10 hours, 20 minutes, with a median of 10 hours, 32 minutes. The range was 3 hours, 57 minutes to 17 hours, 5 minutes. The total effort on the water was about 589 boat-hours. These time estimates include as components:

- transit time (at high speed en route to a search area or on the way back to Cross Island)
- scouting time (when actually looking for whales)
- following and chasing time (after finding a whale)
- towing time (after killing a whale)
- other miscellaneous activities (assistance to other boats, mechanical breakdown, rest breaks, and so on).

A detailed breakout of such separate activities is not easily done, although it is possible through close analysis of the GPS track information. Rough breakouts could be compiled with a reasonable level of effort. More exact accounting would require a high level of effort.

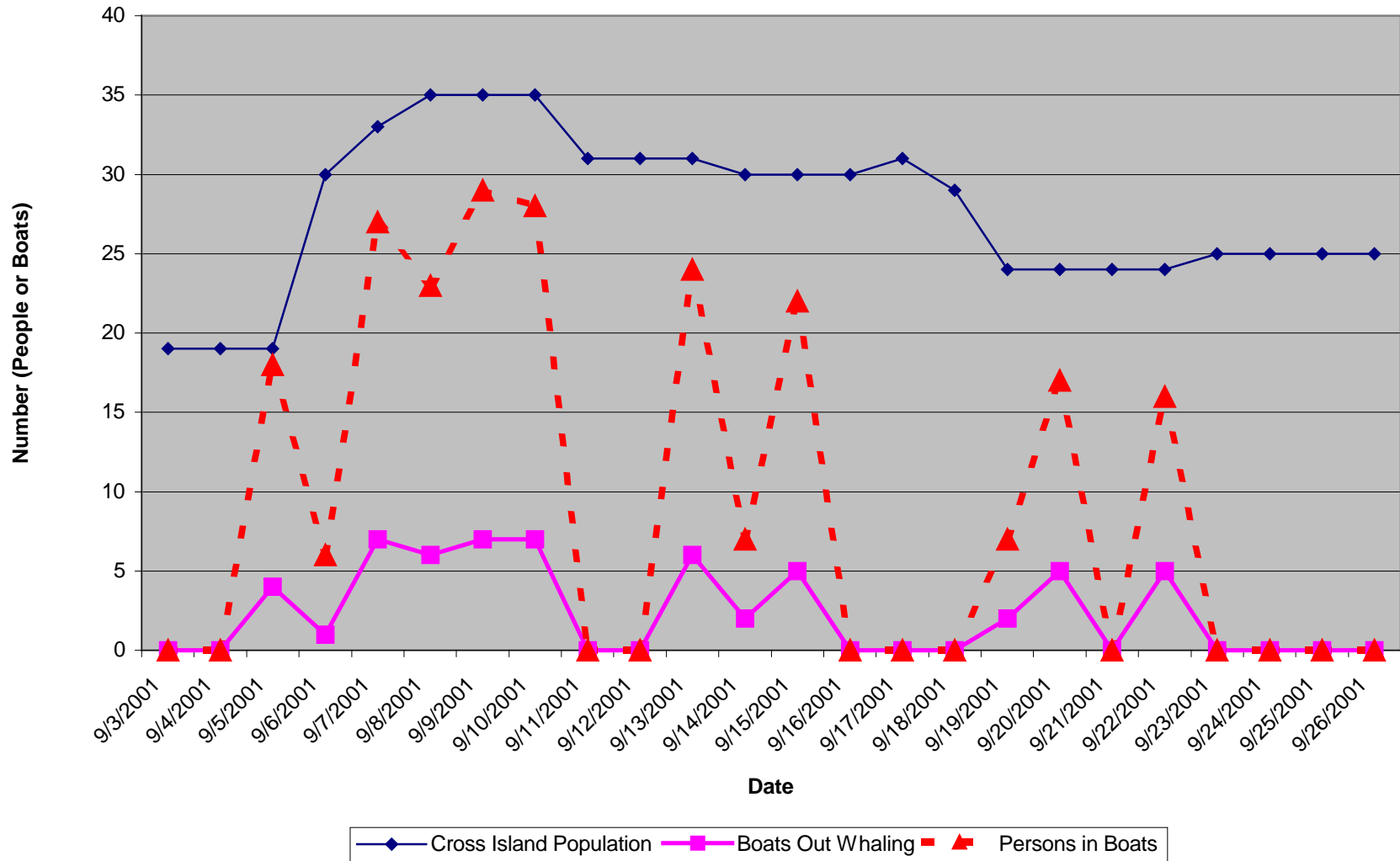
In 2002, three crews from Nuiqsut whaled from Cross Island. All had whaled in 2001. One of these crews initially started with two whaling boats, and the others used three vessels. One crew used all three vessels as whaling boats, while the other crew used the third vessel mainly for support activities. The crew with two boats did “add” a third small boat late in the whaling season, used mainly in a support capacity. All three crews started with nine to eleven members, comparable to the multi-boat crews of 2001. The size of crews did not vary as much in 2002 as in 2001, although the same general dynamics were evident. The number of individuals (not all necessarily on Cross Island at the same time) per crew ranged from nine to fourteen. The biggest difference was the greater number of “visitors” from Nuiqsut to help with butchering and other tasks in 2002. In most cases such visitors were not labeled as members of one crew rather than another, although a visitor often had closer relations with one crew than with the other.

In 2002, the Cross Island whaling season was 23 days long (from the arrival of the first crew at Cross Island to the departure of the last). Weather prevented scouting on 3 days, 2 days were devoted to butchering whales, and 3 days were spent in transit. Scouting for whales occurred on 15 separate days, with a total of 65 boat-days devoted to this activity. The median number of

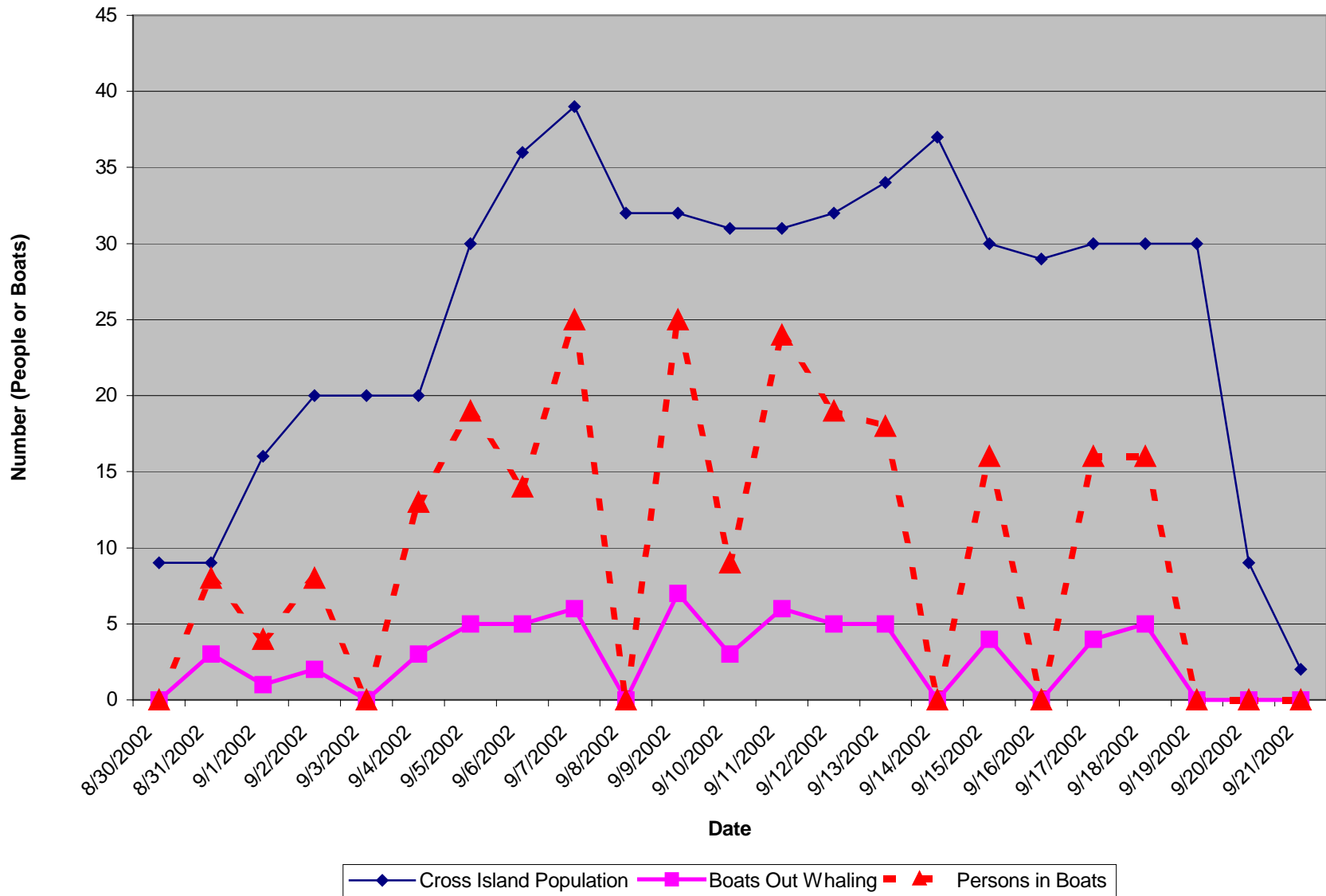
Date	<b>Table 3: Summary of Boat Activity, Cross Island Whaling, 2001</b>																Notes				
	Ahkiviana1		Ahkiviana2		Napageak1		Napageak2		Napageak3		Nukapigak1		Nukapigak2		P.Kittick						
	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time					
03-Sep-01	NA		NA		To CI/3		To CI/3		To CI/2		To CI/5		To CI/5		NA		19 people on CI				
04-Sep-01	NA		NA		No Apparent Scouting												NA		19 people on CI		
05-Sep-01 tow 7:31?	NA		NA		5	14:54	4	14:53	No Apparent Scouting		4	15:09	5	15:09	NA		19 people on CI Harvest/tow 5:40 PM				
06-Sep-01	To CI/4		To CI/4		Butcher		Butcher		To NQT/2		6	5:22	Butcher		To CI/4		30 people on CI				
07-Sep-01	4	10:08	4	10:08	4	9:45	3	10:08	From NQT/3		4	12:57	3 or 4	11:45	4	13:17	33 people on CI				
08-Sep-01	4	12:10	4	12:10	4	11:42	3	11:30	Weather		5	11:52	Disabled		4	11:36	35 people on CI				
09-Sep-01	5	10:32	5	11:08	3	9:08	4	9:47	Weather		4	9:18	4	9:19	4	9:58	35 people on CI				
10-Sep-01 tow 6:57	5	16:47	4	16:47	3	16:44	3	16:31	Support only		4	17:05	6	16:59	3	14:14	35 people on CI Harvest/tow 3:44 PM				
11-Sep-01	Butcher		To NQT/2		Butcher		Butcher		Butcher		Butcher		Butcher		Disabled		31 people on CI				
12-Sep-01	Weather		From NQT/2		Weather		Weather		Weather		Weather		Weather		Disabled		31 people on CI				
13-Sep-01	5	8:01	5	7:50	3	9:55	3	10:44	Support only		4	7:55	4	13:00	Disabled		31 people on CI				
14-Sep-01	Weather		Weather		3	9:02	Disabled		Weather		Weather		To Westdock/3		4	4:54	30 people on CI				
15-Sep-01	5	4:22	5	4:22	3	7:06	Disabled		Weather		5	5:01	In Repair		4	8:12	30 people on CI				
16-Sep-01	Weather		Weather		Weather		To Westdock/2		To Westdock/2		Weather				Weather		30 people on CI				
17-Sep-01	Weather		Weather		Westdock trip		To NQT/1		To NQT/1		Weather				Westdock trip		31 people on CI				
18-Sep-01	Weather		Weather		Weather		In NQT		In NQT		Weather				Weather		29 people on CI				
19-Sep-01	Weather		Weather		Weather						3 to 5				7:30		3		7:09		24 people on CI
20-Sep-01	3	3:57	3	3:59	4	4:57					4 or 5				3:32		3		3:09		24 people on CI
21-Sep-01	Weather		Weather		Weather						Weather				Weather		Weather		Weather		24 people on CI
22-Sep-01 tow 7:50?	3	11:44	3	11:24	3	10:45					4				10:17		3		10:57		24 people on CI Harvest/tow 1:42 PM
23-Sep-01	Butcher		Butcher		Butcher						From NQT/2				Butcher		Butcher		Butcher		25 people on CI
24-Sep-01	Weather		Weather		Weather						Weather				Weather		Weather		Weather		25 people on CI
25-Sep-01	Weather		Weather		Weather						Weather		Weather		Weather		Weather		25 people on CI		
26-Sep-01	To NQT/4		To NQT/4		To NQT/4						To NQT/3		To NQT/6		To NQT/4		To NQT/4		25 people		
NOTES	See text for discussion of other vessel activity, or qualifications on entries above.																				
	"Weather" indicates that conditions were deemed by whalers to be too marginal for productive scouting. See discussion on test.												SHADED cells are boats potentially out whaling								
	Travel days (not primarily devoted to scouting for whales) indicated by "To" or "From" with an indication of the number on board.												GPS Track NOT Collected								
	For whale scouting days, "Crew" is the number of people that went out in a given boat. "Trip" is the duration (hours:minutes) for a daily trip.												GPS Track Collected								
	On days whales harvested, see individual boat daily reports for duration of scouting versus duration of tow.												09/05 Partial tracks: Napageak1 & Napageak2								

