

**FEDERAL AID
INTERIM PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

**Alaska Department of Fish and Game
State Wildlife Grant**

Grant Number: T-1 **Segment Number:** 16
Project Number: 3
Project Title: Bowhead Whale Diet Investigation: St. Lawrence Island, Bering Sea
Project Duration: 20 May 2005 – 30 June 2008
Report Period: 20 May 2006 – 30 June 2007
Report Due Date: September 30, 2007
Partner: North Slope Borough Department of Wildlife Management and Alaska
Department of Fish and Game

Project Objectives

1. Collect stomach contents, harvest data, and other biological tissues from bowhead whales harvested on St. Lawrence Island in 2005, 2006, and 2007 in cooperation with the Gambell Whale Captains Association, Savoonga Boat Captains Association, North Slope Borough Department of Wildlife Management (NSB-DWM), Alaska Eskimo Whaling Commission (AEWC), and Alaska Department of Fish and Game.
2. Analyze the stomach contents of bowhead whales collected during this study and from previous collections to determine the composition of the bowhead diet in the Bering Sea by season, sex, and whale size class.

Summary of Accomplishments

Objective 1: No whales were harvested at St. Lawrence Island during the fall 2006 whaling season but Gay Sheffield was in communication with the St. Lawrence Island AEWC Commissioners, Gambell Boat Captains Association, and the Savoonga Whaling Captains Association as to the status of hunting and was ready to travel to whales that were available for sampling.

The NSB-DWM provided harvest data and field notes for bowhead whale stomach contents from whales harvested from St. Lawrence Island villages during 1984–2004. Data were reviewed and the electronic database was updated.

St. Lawrence Island harvested a total of eight bowhead whales during spring 2007 (Table 1). Gay Sheffield traveled to St. Lawrence Island during mid April to mid May and collected harvest data, stomach contents, and other biological tissues from seven bowhead whales during this period (Table 2). Sampling occurred concurrently with the butchering process. Digestive tract contents (from stomachs or intestines) were obtained from five of the seven whales harvested. The internal organs remained inaccessible for two whales (07S4, 07G2) that were butchered while floating in the ocean. Other biological samples were provided to the NSB-DWM for ongoing studies and/or archived at the University of Alaska Museum for future studies (Table 2).

Objective 2: In the laboratory, aliquots of stomach or intestine samples were thawed, rinsed, and sorted into major taxonomic groups, and examined microscopically at the University of Alaska's Institute of Marine Science for identification. Preliminary results indicate that three of the five bowheads for which stomachs or intestines were sampled had been feeding prior to their death (Table 3). Stomachs of two subadult males (07S1 and 07S3) were empty or contained only parasitic nematodes. Preliminary analysis indicated that shrimp dominated the diet samples from 07S2 and 07G3 though other prey were also identified (Table 3). Fine quartz grit was found in the intestinal sample of 07G3 indicating feeding near the seafloor. Copepods dominated the sample from 07G4. Although euphausiids and fish were found in fall 2005 diet samples, none were found in the spring samples and amphipods were identified as an additional prey item during spring 2007. Amphipods (*Anonyx* sp.) were sampled from the throats of 07G4 and 07G3 but it is unknown if these invertebrates were scavenging the whale carcasses (that had remained in the water >12 hr) or whether they were prey items.

Further work in the laboratory is scheduled to identify amphipod, copepods, and shrimp to the lowest taxonomic level possible. Additional bowhead whale samples will be collected, when available, during the fall 2007 and spring 2008 harvests in order to address diet comparisons by season, sex, and whale size class.

Significant Deviations

1. Intestinal fecal samples were collected when stomachs were not available for sampling.
2. The additional subsampling of one cubic inch from each frozen prey sample allowed for standardized count estimates of prey.

Table 1. Summary information for bowhead whales harvested near St. Lawrence Island during the spring 2007 whaling season.

ID Number	Village	Date	Sex	Total length (meters)
07G1	Gambell	3-Apr-2007	Female	8.8 m
07S1	Savoonga	13-Apr-2007	Male	10.0 m
07S2	Savoonga	15-Apr-2007	Female	8.3 m
07S3	Savoonga	16-Apr-2007	Male	10.7 m
07S4	Savoonga	27-Apr-2007	Female	15.3 m
07G2	Gambell	1-May-2007	Female	16.3 m
07G3	Gambell	1-May-2007	Female	15.3 m
07G4	Gambell	1-May-2007	Female	15.2 m

Table 2. Tissues collected from bowhead whales harvested near St. Lawrence Island during spring 2007 and the recipient of those tissues.

	07S1	07S2	07S3	07S4	07G2	07G3	07G4
Stomach contents	ADF&G	-	ADF&G	-	-	-	-
Intestine contents	-	ADF&G	ADF&G	-	-	ADF&G	ADF&G
Eyeball	NSB	NSB	NSB	NSB	-	NSB	NSB
Skin	NSB	NSB	NSB	NSB	NSB	NSB	NSB
Muscle	NSB / UAM	NSB / UAM	NSB / UAM	NSB / UAM	NSB / UAM	NSB / UAM	NSB / UAM
Kidney	-	NSB / UAM	NSB / UAM	-	-	-	-
Liver	-	NSB / UAM	NSB / UAM	-	-	-	-
Spleen	-	NSB / UAM	NSB / UAM	-	-	-	-
Blubber (ventral)	NSB	-	NSB	-	-	-	-
Blubber (dorsal)	-	NSB	-	-	-	NSB	NSB
Ovaries	-	NSB	-	-	-	-	-

ADF&G = Alaska Department of Fish and Game (Fairbanks)
 NSB = North Slope Borough, Department of Wildlife Management (Barrow)
 UAM = University of Alaska Museum (Fairbanks)

Table 3. Preliminary results of prey items from bowhead whales harvested near St. Lawrence Island during spring 2007.

Prey Items	07S1	07S2	07S3	07G3	07G4
Amphipods	-	X	-	-	-
Copepods	-	-	-	-	X
<i>Metridea</i> sp.	-	-	-	X	-
Shrimp	-	X	-	X	-

Project Leader: John “Craig” George (NSB-DWM) and Gay Sheffield (ADF&G)

Additional Information

Presentations of fieldwork and research results were made to the Gambell and Savoonga IRA Tribal Councils, Sivuqaq Native Corporation, and the Savoonga Whale Captains Association. Reports of work accomplished are provided to the AEWG, St. Lawrence Island AEWG Commissioners, Gambell Boat Captains Association, and the Savoonga Whaling Captains Association. One of the most important aspects of the work that Sheffield has conducted on St. Lawrence Island has been to include the Native community in the scientific work. This community outreach effort will pave the way for future studies by shedding a positive light on scientific research.

Results of this project will compliment the ongoing National Marine Mammal Laboratory’s study near Barrow, Alaska entitled “Bowhead whale feeding in the western Beaufort Sea”. The objectives of this Minerals Management Service funded study include documenting patterns and variability in the timing and locations of bowhead whales feeding and documenting bowhead whale prey distributions in the western Beaufort Sea.