Date	Table 4: Summary of Boat Activity, Cross Island Whaling, 2002																		Notes								
	Ahkiviana1		Ahkiviana2		Ahkiviana3		Napageak1		Napageak2		Napageak3		Nukapigak1		Nukapigak2		Nukapigak3										
	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time	Boat Crew	Trip Time									
8/30/02	Still in Nuiqsut						To CI/3		To CI/3		To CI/2		Still in Nuiqsut		Still in Nuiqsut		Still in Nuiqsut		9 people on CI								
8/31/02							2	10:18	3	10:21	3	10:18							Scouting/small whales								
9/01/02							4	3:42	To WD w/3		No Scouting		Try for CI/4		To CI 5/6				16 people on CI								
9/02/02							4	7:35	4	7:40	No Scouting		To CI/3 or 4		No Scouting				20 people on CI								
9/03/02							Weather																		20 people on CI		
9/04/02							4	3:09	3	1:57	No Scouting		3	3:10	6	3:10			20 people on CI								
9/05/02							To CI/4		To CI/4		To CI/3		3	10:43	3	10:58			3	10:43	4	10:42	6	10:30	30 people on CI 1 struck & lost, 1 taken		
9/06/02	3	10:55	3	10:44	Support Vessel		3	13:45	3	13:50	2	13:07	To NQT 4/3		Butcher		36 people on CI 2 NQT vessels in										
9/07/02	6	4:40	5	4:37			3	5:21	3	4:56	2	4:05	To CI/3		6	4:52	39 people on CI										
9/08/02	Weather																		32 people on CI 2 ves out, 1 ves in, 2 ACS								
9/09/02	4	12:07	5	11:57	Support		3	10:42	2	11:07	2	7:12	4	12:05	4 or 5	12:10	32 people on CI										
9/10/02	3	1:52	3	5:15	Remodel		Disabled		3	6:10	Disabled		West Dock Trip		Rest Day		31 people on CI ACS barge										
9/11/02	5	10:29	4	10:24	3	10:34			3	10:28	5	10:28	4	10:22	31 people on CI												
9/12/02	5	11:34	2	7:28	West Dock Trip				3	12:55	Unreliable		3	11:07	6	6:15	32 people on CI 1 whale struck & sunk										
9/13/02	4	9:32	Disabled		Weather		3	8:12	4	8:44	5	8:45	To CI/2		2	4:11	34 people on CI 1 whale harvested										
9/14/02	Butcher						West Dock Trip		Butcher						37 people on CI 1 NQT vessel in												
9/15/02	5	9:59	Disabled		Weather		3	9:36	3	9:20	Unreliable		5	8:21	ToNQT/2		30 people on CI whale struck & sunk 1 NQT ves out, ACS										
9/16/02	Weather				Weather			West Dock Trip		Weather			In NQT		29 people on CI												
9/17/02	5	5:12			West Dock Trip		3	5:00	3	5:00			5	4:58	To CI/2		30 people on CI sunk whale found/towed										
9/18/02	3	4:04	3	4:04	Weather		2	3:55	To NQT and back w/3-10:53		Disabled		5	8:03	3	7:07	30 people on CI 1 <sup>st</sup> sunk whale found										
9/19/02	Butchering & waiting for 2 <sup>nd</sup> "stinker" whale																		30 people on CI sunk whale towed/ACS								
9/20/02	To NQT 3/5		To NQT 3/0		To NQT 3/4		Pack		Pack		To NQT/2		To NQT/9		To NQT/2		9 people on CI most boats leave										
9/21/02	Tow AA2 from Oliktok Point		Towed by AA1 from Oliktok		In NQT		To NQT/?		To NQT/?		In NQT		In NQT		In NQT		2 people on CI (polar bear researchers)										
See text for discussion of other vessel activity, or qualifications on entries above.															SHADED cells: boats potentially whaling – see text												
"UNK" indicates that the information is not available. It is not known if whaling took place on 9/01 or 9/02.															GPS Track NOT Collected												
"Weather" indicates that conditions were deemed by whalers to be too marginal for productive scouting. See discussion in text.															GPS Track Collected												
Travel days (not primarily devoted to scouting for whales) indicated by "to" or "From" with an indication of the number on board. A slash ("/") indicates uncertainty in this number or a change during the trip. For whale scouting days, "Crew" is the number of people that went out on a given boat. "Trip" is the duration (in hours:minutes) for a daily trip. On days whales are harvested, see individual daily boat reports for duration of scouting versus duration of tow.															Some GPS tracks are partial, some "non-whaling" GPS tracks were collected (see daily boat report forms)												

**Figure 7: Cross Island Population, 2001**



**Figure 8: Cross Island Population, 2002**



boats scouting on each of these 15 days was 5, with an average of 4.33 boats. The average boat crew was 3.6 people, with a range of 2 to 6 people. Whales were struck an average of 13.4 miles from Cross Island. An average scouting trip lasted 8 hours, 12 minutes, with a median of 8 hours, 3 minutes. The range was 1 hour, 57 minutes to 13 hours, 7 minutes. The total effort on the water was about 532 boat-hours. These time estimates include the same components as for 2001. Similarly, a detailed breakout of such separate activities is not yet available.

### *Whaling and Boat Crew Characteristics*

The definitions of, and relationships between, “whaling crew” and “boat crew” have been discussed above. For 2001 and 2002, the number of people who actually manned each boat while whaling (and manned is the proper term on Cross Island, as few total crew members were women) varied for different whaling crews, and could also differ from day to day. A whaling boat normally requires a minimum of three crew members – a driver, a harpooner, and a person in charge of the float – although boats will sometimes go out with only two crew members. In 2001, all Cross Island whaling boats went out with at least three crew members. The maximum number in a Cross Island whaling boat in 2001 was six crew members. The boats of one crew most commonly (63 percent of their trips) had three crew members in a boat, with more on all other scouting trips. Boats of two crews seldom had fewer than four (78 percent of the time). The fourth crew averaged 3.56 crew members per trip. A number of factors were advanced by whalers to explain their boat crew composition. For example, when conditions were rougher or more marginal, or on days when a captain felt a greater need for speed than other days, he would go out with fewer crew members in each boat. When conditions were optimal or when a captain wished to act more in support of other boats rather than to more aggressively seek a first strike, he may take more crew members in a boat. Those crews with younger crew members not yet fully proficient in the skills required for whaling tended to be larger, to facilitate the transmission of whaling knowledge. When a crew member slept late, he was left on shore. None of these relationships or reasons was determinant, however. Many interacting factors affected how many crew members went scouting in each boat on any given day.

The “typical” whaling crew on Cross Island in 2001 started with about five crew members per boat used by that whaling crew. Generally each whaling crew would have three crew members per boat who would be expected to go out with that boat each whaling day. Such crew members would be adult males (21+ years old) or responsible young adults (mature teenagers). The two “extra” crew members ranged widely in their characteristics. Some young (perhaps as young as 8 to immature teenager) crew members usually went out in the boat, while others usually did not. Adult crew members usually did go out in the boat whaling. Some crews had one or two adults who were principally “support” crew members and did not usually go out scouting. These adults were nonetheless important crew members.

In 2002, all crews had a majority of adult members, but differed in the age of the youngest member and the ratio of older to younger members. Two crews had no members younger than a high school student, while a boy of 13 was a member of the third. For all crews, “mature adults”

(over the age of 25) only narrowly outnumbered other crew members (by only 1 or 2). Kinship and kin relations were clearly important for the composition of all three crews, but differed in the way they were expressed in each crew. One crew was composed of more “immediate” family, with in-laws perhaps more important for another, and less immediate and friendship relationships were important for the third.

Crews again differed in the number of people who actually manned the boat while whaling. The boats of one crew again seldom went out with more than 3 crew members (only 14 percent of their trips). Another crew most commonly had 4 or more crew members per boat (87 percent of the time). The third crew was more variable in this regard. Generally, female crew members only went in the boat when the captain deemed there was space available. Depending on conditions and intuition, a whaling captain may desire to take as few crew members as possible (to have a light, fast boat) or as many extra as possible (to have as many eyes watching for whales as possible). As discussed above, many factors interact in each whaling captain’s decision on boat crew size.

Unlike 2001, when all Cross Island whaling boats went out with at least three crew members, in 2002 one boat commonly (3 of 5 trips) went out with two. This boat was a special case, as it was an 18-foot Lund and the crew carried only a harpoon and a float (no bombs). This boat generally stayed close to its whaling captain’s boat and appeared to be a way for its crew members to acquire direct, firsthand, whaling experience in the “skill positions” of driver and harpooner. Other whaling boats also at times went out with only two crew members, but not often (5 of 32 trips). Some boats never went out with fewer than 3 crew members (27 total trips). Thus, the typical case for all boats, 56 of the 64 whaling trips made, was for crews to be three or larger. The maximum number in a Cross Island whaling boat was six crew members, although that was relatively uncommon (5 of 64 trips). Crews of 3 to 5 were most common.

Two whaling crews had an “excess” of crew members to man their boats while whaling. The third whaling crew was minimally manned until they experienced engine problems that disabled one (and for a time two) of their boats. Generally, each boat would have three or four crew members per boat who would be expected to go out with that boat each whaling day. Such crew members would be adult males or responsible young adults. The “extra” crew members ranged widely in their characteristics. Some young crew members usually went out in the boat, while others usually did not. Adult crew members usually did go out in the boat whaling. Some crews again had one or two adults who were principally “support” crew members and did not usually go out whaling. These adults were nonetheless vitally important crew members.

### *Whaling Effort (Boat Days)*

For a variety of reasons (mainly mechanical or structural problems), only five of the seven boats fielded by crews in 2001 whaled on a regular basis, and one of those five also missed part of the season while being repaired. Such variability was reported to have been a normal part of the whaling season in the past (personal communication from Nuiqsut whalers 2001), although some boats may have experienced more problems in 2001 than “normal.”



Of the 24 days that composed the Nuiqsut whaling season in 2001, at least one boat scouted for whales on 12 different days. Different numbers of boats scouted for whales on each of these days. A “boat day” is defined as one boat scouting for whales for any amount of time during one 24-hour day. In 2001, a total of 57 boat days were expended during the 12 days on which scouting activity took place. Whaling did not take place on 12 days. Of these 12 days, 2 were devoted to butchering and were not available for whaling (except in the most favorable of circumstances, for a limited number of boats – on one of the whaling days only one boat did go out while others were butchering). The 2 days spent in transit to and from Cross Island also cannot be considered as fully available for whaling. Weather prevented scouting for whales on 8 days. Reasons other than weather kept some boats from whaling on other days (predominately need for repairs), and sometimes a boat chose not to whale on an otherwise suitable day. Table 3 above presents this information.

For the 2002 Cross Island whaling season, each crew had two primary whaling boats, and a third boat as discussed above. For two crews, the third boat was primarily for support and actively whaled only one or two days. For the remaining crew, the third boat whaled regularly until its motor became unreliable on September 9, about halfway through the season. Of the six primary whaling boats, three (one from each crew) were disabled for at least three whaling days each. Three boats had the opportunity to whale every day that conditions were appropriate while they were at Cross Island. This variability has been a normal part of the whaling season in the past, including 2001 (personal communication from Nuiqsut whalers 2001).

Of the 23 days that composed the Nuiqsut whaling season in 2002, at least one boat scouted for whales on 15 different days. As in 2001, different numbers of boats scouted for whales on each of these days. A total of 65 boat days were expended during the 15 days on which scouting activity took place in 2002. Whaling did not take place on 8 days. Of these 8 days, 1 was devoted to butchering and not available for scouting, except in the most favorable of circumstances for a limited number of boats. The two days spent in transit to and from Cross Island also cannot be considered as fully available for whaling. Two other days were spent butchering and preparing to leave Cross Island after Nuiqsut’s full quota of whales was taken and scouting for whales had ceased. Only 3 of the 23 days were considered unsuitable for whaling because of weather. Weather or sea conditions did prevent the “third” boat of some crews from whaling on days when their two primary boats did go out. Reasons other than weather kept some boats from whaling on other days (mainly need for repairs), and sometimes a captain chose not to whale on an otherwise suitable day. Table 4 above presents this information.

Some generalizations about the factors influencing these decisions are possible, although no systematic model was developed. If the weather is suitable for successful scouting of whales (slight or no wind, slight or no chop, good visibility), all boats physically able to whale will go out. Some captains will go out in more marginal weather than others, and such decisions are quite situational in nature. A crew that has not been out recently seems more likely to go out in marginal weather than those crews that have been out more recently. Crews that have not harvested whales seem more likely to go out whaling than those crews that have landed whales. A captain may call a “rest day” for a crew that has been working hard, especially if conditions are marginal. Trips on days with marginal weather conditions tend to be shorter than on days with better weather. After the harvest of a whale the butchering must reach a well-defined point

before whaling can resume. For Nuiqsut whalers this is generally the next day for all crews other than that which took the whale. The crew which takes a whale has more responsibilities in terms of butchering, but can also fully discharge these duties during the day after the whale is landed. All crews generally go whaling in suitable weather and any deviation from that pattern has an explanation.

### *“Non-Whaling” Boat Activity*

In addition to searching for whales, several Nuiqsut whaling vessels made trips between Cross Island and West Dock on a fairly regular basis. These trips were to pick up packages and supplies, or to do other errands. Generally, after a whale is butchered, one of the harvesting crew’s boats made the trip between Cross Island and Nuiqsut to transport the “fresh kill” meat and muktuk to feed the village. Few, if any, other boats went to Cross Island from Nuiqsut other than the whaling boats. There were visitors of other sorts in 2001. In 2002, four different (“non-whaling”) vessels from Nuiqsut did make visits to Cross Island during the whaling season. The people from these boats generally stayed a day or two before returning to Nuiqsut, and helped with whatever tasks needed to be done (especially the butchering of the second whale). One “visitor” joined a crew and stayed for the remainder of the whaling season.

This project focuses explicitly on Cross Island whaling activity, so little attempt was made to collect information on preparation, support, or other crew member activities that occurred elsewhere (primarily in Nuiqsut, one would assume). Similarly, although whaling support activities from non-Nuiqsut sources (mainly oil and gas industry support) were quite evident, both in terms of island infrastructure as well as the frequency of Alaska Clean Seas (ACS) barge activity, they were not logged in detail. During the 24 day whaling season of 2001, one or more ACS barges landed on Cross Island at least nine times, primarily to provide logistical support to the whalers (including demobilization). It can be assumed that ACS barges also landed on Cross Island at least one day to mobilize the generator, bring over the loader, and other support materials. Thus, on average, at least one ACS barge landed on Cross Island just under every 3 days during the 2001 season. In addition, there were other visitors to Cross Island, ranging from visits from oil and gas facilities (most often in conjunction with or in addition to other activities such as training) to other passersby (such as adventurers from Greenland in 2001). During the 2002 (23-day) whaling season, one or more ACS barges landed on Cross Island at least four times, primarily to provide logistical support to the whalers. In addition, at least one (and probably several) ACS barges landed on Cross Island on 8/28 in order to mobilize the generator, bring over the loader, and other support materials. ACS barges of course were used to demobilize these items after the Nuiqsut whalers left. This is an average of 4 to 5 days between barge visits. There were also two phones on the island (which, like the generator, operate only during Nuiqsut’s whaling season), as well as a FAX. Thus, important business need not be put on hold while corporation and other officials are whaling on Cross Island. Contacts and interactions through telephone, FAX, or non-whaling non-Nuiqsut vessel were not fully documented, and such information was only collected as contextual background.

## *GPS Information*

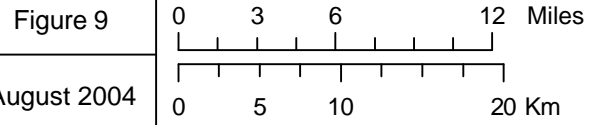
In terms of GPS locational information, all whaling crews agreed to carry and use GPS units. The level of information obtained varied from boat to boat, as discussed above, but for most boats and for all crews at least partial tracking information (where most boats went each day) was obtained, along with the locations where whales were observed (or struck). In Tables 2 and 3 (above), the days that boats went out whaling are shaded. Dark shading indicates that a GPS track was not obtained for that day from that boat. Light shading indicates that a GPS track was obtained from that boat for that day. Examples of GPS tracks for individual boats on a single day have been presented above (Figures 2 and 3) and complete tracks for both seasons are available as appendices to the annual reports, which are attached to this report as digital appendices.

All electronic track files have been transferred to MMS and the Native Village of Nuiqsut. These electronic tracks are in several forms. As originally collected, the tracks must be viewed with Garmin's proprietary software "MapSource" ("mps" format for 2001-2003, but Garmin modified their format to "gdb" format). These tracks were exported as "DXF" files so that the cartography department of BPXA could import them into their system and produce better quality figures. All mapped figures in the body of this report have been produced by BPXA, as a contribution to improve the report. The figures in the electronic appendices are, for the most part, direct products produced with MapSource. All track and waypoint information is available from MMS in either MPS (MapSource) or DXF format (and both are included on the Final Report CD). DXF format can, if desired, be imported into a number of GIS programs and saved as .E00 (ArcGIS) format.

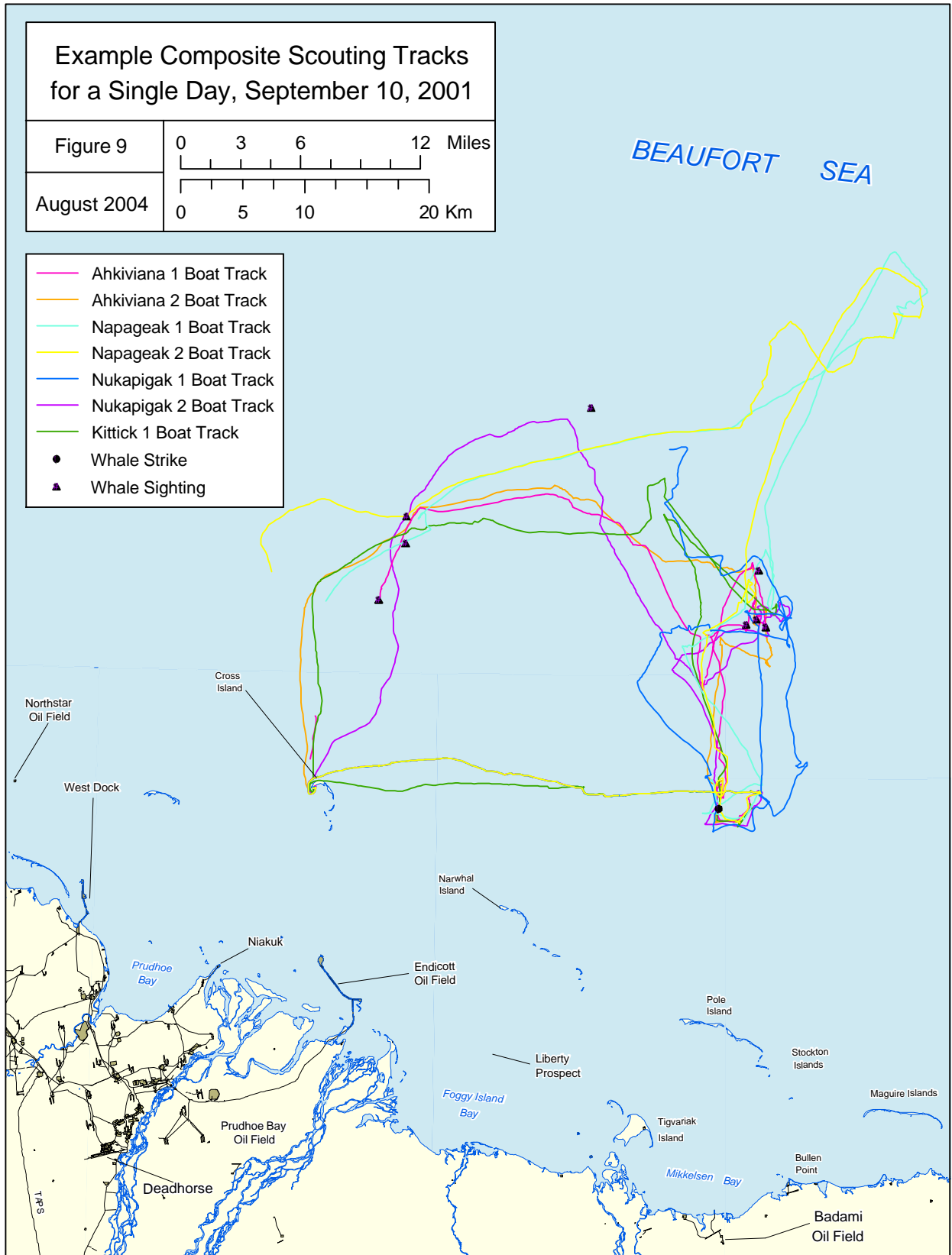
For 2001, there was a total of 57 different whaling "boat days" (on 12 different days) for which GPS tracks could have been collected. GPS tracks were collected for 47, or 82 percent, of these. Of the 10 whaling "boat days" (18 percent of the total) for which GPS tracks were not collected, 3 were for days before the observer was on Cross Island. Further, the remaining 7 whaling boat days for which GPS information was not collected were all early in the research (the first third of the whaling season). From September 10 to the end of the 2001 season GPS information was collected for all whaling trips. For 2002, there were 65 different "boat days" (on 15 different days) for which GPS tracks could have been collected. GPS tracks were collected for 50 boat days, or 77 percent of all 65 boat days. Of the 15 "boat days" (23 percent of all potential boat days) for which GPS tracks were not collected, 10 were for days before the observer was on Cross Island. Of the 5 boat days after 9/05 for which GPS information is lacking, 4 are for the same boat. As discussed above, this boat generally accompanied a second boat for which GPS information is available. The other case was for a boat that had come from Nuiqsut without a GPS unit that went out to assist in towing a whale.

There are several ways to use the collected GPS to describe, compare, and otherwise analyze Cross Island whaling activities. While the primary purpose of this project so far has been the collection of this information, this report can make some suggestions in this regard. Displaying all GPS tracks for all boats whaling on a single day, combining individual tracks on a daily basis, provides a visual measure of the cooperation among boats from the same and different crews. Examining such figures for different days is a quick way to compare day-to-day variability, both within and between years. Examples of such daily summary figures are presented in Figures 9 and 10 for 2001 and 2002, respectively. Figures for all days on which at least one boat went

### Example Composite Scouting Tracks for a Single Day, September 10, 2001

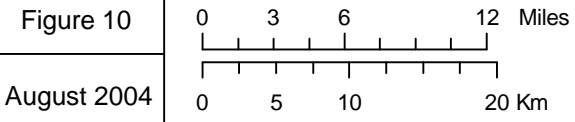


- Ahkiviana 1 Boat Track
- Ahkiviana 2 Boat Track
- Napageak 1 Boat Track
- Napageak 2 Boat Track
- Nukapigak 1 Boat Track
- Nukapigak 2 Boat Track
- Kittick 1 Boat Track
- Whale Strike
- ▲ Whale Sighting



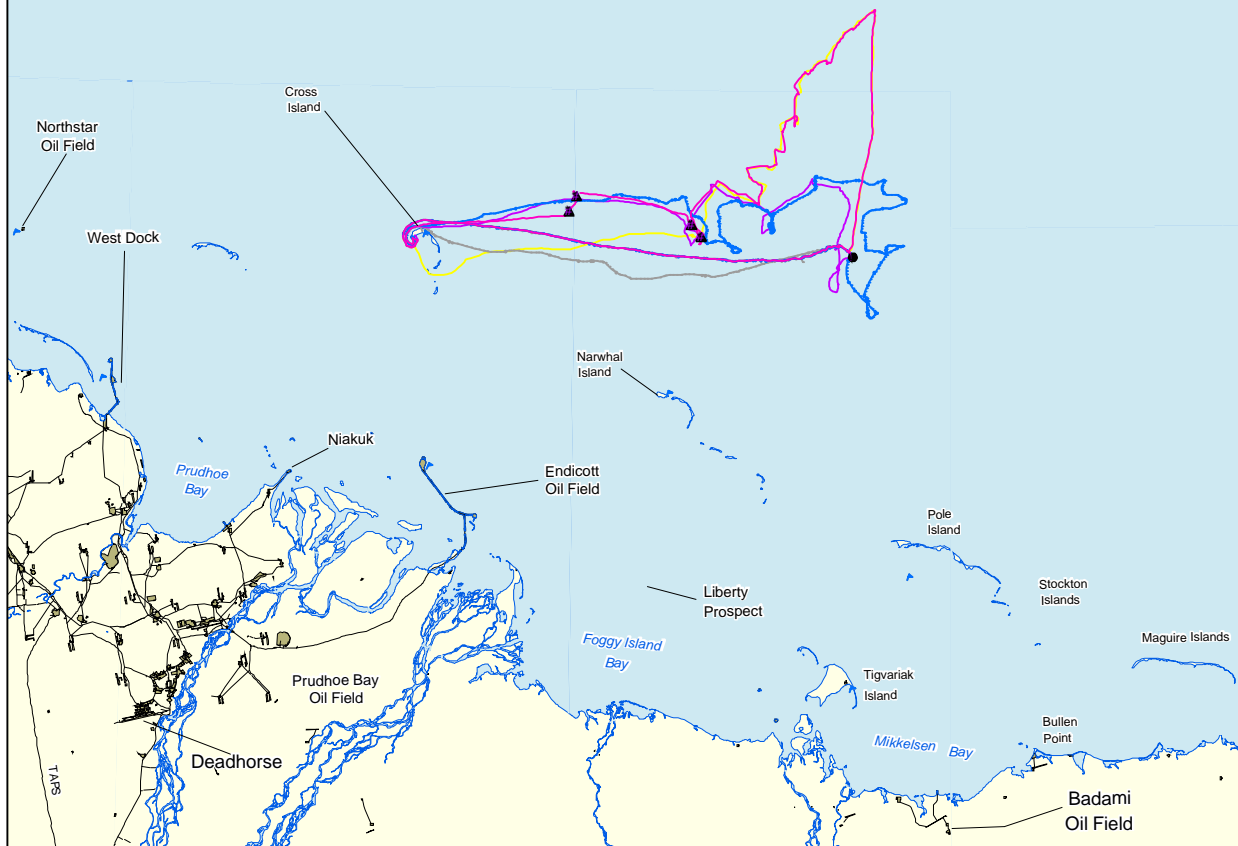
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### Example Composite Scouting Tracks For a Single Day, September 13, 2002



BEAUFORT SEA

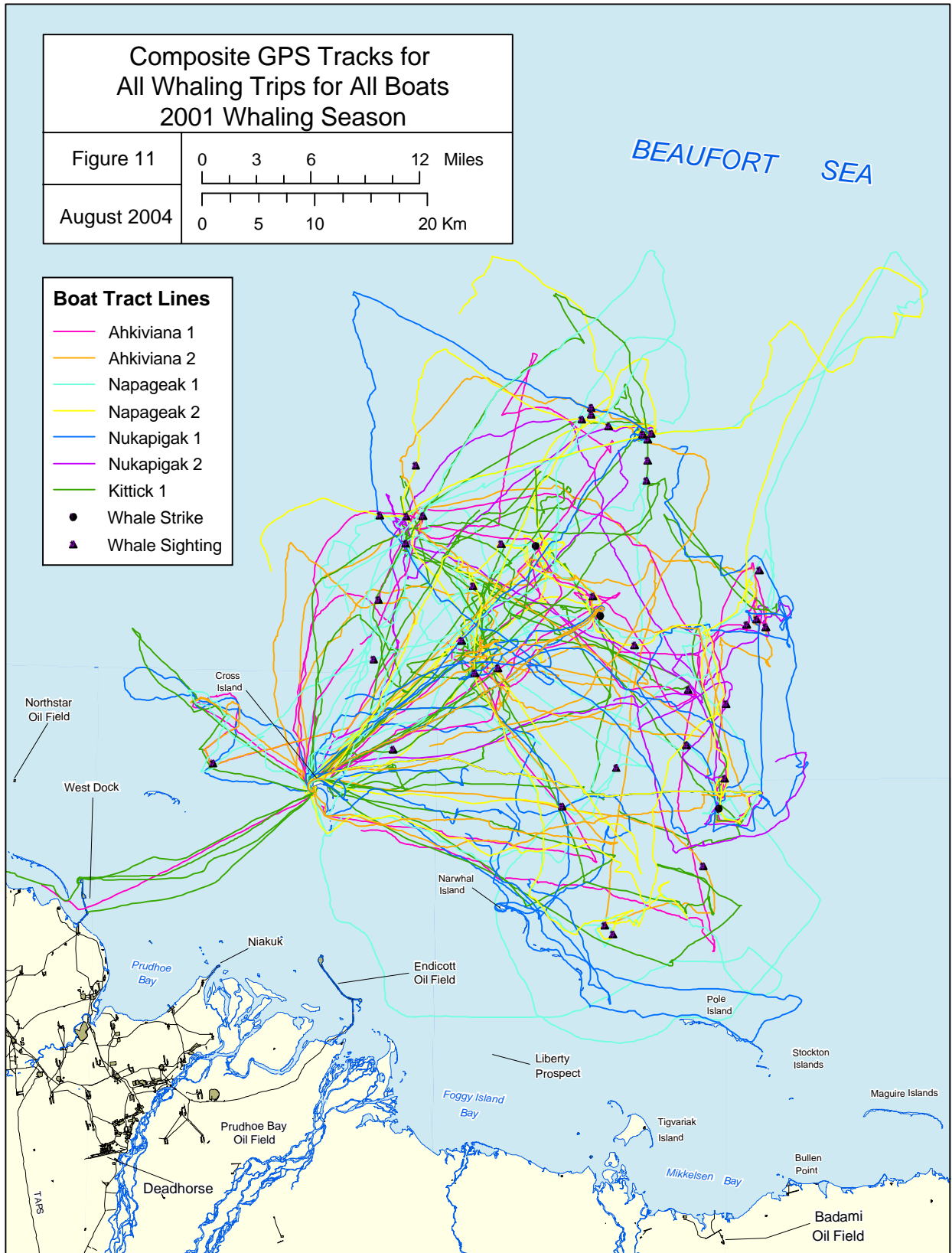
- Ahkiviana 1 Boat Track
- Napageak 2 Boat Track
- Nukapigak 1 Boat Track
- Nukapigak 2 Boat Track
- Nukapigak 3 Boat Track
- Whale Strike
- ▲ Whale Sightings



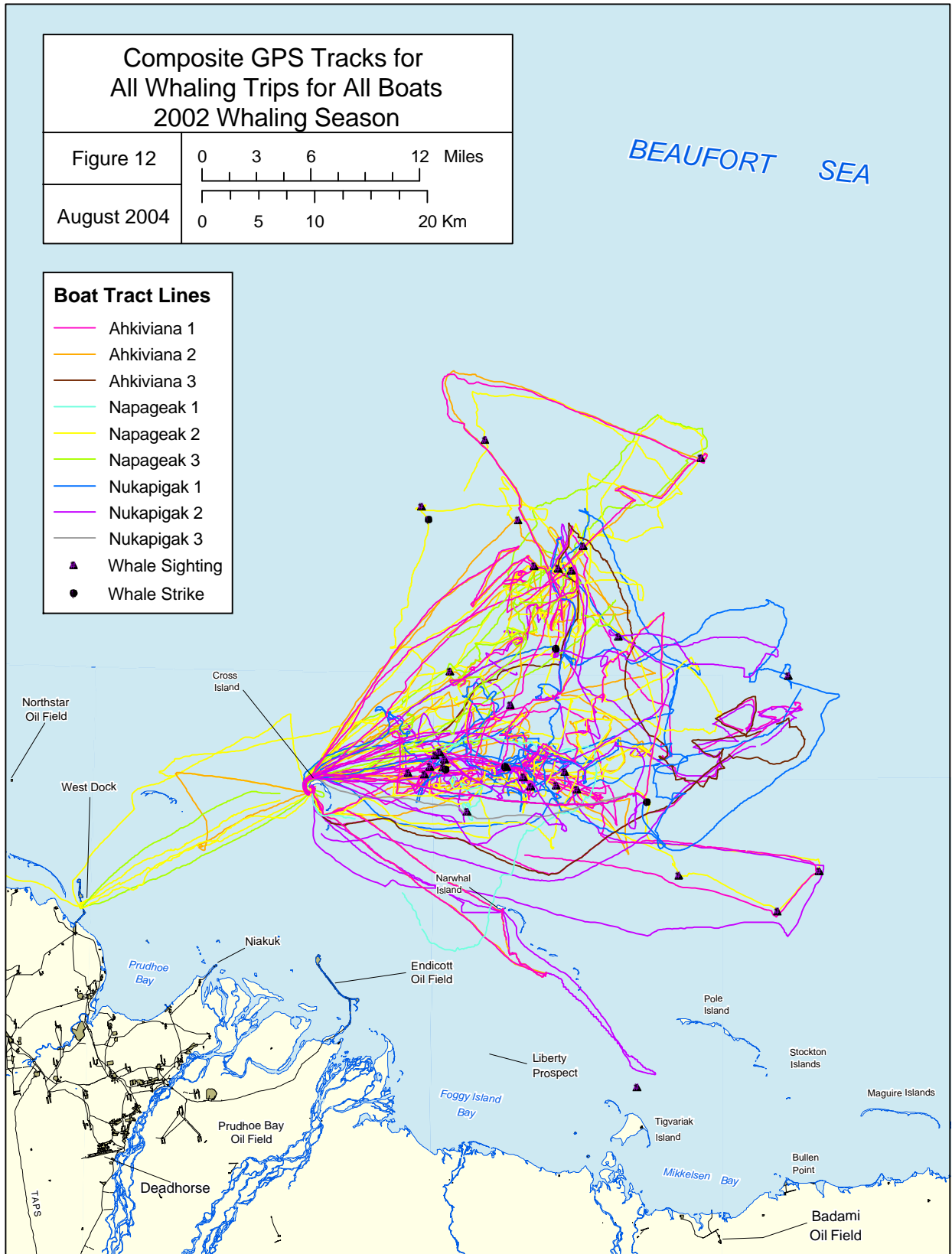
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scouting for whales in 2001 and 2002 are presented in the electronic appendices to this document (files “Days2001.zip” and “Days2002.zip”) and will be incorporated into the annual reports for 2003 and future years. Similarly, GPS tracks can be aggregated and displayed on an annual basis. Composite maps of all daily GPS boat tracks (scouting trips) for 2001 and 2002 are presented in Figures 11 and 12, respectively. A map displaying all daily tracks for all boats for all three documented whaling seasons (2001, 2002, 2003), coded by year, is presented in Figure 13. It clearly shows the year-to-year variability in distance traveled to find and harvest whales, both in terms of “total daily round trip” as well as “straightline distance from Cross Island.” The density of tracks also is an indicator of the concentration of whales in certain areas, or at least of the concentration of scouting effort in certain areas. This is especially useful in conjunction with displays of marked whale sightings.

Figures 14 and 15 display this point type of GPS information in a comparative way – all significant waypoints noted by Nuiqsut whaling crews in 2001 and 2002 are shown, respectively. Tables 5 and 6 list these points and their characteristics. Figure 16 displays all whale sightings for 2001, 2002, and 2003 on the same map. It codes each year by color, and so is a vivid comparison of the three years. Not all of these points were actually marked by crews while they were out on the water. Some points were located on GPS tracks on the basis of the recollection of a person looking at the track as displayed on the computer screen. That is, the locations of all whale sightings were not marked by the whalers, nor were all unmarked whale sightings later described to the researcher. Duplicate points (whether marked by the same or different boats) were eliminated as far as possible for these figures and are not displayed. The daily boat report forms (and individual boat GPS files) thus include some additional likely whale sightings that are not included in the tables, but these additional points are either duplicative or based on whalers’ general accounts, and not specific locational information tied to daily GPS vessel tracks. It is almost certain that not all whale sightings by all crews are included on the daily report forms, although it is more likely that most individual whales (or group of whales) sighted are represented by at least one sighting by one of the crews which observed it. All of the individuals in a group of whales may not be represented as such, since it was not always clear how many whales were in a group and such groups were marked with a single waypoint. This was especially true for multiple blows observed at a distance. Multiple sightings of the same whale were usually reported as such by most crews, but most crews only marked a single position for a whale unless they followed it for a significant period of time and/or struck it. Different crews commonly marked the position of the same whale, so the number of different whales observed would be difficult to determine without an analysis of all points and tracks in relation to each other, which would be a time-consuming process. For this report, as discussed above, the most obvious of such “duplicate” points have not been included in the summary whale observation graphics or tables, so these figures are far from definitive.

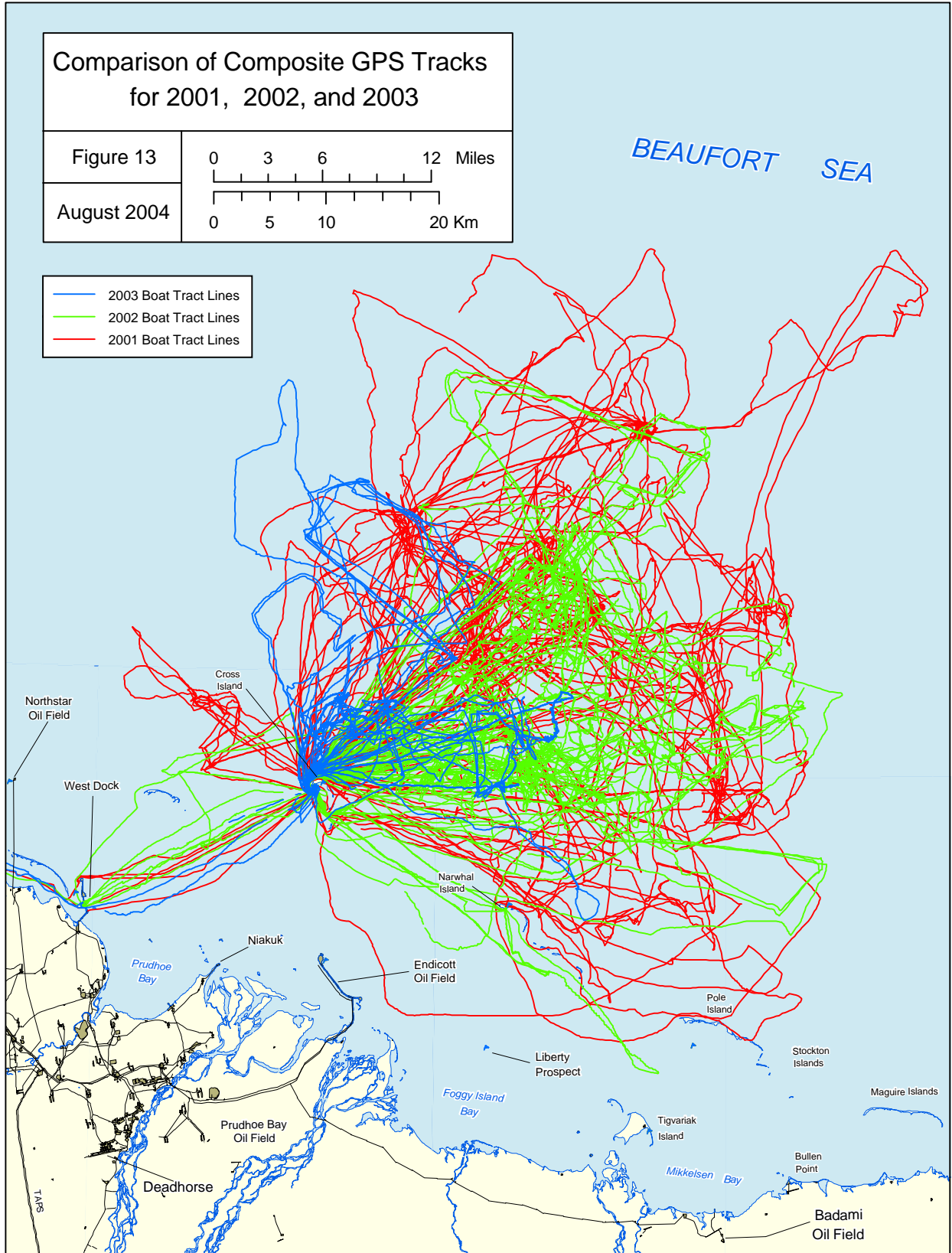
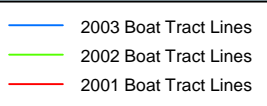
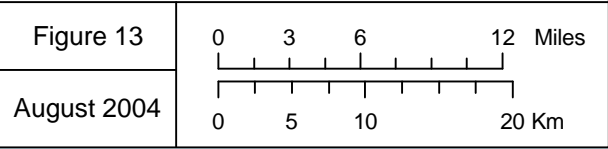


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### Comparison of Composite GPS Tracks for 2001, 2002, and 2003



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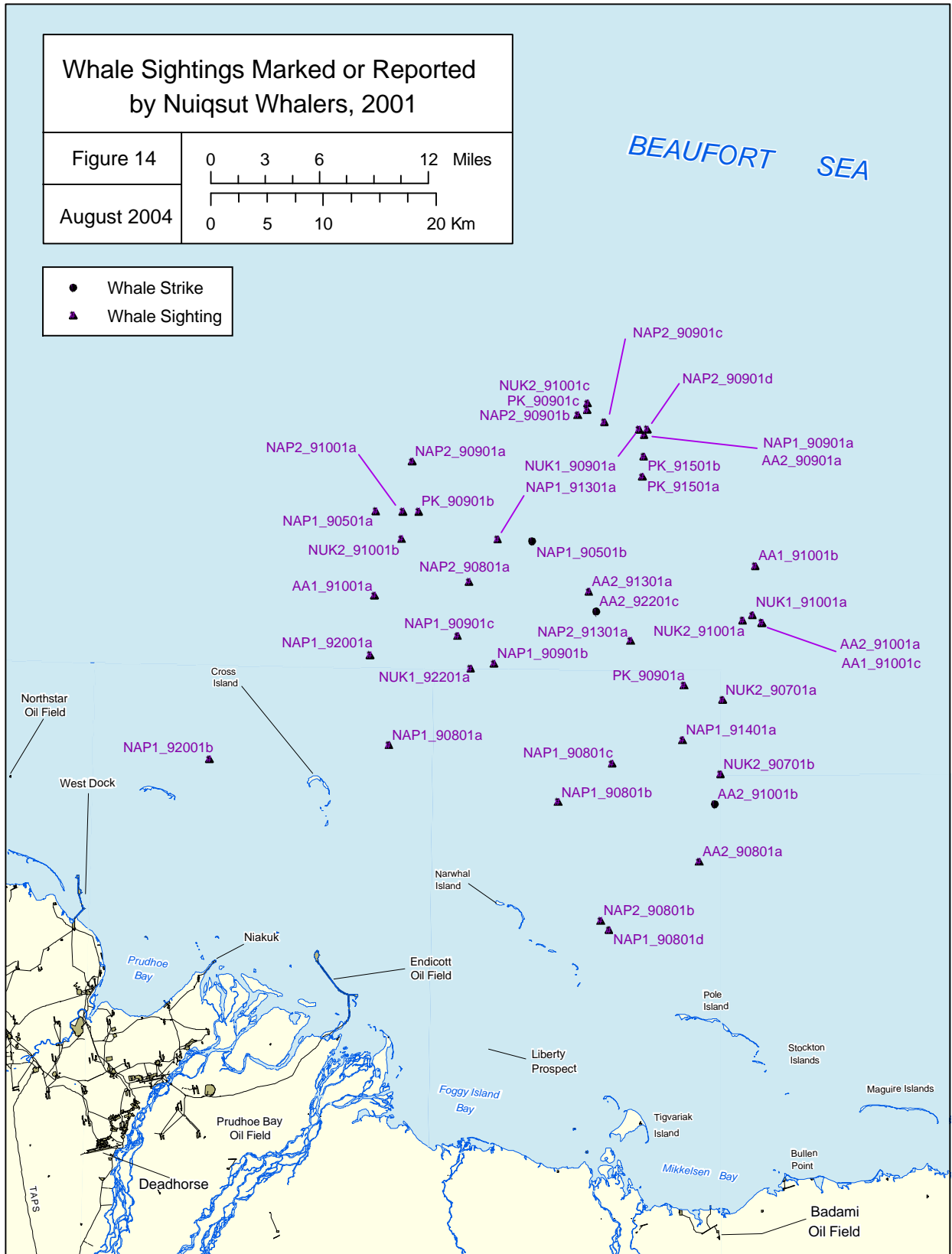
# Whale Sightings Marked or Reported by Nuiqsut Whalers, 2001

Figure 14

0 3 6 12 Miles

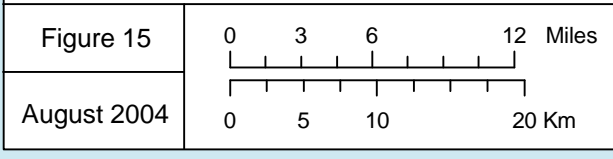
0 5 10 20 Km

- Whale Strike
- ▲ Whale Sighting

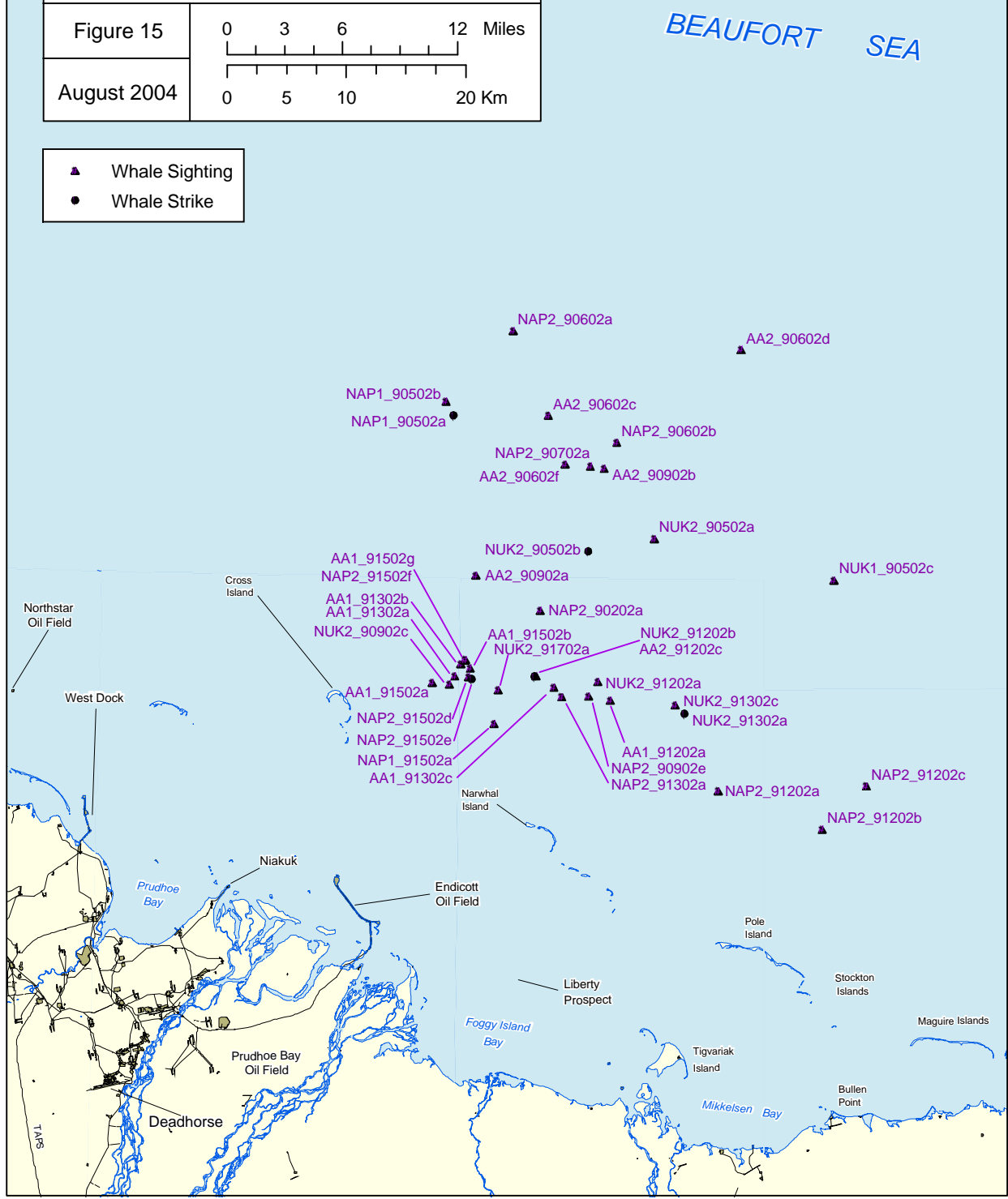


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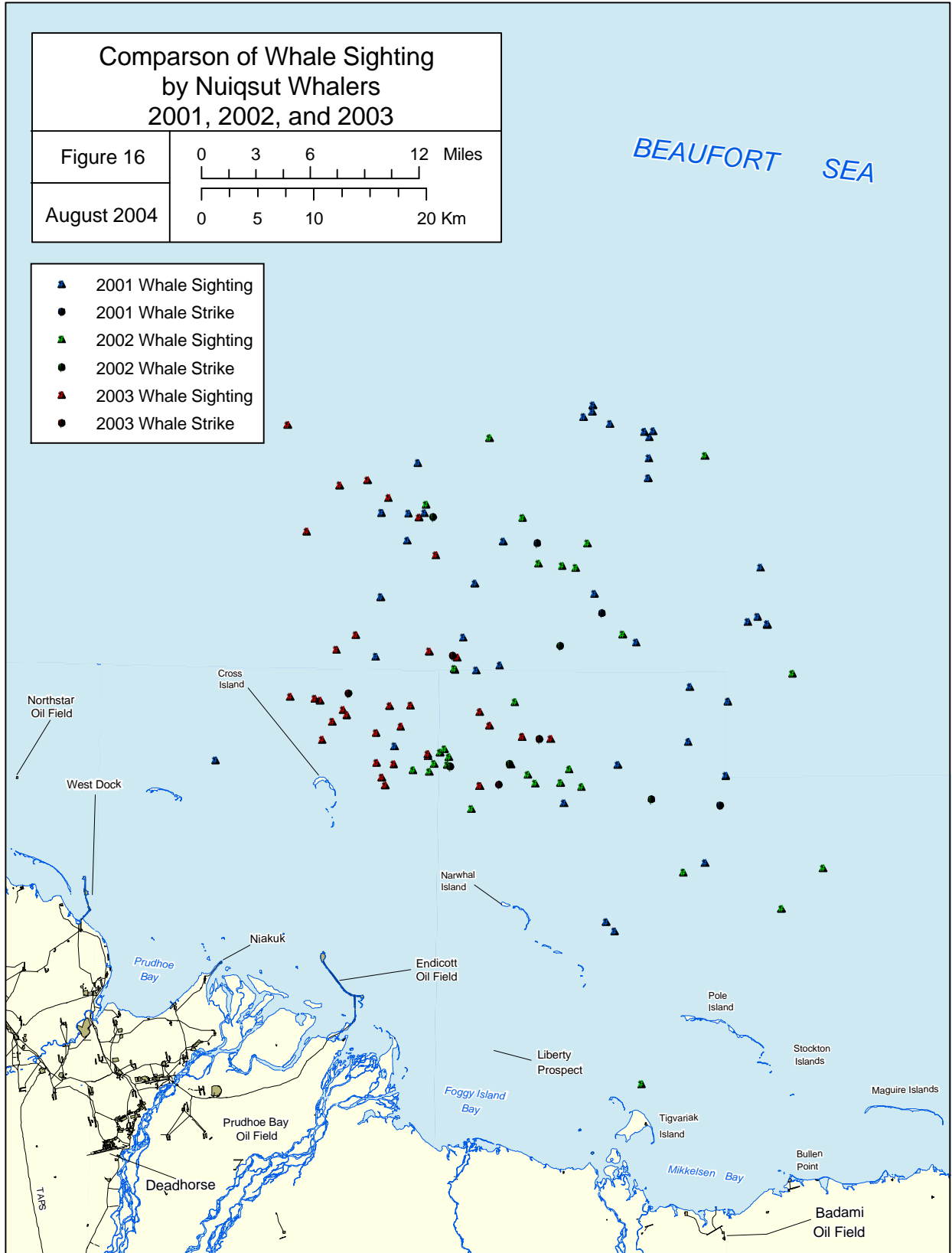
# Whale Sightings Marked or Reported by Nuiqsut Whalers, 2002



- ▲ Whale Sighting
- Whale Strike



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**Table 5: Waypoints Noted by Nuiqsut Whaling Crews, 2001 Cross Island Whaling Season**

Date	Crew	Lat/Long	Point #	Time	Notes
09/05/2001	Napageak1	N70 42 30.7 W147 49 55.9	NAP1_90501a	12:42 PM	No explanation – likely whale sighting
09/05/2001	Napageak1	N70 41 09.1 W147 27 18.5	NAP1_90501b	4:41 PM	Marked at the whale – probably where struck
09/05/2001	Napageak2	N70 41 16.5 W147 23 36.8	NAP2_90501a	5:39 PM	Marked at the whale – probably near start of the tow
09/07/2001	Nukapigak2	N70 33 36.3 W146 59 46.7	NUK2_90701a	11:30 AM	Possible whale sighting
09/07/2001	Nukapigak2	N70 30 02.6 W147 00 01.9	NUK2_90701b	12:07 PM	Possible whale sighting
09/07/2001	Nukapigak2	N70 33 43 W147 16 26		3:47 PM	Where they developed motor problems
09/07/2001	Napageak1	N70 42 05 W147 49 28	NAP1_90701a	NA	Whale sighting (or blow)
09/07/2001	Napageak1	N70 42 07 W147 25 30	NAP1_90701b	1:39 PM	Whale sighting (or blow)
09/07/2001	Napageak1	N70 27 34 W146 55 05	NAP1_90701c	NA	Whale sighting (or blow)
09/08/2001	Napageak1	N70 31 20.1 W147 47 35.0	NAP1_90801a	9:36 AM	Blow or whale
09/08/2001	Napageak1	N70 28 41.5 W147 23 14.1	NAP1_90801b	10:33 AM	Blow or whale
09/08/2001	Napageak1	N70 30 33.2 W147 15 32.3	NAP1_90801c	10:55 AM	Blow or whale
09/08/2001	Napageak2	N70 39 10.5 W147 36 20.4	NAP2_90801a	12:51 PM	Blow/whale OR coordinates from another boat
09/08/2001	Napageak1	N70 22 35.1 W147 15 55.9	NAP1_90801d	3:34 PM	Blow or whale
09/08/2001	Ahkiviana2	N70 25 52.0 W147 03 03.1	AA2_90801a	6:27 PM	Whale sighting – date & time on waypoint incorrect
09/08/2001	Pakotak1	N70 21 17.1 W147 07 28.5		7:28 PM	Probable coordinates of boats meeting before return to Cross Island
09/08/2001	Napageak1	N70 28 28.6 W147 22 15.2	NAP1_90801e	10:38 PM	Blow or whale – same as NA1_90801b
09/08/2001	Napageak2	N70 23 01.3 W147 17 06.8	NAP2_90801b	3:57 PM	Blow/whale OR coordinates from another boat
09/09/2001	Napageak2	N70 44 55.4 W147 44 45.8	NAP2_90901a	1:36 PM	Sighting ?
09/09/2001	Napageak2	N70 47 11.9 W147 20 45.8	NAP2_90901b	3:22 PM	Waypoints NA2_90901b-d represent following the same whale
09/09/2001	Napageak2	N70 46 52.6 W147 16 54.1	NAP2_90901c	3:26 PM	May be more in Whaling Communication Center log
09/09/2001	Nukapigak2	N70 46 49.0 W147 10 47.3		3:37 PM	Farthest point reached this day
09/09/2001	Napageak2	N70 46 31.6 W147 10 39.7	NAP2_90901d	3:45 PM	Probable whale sighting (same area as AA2_90901a)
09/09/2001	Ahkiviana2	N70 46 15.4 W147 11 10.2	AA2_90901a	4:59 PM	Whale – searched area a bit, but soon lost it
09/09/2001	Nukapigak1	N70 44 09.0 W147 19 19.6		5:22 PM	Undocumented
09/09/2001	Nukapigak1	N70 40 02.6 W147 30 31.0		5:42 PM	Boat EAST of this point – coordinates of ?
09/09/2001	Napageak1	N70 46 30 W147 11 53	NAP1_90901a	3:30-5:00	Missed striking whale in this area – not marked
09/09/2001	Nukapigak1	N70 46 30 W147 11 53	NUK1_90901a	3:30-5:00	Missed striking whale in this area – not marked
09/09/2001	Pakotak1	N70 46 30 W147 11 53	PK_90901d	3:30-5:00	Missed striking whale in this area – not marked
09/09/2001	Napageak1	N70 35 17 W147 32 36	NAP1_90901b	C6:54 PM	Whale sighting (or blow)
09/09/2001	Napageak1	N70 35 95 W147 37 53	NAP1_90901c	6:54 PM	Whale sighting (or blow)
09/09/2001	Pakotak1	N70 34 17.1 W147 05 15.1	PK_90901a	12:01 PM	May be blow or sighting – or only reference mark
09/09/2001	Pakotak1	N70 42 31.1 W147 43 42.1	PK_90901b	3:00 PM	May be blow or sighting – or only reference mark
09/09/2001	Pakotak1	N70 47 26.8 W147 19 25.2	PK_90901c	3:18 PM	May be blow or sighting – or only reference mark

**Table 5 (Continued): Waypoints Noted by Nuiqsut Whaling Crews, 2001 Cross Island Whaling Season**

Date	Crew	Lat/Long	Point #	Time	Notes
09/10/2001	Ahkiviana1	N70 38 28.8 W147 49 53.6	AA1_91001a	7:40 AM	May be a sighting
09/10/2001	Napageak2	N70 42 29.9 W147 46 02.0	NAP2_91001a	7:57 AM	Not explained – may be a sighting
09/10/2001	Ahkiviana1	N70 40 00.4 W146 55 01.7	AA1_91001b	10:31 AM	May be a sighting or a reference point
09/10/2001	Ahkiviana1	N70 37 17.3 W146 54 05.2	AA1_91001c	11:51 AM	Probable sighting
09/10/2001	Napageak2	N70 40 06.0 W146 56 29.0	NAP2_91001b	12:40 PM	Ahkiviana1 whale
09/10/2001	Napageak2	N70 38 30.8 W146 56 46.7	NAP2_91001c	12:42 PM	Ahkiviana1 whale
09/10/2001	Ahkiviana2	N70 37 17.3 W146 54 05.2	AA2_91001a	12:51 PM	Whale Ahkiviana1 spotted and chased
09/10/2001	Napageak2	N70 30 53.7 W146 59 34.5	NAP2_91001d	3:19 PM	Ahkiviana2 whale
09/10/2001	Pakotak1	N70 30 31.0 W146 59 31.6		3:31 PM	Not on track – reference point
09/10/2001	Ahkiviana2	N70 28 37.6 W147 00 51.8	AA2_91001b	3:44 PM	Mark for the whale they struck and killed
09/10/2001	Pakotak1	N70 29 21.5 W146 54 56.6		5:16 PM	Not on track – reference point
09/10/2001	Napageak1	N70 29 14.3 W147 15 10.7		6:57 PM	Event during tow
09/10/2001	Nukapigak1	N70 37 39.0 W146 55 26.0	NUK1_91001a	1:15-1:45	Ahkiviana1 whale
09/10/2001	Napageak2	N70 29 18.5 W146 55 27.3	NAP2_91001e	4:19PM	Ahkiviana2 whale
09/10/2001	Nukapigak2	N70 37 23.9 W146 55 112	NUK2_91001c	1:58 PM	Whale sighting (or blow)
09/10/2001	Nukapigak2	N70 41 12 W147 45 069	NUK2_91001a	7:13 AM	Whale sighting (or blow)
09/10/2001	Nukapigak2	N70 47 046 W147 19 023	NUK2_91001b	8:59 AM	Whale sighting (or blow)
09/13/2001	Napageak2	N70 36 25.0 W147 12 58.2	NAP2_91301a	1:39 PM	Possible sighting
09/13/2001	Ahkiviana2	N70 38 44.7 W147 19 01.3	AA2_91301a	2:30 PM	Whale sighting
09/13/2001	Napageak1	N70 41 13.1 W147 32 16.5	NAP1_91301a	3:50-4:00	Possible sighting
09/14/2001	Napageak1	N70 31 39.6 W147 05 28.2	NAP1_91401a	12:57 PM	Possible sighting
09/15/2001	Ahkiviana1	N70 35 47.9 W147 54 01.0		9:24 AM	Not explained – boat may have stopped here
09/15/2001	Pakotak1	N70 44 17.1 W147 11 20.4	PK_91501a	11:11 AM	Possible sighting
09/15/2001	Pakotak1	N70 45 14.2 W147 11 12.4	PK_91501b	11:13 AM	Possibly following whale
09/20/2001	Ahkiviana1	N70 32 28.0 W148 10 01.0	AA1_92001a	1:37 AM	Reference?
09/20/2001	Napageak1	N70 35 37.2 W147 50 28.5	NAP1_92001a	1:22 PM	Possible sighting, but not explained
09/20/2001	Napageak1	N70 30 32.0 W148 13 17.0	NAP1_92001b	1:50 PM	May have seen something, but not on the track

**Table 5 (Continued): Waypoints Noted by Nuiqsut Whaling Crews, 2001 Cross Island Whaling Season**

Date	Crew	Lat/Long	Point #	Time	Notes
09/22/2001	Ahkiviana1	N70 35 03.4 W147 37 02.3	AA1_92201a	10:14 AM	Roughly area of Nukapigak1 sighting/following – reference?
09/22/2001	Ahkiviana2	N70 26 51.2 W147 29 07.0	AA2_92201a	8:48 AM	Reference point ?
09/22/2001	Napageak1	N70 35 26.8 W147 34 36.3	NAP1_92201a	9:59 AM	Nukapigak1 whale chase event
09/22/2001	Napageak1	N70 35 09.0 W147 35 50.1	NAP1_92201b	10:05 AM	Nukapigak1 whale chase event
09/22/2001	Nukapigak1	N70 35 08.8 W147 36 01.8	NUK_92201c	10:08 AM	Area where they found whales and had a chance
09/22/2001	Ahkiviana2	N70 36 00.5 W147 35 08.3	AA2_92201b	10:30 AM	Whale Nukapigak1 had a chance at
09/22/2001	Napageak1	N70 37 06.4 W147 19 39.9	NAP1_92201c	12:36 PM	Ahkiviana2 whale chase event
09/22/2001	Napageak1	N70 38 00.4 W147 18 49.5	NAP1_92201d	1:28 PM	Ahkiviana2 whale chase event
09/22/2001	Napageak1	N70 37 48.1 W147 17 55.7	NAP1_92201e	1:38 PM	Close to AA2_92201c – kill or last strike location?
09/22/2001	Ahkiviana2	N70 37 49.0 W147 17 57.2	AA2_92201c	1:42 PM	Whale Ahkiviana2 found and followed and struck
<p>NOTES: Shaded waypoint number indicates the point was not marked, but was described when the crew reviewed their track            Lack of a time for a waypoint indicates that the track for that day was flawed            Only those unmarked points specifically noted by crew members are included in this table -- others may be noted on daily boat report forms</p>					

**Table 6: Waypoints Noted by Nuiqsut Whaling Crews, 2002 Cross Island Whaling Season**

Date	Crew	Lat/Long	Way Point #	Time	Notes
09/04/2002	Nukapigak2	N70 32 01.9 W147 53 08.1	NUK2_90402a	5:49 PM	Not on track – reference point for Nukapigak1
09/04/2002	Nukapigak2	N70 31 57.8 W147 52 44.1	NUK2_90402b	5:49 PM	Not on track – reference point for Nukapigak1
09/05/2002	Napageak1	N70 42 20.8 W147 42 27.1	NAP1_90502a	9:46 AM	Area of whale strike – where 1st seen or struck
09/05/2002	Napageak1	N70 42 56.6 W147 43 28.6	NAP1_90502b	10:47 AM	Area of whale strike/following
09/05/2002	Nukapagak1	N70 34 56.1 W146 50 27.3	NUK1_90502c	10:14 AM	Whale sighting
09/05/2002	Nukapagak1	N70 31 23.8 W147 50 18.5	NUK1_90502a	6:52 AM	GPS turned on after being off for a short time – unknown significance
09/05/2002	Nukapagak1	N70 27 24.4 W147 10 30.7	NUK1_90502b	8:28 AM	Significance not documented
09/05/2002	Nukapagak1	N70 34 55.9 W147 28 45.6	NUK1_90502d	2:55 PM?	Not on track – very near Nukapigak2 strike
09/05/2002	Nukapigak2	N70 36 48.3 W147 14 54.5	NUK2_90502a	9:38 AM	Saw whale
09/05/2002	Nukapigak2	N70 36 14.0 W147 23 55.0	NUK2_90502b	2:47 PM	Struck whale
09/06/2002	Ahkiviana1	N70 36 52.8 W147 40 25.3	AA1_90602a	11:39	Not explained – reference coordinate for whale chase?
09/06/2002	Ahkiviana1	N70 41 19.4 W147 19 17.6	AA1-90602b	6:48 PM	Reference Point from another boat?
09/06/2002	Ahkiviana2	N70 47 53.9 W147 42 55.5	AA2_90602a	11:25 AM	Coordinates from Napageak2 for whale, AA2 in the area 3:44 PM
09/06/2002	Ahkiviana2	N70 36 49.6 W147 44 23.3	AA2_90602b	11:28 AM	Reference point from Napageak2 boat – significance not documented
09/06/2002	Ahkiviana2	N70 42 21.5 W147 29 30.9	AA2_90602c	1:04 PM	Whale, a little bigger than AA2_90602f
09/06/2002	Ahkiviana2	N70 45 21.4 W147 03 05.2	AA2_90602d	4:50 PM	Whale, maybe dif. from AA290602a – too big (40+ feet) [ref. 2:05 PM]
09/06/2002	Ahkiviana2	N70 40 09.6 W147 27 06.9	AA2_90602f	8:07 PM	Small whale, last place whale seen
09/06/2002	Ahkiviana2	N70 44 13.0 W147 07 15.0	AA2_90602e	5:25 PM	Not on track – reference coordinate from Napageak2 [marked 1:06 PM]
09/06/2002	Napageak2	N70 46 10.0 W147 34 24.7	NAP2_90602a	9:22 AM	Whale sighting
09/06/2002	Napageak2	N70 41 08.9 W147 20 04.7	NAP2_90602b	7:04 PM	Whale sighting
09/06/2002	Napageak2	N70 39 49.9 W147 28 42.9	NAP2_90602c	7:34 PM	Whale sighting
09/06/2002	Napageak2	N70 40 08.8 W147 26 42.1	NAP2_90602d	8:10 PM	Location where whale was seen last
09/06/2002	Napageak3	N70 48 06.7 W147 23 27.1	NAP3_90602a	1:21 PM	Not on track – reference point?
09/06/2002	Napageak3	N70 45 37.7 W147 10 55.9	NAP3_90602b	2:29 PM	Not on track – reference point – in the area about 6PM
09/07/2002	Napageak2	N70 40 03.3 W147 23 40.6	NAP2_90702a	6:41	Possible whale sighting
09/09/2002	Ahkiviana2	N70 35 05.6 W147 39 08.5	AA2_90902a	8:02 AM	Small whale near ice – chance for Napageak3
09/09/2002	Ahkiviana2	N70 39 58 W147 21 46.4	AA2_90902b	10:24 AM	Saw many blows in this area
09/09/2002	Ahkiviana2	N70 29 33.4 W147 43 12.0	AA2_90902c	4:32 PM	Larger whale (45 feet) – seen by Napageak3 first
09/09/2002	Ahkiviana2	N70 32 19.2 W147 46 15.4	AA2_90902d	5:57 PM	Larger whale (45 feet) – probably same as AA2_90902c
09/09/2002	Napageak2	N70 34 42.5 w147 31 27.0	NAP2_90902a	8:12 AM	Ahkiviana2 saw whale and broadcast coordinates. W coordinates ?
09/09/2002	Napageak2	N70 34 39.5 w147 38 29.7	NAP2_90902b	8:15 AM	Ahkiviana2 saw whale and broadcast coordinates.
09/09/2002	Napageak2	N70 33 57.0 w147 24 12.2	NAP2_90902c	12:22 PM	Took break on an ice floe – saw big polar bear
09/09/2002	Napageak2	N70 29 40.0 w147 23 44.4	NAP2_90902b	4:49 PM	Ahkiviana2 saw whale, broadcast coordinates. Napageak2 was 22 miles out.
09/09/2002	Napageak2	N70 35 27.4 W147 35 37.6	NAP2_90902a	2:39 PM	Reference point – meaning not known
09/09/2002	Nukapigak2	N70 34 55.0 W147 28 56.9	NUK2_90902a	8:00 AM	Near where GPS turned on, but not on track – may be reference point
09/09/2002	Nukapigak2	N70 30 24.9 W147 35 16.0	NUK2_90902b	2:35 PM	On track, significance not documented
09/09/2002	Nukapigak2	N70 30 09.0 W147 42 34.4	NUK2_90902c	5:13 PM	Whale sighting – search area



**Table 6: Waypoints Noted by Nuiqsut Whaling Crews, 2002 Cross Island Whaling Season (continued)**

Date	Crew	Lat/Long	Way Point #	Time	Notes
09/10/2002	Ahkiviana2	N70 29 51.4 W148 18 36.7		5:32 PM	Point marked 5:32 PM, in the area 5:52 PM – help disabled boat
09/11/2002	Ahkiviana1	N70 31 35.6 W147 08 05.1	AA1_91102a	1:57 PM	Reported seeing a whale, 12.8 miles NE of Narwhal
09/11/2002	Ahkiviana1	N70 33 40.4 W146 49 40.5	AA1_91102b	4:48 PM	Possible chance at whale [?]
09/11/2002	Ahkiviana2	N70 34 52.4 W147 34 30.5	AA2_91102a	9:38 AM	1st whale of the day seen, est. at 30 feet
09/11/2002	Ahkiviana2	N70 39 13.7 W147 21 08.5	AA2_91102b	10:57 AM	2nd whale of the day seen (could be same whale)
09/11/2002	Ahkiviana2	N70 30 55.6 W147 16 22.4	AA2_91102c	2:43 PM	Another whale seen
09/11/2002	Ahkiviana2	N70 31 01.5 W147 19 24.2	AA2_91102d	3:40 PM	Same whale as AA2_91102c
09/11/2002	Ahkiviana3	N70 34 50.9 W147 32 17.1	AA3_91102a	9:55 AM	No explanation
09/11/2002	Ahkiviana3	N70 30 38.7 W147 07 17.4	AA3_91102b	2:11 PM	Whale sighting – probably Ahkiviana1 whale NE of Narwhal Island
09/11/2002	Nukapigak1	N70 35 40.5 W147 06 49.5	NUK1_91102a	1:20 PM	Whale sighting
09/11/2002	Nukapigak2	N70 33 07.3 W147 18 23.7	NUK2_91102a	10:46 AM	1st whale sighting (Ahkiviana2 – their AA2_91102a)
09/12/2002	Ahkiviana1	N70 29 28.6 W147 20 46.1	AA1_91202a	12:47 PM	whale sighting
09/12/2002	Ahkiviana2	N70 30 32.8 W147 30 49.7	AA2_91202c	2:13 PM	NA2 whale
09/12/2002	Ahkiviana2	N70 30 42.3 W147 27 19.4	AA2_91202d	5:12 PM	Probable whale sighting (may be same animal as AA2_91202c)
09/12/2002	Ahkiviana2	N70 32 14.5 W147 31 19.8	AA2_91202e	7:41 PM	Probable whale sighting (may be same animal as AA2_91202c)
09/12/2002	Ahkiviana2	N70 29 21.5 W147 23 22.5	AA2_91202a	1:16 PM	Coordinates from Ahkiviana1, not on track (close to AA1_91202a)
09/12/2002	Ahkiviana2	N70 30 03.6 W147 31 41.3	AA2_91202b	1:40 PM	Coordinates from Nukapigak , not on track (closest to NA2_91202d)
09/12/2002	Napageak2	N70 25 24 W147 06 09	NA2_91202a	10:03 AM	1st whale seen (by Nukapigak2) , not marked
09/12/2002	Napageak2	N70 23 40.0 W146 52 07.3	NAP2_91202b	11:09 AM	2nd whale seen (by Nukapigak2) – on track
09/12/2002	Napageak2	N70 25 36.3 W146 46 09.9	NAP2_91202c	11:23 AM	Blow seen
09/12/2002	Napageak2	N70 30 02.0 W147 31 41.0	NAP2_91202d	1:42 PM	Coordinates entered for Nukapigak2 whale strike
09/12/2002	Napageak2	N70 30 37.1 W147 30 08.3	NAP2_91202e	2:52 PM	Nukapigak2 whale after the strike
09/12/2002	Napageak2	N70 30 39.8 W147 16 30.1	NAP2_91202f	4:04 PM	Where whale sunk (?)
09/12/2002	Nukapigak2	N70 30 19.6 W147 22 31.3	NUK2_91202a	12:44 PM	Whale 1st seen
09/12/2002	Nukapigak2	N70 30 33.5 W147 31 05.7	NUK2_91202b	1:46 PM	Whale struck with darting gun
09/12/2002	Nukapigak2	N70 30 33.1 W147 30 55.5	NUK2_91202c	2:02 PM	Waypoint intermediate to NU2_91202b and NU2_91202d to mark whale
09/12/2002	Nukapigak2	N70 30 35.4 W147 30 48.6	NUK2_91202d	2:45 PM	Whale sank (float came off)
09/13/2002	Ahkiviana1	N70 30 31.7 W147 41 51.5	AA1_91302a	12:49 PM	Blow seen 6.71 miles from CI – seen nearly every day
09/13/2002	Ahkiviana1	N70 31 04.5 W147 41 05.0	AA1_91302b	12:56 PM	1st whale seen, followed, lost
09/13/2002	Ahkiviana1	N70 30 03.6 W147 28 26.1	AA1_91302c	1:57 PM	Whale observation
09/13/2002	Ahkiviana1	N70 30 28.1 W147 28 30.1	AA1_91302d	2:00 PM	Whale followed N – seen here or further N. Whale seen in same area 09/12
09/13/2002	Ahkiviana1	N70 29 06.0 W147 11 12.6	AA1_91302e	5:33 PM	Kill site/start of tow (Nukapigak2 whale)
09/13/2002	Napageak2	N70 29 37.4 W147 27 22.8	NAP2_91302a	2:09 PM	Whale followed N seen here or further north
09/13/2002	Napageak2	N70 28 55.0 W147 10 33.0	NAP2_91302b	NA	Coordinates for Nukapigak whale
09/13/2002	Nukapigak2	N70 28 55.0 W147 10 43.6	NUK2_91302a	5:07 PM	Whale struck with darting gun
09/13/2002	Nukapigak2	N70 29 16.7 W147 11 59.6	NUK2_91302b	6:05 PM	Whale struck again – maybe killed
09/13/2002	Nukapigak2	N70 29 16.9 W147 12 00.3	NUK2_91302c	6:07 PM	Whale killed/tow site

**Table 6: Waypoints Noted by Nuiqsut Whaling Crews, 2002 Cross Island Whaling Season (continued)**

Date	Crew	Lat/Long	Way Point #	Time	Notes
09/15/2002	Ahkiviana1	N70 30 13.4 W147 44 56.3	AA1_91502a	8:59 AM	Area 1st whale seen (estimate)
09/15/2002	Ahkiviana1	N70 30 52.4 W147 39 45.9	AA1_91502b	9:40 AM	Two whales seen together
09/15/2002	Ahkiviana1	N70 29 55.5 W147 37 59.9	AA1_91502c	11:43 AM	Whaling event
09/15/2002	Ahkiviana1	N70 31 09.3 W147 39 34.8	AA1_91502d	12:27 PM	Whaling event with whale that was struck
09/15/2002	Ahkiviana1	N70 31 00.2 W147 40 12.3	AA1_91502e	12:35 PM	Whaling event with whale that was struck
09/15/2002	Ahkiviana1	N70 30 57.2 W147 40 26.7	AA1_91502f	12:56 PM	Whaling event with whale that was struck
09/15/2002	Ahkiviana1	N70 31 14.1 W147 40 28.2	AA1_91502g	2:03 PM	Where whale sank (and when)
09/15/2002	Napageak1	N70 28 23.5 W 147 36 28.7	NAP1_91502a	9:57 AM	1st whale seen
09/15/2002	Napageak1	N70 31 14.8 W147 40 28.3	NAP1_91502b	2:03 PM	Marks where struck whale sunk (2nd whale seen)
09/15/2002	Napageak2	N70 30 36.0 W147 43 12.0	NAP2_91502a	9:23 AM	Coordinates given by Ahkiviana1
09/15/2002	Napageak2	N70 28 13.7 W147 36 20.4	NAP2_91502b	10:07 AM	Coordinates given by Ahkiviana1
09/15/2002	Napageak2	N70 30 01.3 W147 38 12.6	NAP2_91502c	11:43 AM	Prior point used as "GoTo" coordinates
09/15/2002	Napageak2	N70 30 29.6 W147 39 59.8	NAP2_91502d	12:11 PM	Whale seen
09/15/2002	Napageak2	N70 3024.3 W147 39 34.1	NAP2_91502e	12:20 PM	Whale struck
09/15/2002	Napageak2	N70 31 16.5 W147 40 27.1	NAP2_91502f	2:04 PM	Float comes off whale/whale sunk
09/15/2002	Napageak2	N70 27 47.8 W147 33 14.4	NAP2_91502g	6:17 PM	UNK
09/17/2002	Nukapigak2	N70 29 54.2 W147 35 59.9	NUK2_91702a	12:08 PM	Dead whale position (Napageak whale)
NOTES:	<p>Shaded waypoint number indicates the point was not marked, but was described when the crew reviewed their track</p> <p>Lack of a time for a waypoint indicates that the track for that day was flawed</p> <p>Only those unmarked points specifically noted by crew members are included in table -- others may be noted on daily boat report forms</p>				

### *Other Subsistence Activities*

Very little non-whaling subsistence activity was documented in either 2001 or 2002. For 2001, hunters had been asked to report their other subsistence efforts and results, in terms of time spent, species, number, and location in terms of GPS coordinates. Little such activity was reported, other than for two or three seals taken by boat and a polar bear shot on Cross Island itself. No GPS information was obtained for these activities. In 2002, only a few waypoints were marked where other subsistence resources (mostly polar bear) were observed. Whalers did note that they had seen seals and birds, but did not mark these points and generally described such sightings as taking place where ice was encountered. While scouting for bowhead whales in 2002, Nuiqsut whalers saw a gray whale and a big polar bear in the same general area on 9/09/02 (near an ice floe), and noted a polar bear on 9/18/02. Relatively few polar bear were observed in 2002, even after whales had been landed and butchered on Cross Island. Two researchers interested in observing polar bear behavior arrived on Cross Island 9/10/02, but the first polar bear to be seen on Cross Island arrived 9/15. It was attracted to the fresh meat and blubber in the boneyard. A whaler who had expressed a desire to take a bear, should the chance present itself, shot this bear. Other polar bears were not seen on Cross Island until 9/18/02, when several were seen on various parts of the island. At least one bear was seen on 9/19/02, and bears were no doubt present from that point on. A few boat trips were taken to look around for seal or ducks, but no harvest occurred.

### *Nuiqsut Whalers' Observations and Perceptions of Whale Behavior*

This section for the most part simply reproduces the material presented in the annual reports for 2001 and 2002. No additional effort has been expended in augmenting or reprocessing this information. Nuiqsut whaling captains have requested that some treatment of their observations from earlier whaling seasons be included in this or subsequent reports. Some effort was expended in examining existing AEWK records for this purpose, and is reported below. Funding limitations prevented much effort in this regard, and precluded any targeted interviewing on these topics altogether. If MMS and the Nuiqsut whalers continue this research effort, this task should be incorporated into the goals of the project.

### *The 2001 Cross Island Whaling Season*

Weather and ice conditions in 2001 were much more challenging than in recent years, especially when compared to 2000 (personal communication from Nuiqsut whalers during the 2001 whaling season). There was more ice, more marginal and outright poor whaling weather in terms of fog and wind, and the whales themselves were fewer and farther out than in the past. The year previous, Nuiqsut whalers had taken four whales in eight days total, with no days during which they could not go out whaling. Nuiqsut whalers believe that whales in 2001 were behaving differently than they had in past years. The following summary of their observations was prepared upon their request (for submission as part of their report on the 2001 whaling season to

the AEWCA), and was reviewed by the President of the NWCA prior to its inclusion in this report. It is based on discussions with Nuiqsut whalers during 2001 (Galginaitis 2001).

- Nuiqsut whalers reported seeing far fewer whales during whale hunting trips in 2001 than in previous years. When whales were observed, they were alone or with one or two other animals. In previous years it was not unusual to see ten or twelve whales at one time.
- Nuiqsut whalers had to travel farther to find the relatively few whales that they did see. That is, Nuiqsut whalers traveled farther from Cross Island than has been necessary in recent years, and total miles traveled each day were greater in 2001 than in previous years.
- Those whales observed in 2001 were more skittish or “spookier” than in previous years. There were at least three components mentioned as part of this pattern of behavior. First, whales were observed to be staying around ice floes, rather than spending more time in open water. That is, whales were described as “playing hide-and-seek” amidst the floating ice, even though there was a significant amount of open water. Second, whales seemed to be staying more on the surface, and swimming more on the surface, than in previous years. The normal pattern from previous years was described as one where a whale would surface briefly, with a noticeable “blow,” dive and swim for perhaps twenty minutes or so, surface briefly again, dive, and so on. Third, the underwater paths of whales in 2001 were more unpredictable than in previous years. In past years, whales tended to swim in straight paths when they dived, and thus surfaced in predictable places. In 2001, they tended to turn when underwater and thus surfaced in unpredictable locations.
- Perhaps related to this, whales were more difficult to spot in 2001 than in previous years. “Blows” were not as observable, even in flat or calm waters, as in past years and at times whalers could hear the “blows” from whales but still could not see them. Whalers reported that the only time they observed “blows” was when they spooked whales out of the ice. Whalers prefer not to hunt in this way, but found this was the only way to spot and follow whales in 2001.
- Some whalers reported that, to them, the whales appeared to be skinnier (not as round) than they had been in previous years. The second whale taken had an empty stomach.
- Whalers mentioned several possible causes for these differences in whale behavior:
  - Oil and gas activities (and especially survey work for the offshore route for a natural gas pipeline);
  - Barge traffic associated with the Kaktovik Sewer and Water project;
  - Killer whales offshore and to the east of Cross Island somewhere (these were not observed, but it was hypothesized that they could be present, based on accounts by Elders and past experience);
  - Ice conditions in Canadian waters; and/or
  - Other air or water traffic to the east of Cross Island.

### *The 2002 Cross Island Whaling Season*

Weather and ice conditions in 2002 were more moderate than in 2001. There was not much ice cover, or at least whalers reported encountering ice only sporadically. Ice cover was reported as contributing to not being able to follow certain whales, but not to the same extent as in 2001. Weather prevented scouting for whales on three days, as opposed to eight or nine in 2001. Thus, while conditions were not as optimal as they had been in 2000, they were much more favorable

to whaling than in 2001. In terms of the same factors about which Nuiqsut whalers made observations in 2001:

- Nuiqsut whalers reported seeing more whales during hunting trips in 2002 than in 2001. While there were days when few or no whales were observed, there were also cases when numerous whales were observed at the same time. This was reported to be more the “normal” case than what was observed in 2001.
- Nuiqsut whalers could find whales relatively close to Cross Island (6 to 8 miles) but could not always follow these whales. Whales could consistently be found within 15 to 20 miles. At least one whale was consistently observed and reported at the same location on several different days. Whales were harvested closer to Cross Island in 2002 than in 2001, but whalers probably traveled as far on their trips in 2002 as in 2001.
- There were some observations of skittish or “spooky” whales. These behaviors were not explicitly compared to those observed in 2001, however. It was noted that some whales stayed around ice floes (as they had in 2001). No observations on surface versus subsurface swimming were noted. Several crews were able to follow individual whales for several dives before either losing the whale or being able to strike it, so that it seemed that crews were better able to track whales in 2002 than in 2001.
- Two whales sunk after they were killed, and whalers did discuss what could account for this, but no consensus (other than loss of buoyancy) was reached.

#### *Cross Island Whaling Seasons Prior to 2001*

Nuiqsut whalers specifically requested that some discussion of Cross Island whaling seasons prior to 2001 be included in this final report. They reasoned that the two years of data collected for this project, while useful, would not be adequate to demonstrate the variability they had experienced while whaling near Cross Island. They recognize that the nature of the information available for earlier whaling seasons is quite variable and is of a different nature than that collected for this project, but are confident that it will enrich the interpretation of the data obtained through this research effort. Nuiqsut whalers have been especially concerned with the potential effects of oil and gas activities upon whale behavior and subsistence whaling success, but also report on such limiting factors as poor weather, rough seas, and/or bad ice conditions. Thus, although it was beyond the scope of this project, this information has been incorporated to the limited extent possible (see “The Historical Context of Cross Island Whaling” above). Little time and resources were devoted to its development, although additional effort in this regard will add important historical contextual information for any continued monitoring effort.

Several days in Barrow were devoted to looking through the archival records of AEWCC, primarily reading statements of Nuiqsut whalers on their observations about whale behavior during past Cross Island whaling seasons. Many or most of these focussed on the detrimental effects of industrial activities on subsistence whaling, mainly through effects on whale behavior (changing the migration route, making whales more nervous or difficult to approach, and so forth). These reports also included notes on other factors (weather, sea conditions, and ice) that the reporting whaler perceived as affecting the success of whaling for that particular season.

## **Planned Future Activities**

The original project was amended to include a third year of field work, for 2003. This fieldwork has been completed. The information for the 2003 field season is not included in this “final” report (except in comparative, summary form), nor was it expected to be. The information is being processed and an annual report for the 2003 field season will be submitted to MMS in August, 2004.

Results of the third field season and this “final” report will be presented to the North Slope participants in the project some time in the last half of 2004 or early 2005. Galginaitis will make a trip to Barrow and Nuiqsut for this purpose, but timing will depend on the completion of the draft 2003 field season report and the advice of the Nuiqsut whalers. The most probable timing is the fall/winter of 2004/05, after the 2004 fall whaling season. All information and software to make use of it (MapSource) will also be transferred to the Nuiqsut whalers at this time, if it has not already taken place in connection with the 2004 field season.

The Core Contractor has the responsibility for transferring the data collected into a standardized data base. These data will be made available to MMS scientists and other researchers for analysis. The GPS files on the included CD-ROM should suffice for this purpose.

The MMS intends to continue this research effort for an additional number of years through the cANIMIDA project. This effort has been funded for at least three additional field seasons (2004, 2005, and 2006) and an inclusive final synthetic report incorporating the data from 2001-2006. Annual reports for individual field seasons, reporting data collected, will also be produced as internal documents.

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## **Electronic Appendices**

Annual Assessment of Subsistence Bowhead Whaling Near Cross Island, 2001 Annual Report (ANIMIDA Task 4) – PDF file “AnRpt2001.pdf”

Annual Assessment of Subsistence Bowhead Whaling Near Cross Island, 2002 Annual Report (ANIMIDA Task 4) – PDF file “AnRpt2002.pdf”

Individual Boat Track and Waypoint files for the Cross Island 2001 Whaling Season – “zip” file “Trak01\_m.zip” (Mapsource “mps” format) and “Trak01\_d.zip” (dfx format).

Individual Boat Track and Waypoint files for the Cross Island 2002 Whaling Season – “zip” file “Trak02\_m.zip” (Mapsource “mps” format) and “Trak02\_d.zip” (dfx format).

Data Logger file from Cross Island weather station for 2002 in Excel format – file “CI2002WF.xls”

PDF format files containing displays of combined whale boat GPS tracks for all days on which at least one boat went scouting for whales:

File “Days2001.pdf” for 2001 and file “Days2002.pdf” for 2002

MapSource (gdb) files for the combined whale boat GPS tracks for all days on which at least one boat went scouting for whales, archived in “zip” files:

“Days01\_m.zip”

“Days02\_m.zip”

