Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 2003 – (October 1, 2003 to Sept 30, 2003)

Project Title: No. 2 Identification of Beaufort Sea Migration Corridor for Sea Ducks

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Partners: USFWS, SDJV; USFWS Region 7 Alaska; National Fish and Wildlife Foundation; Polar Continental Shelf Project, Natural Resources Canada; Inuvialuit Wildlife Management Advisory Council; Nunavut Wildlife Management Board.

Project Description: Oil development is increasing along the U.S. coast of the Beaufort Sea. This area is extremely important during migration for three species of sea ducks that are currently in decline: the Pacific race of common eider, the king eider and long-tailed duck. Although there is some information on migration, little is known about the specific migration pathways and habitats used by these sea ducks. Hence, it is difficult to predict the degree of potential threats of expanded oil development. Using satellite telemetry, this study is providing information about the location and timing of use of migration corridors, so that analysts can better predict and mitigate any adverse effects of offshore oil development on subject populations. The study is also providing information on affiliations between wintering, breeding and moulting grounds, thereby helping to define populations units. Such information is essential to effectively manage a harvested species.

The focus in the first two years of the study was on common eiders nesting just east of Bathurst Inlet, Nunavut. Due to an error in programming the transmitters, work done in the second year had to be repeated in 2003. In addition in 2003, we tagged and tracked king eiders and long-tailed ducks in a breeding area on Victoria Island. All three species were captured with mist nets on the breeding grounds in mid June prior to nest initiation.

To maximize the amount of information obtained on location of sea ducks in relation to offshore oil and gas development, satellite transmitters for eiders were programmed to transmit a location every eight hours (i.e. duty cycle of 4 h on and 4 h off) during their migration across the Beaufort Sea.

Objectives: The primary objectives of the study are: 1) to determine specific migration routes for declining western Canadian breeding populations of eiders and long-tailed ducks, 2) to document temporal and spatial relationships of migrating eiders and long-tailed ducks to pack ice, islands and other physical features in the Beaufort Sea, and 3) to identify wintering, staging and moulting areas, and their affiliation with specific breeding areas.

Other incidental benefits include: 1) identification of important coastal habitats for sea ducks, 2) collection of tissues for genetics, stable isotope and contaminant analyses, 3)

provision of information to develop more effective survey techniques to monitor the status of populations.

Preliminary Results: In June of 2003, satellite transmitters were implanted in 16 common eiders (8 male, 8 female), 12 king eiders (6 male, 6 female) king eiders, and 6 long-tailed ducks (3 male, 3 female) on their breeding grounds in central arctic Canada. As of early September, all of the eiders were alive and their transmitters functioning well. However, only 2 of the 6 long-tailed duck transmitters were still providing locations. Based on the transmitter temperature sensors, 2 of the long-tailed ducks died shortly after surgery, and 2 transmitters malfunctioned perhaps due to the angle of the antenna.

As in the previous two years, all female common eiders remained within 50 km of the nesting colony to moult, whereas males dispersed widely to locations as far away as the Bering Sea (Fig. 1). Half of the males crossed the Beaufort Sea prior to moult, moving through during a 1 - 2 week period between mid July and mid August. Another male stopped to moult in the Beaufort Sea about 80 km east of Prudhoe Bay.

King eiders all migrated to the Bering Sea to moult (Fig. 2). Males moved through the Beaufort Sea in a 2 – 5 week period between late June and mid August, staging first in eastern Beaufort Sea off Banks Island and Cape Bathurst, then again off the Alaskan coast (Fig. 3). The females moved through later (15 August – 12 September) and more quickly than the males, taking from 2 – 20 days to cross the Beaufort Sea. None of the females staged in eastern Beaufort Sea, but most (5 of 6 birds) spent several days off the Yukon and Alaskan coasts.

The two long-tailed ducks with transmitters that provided locations past 15 July were a pair. In late June both moved about 100 km southeast on Victoria Island to nest (Fig. 4). In mid July the male migrated southeast to Queen Maud Gulf where it presumably moulted in August. By contrast, the female moulted on a freshwater lake in interior Victoria Island.

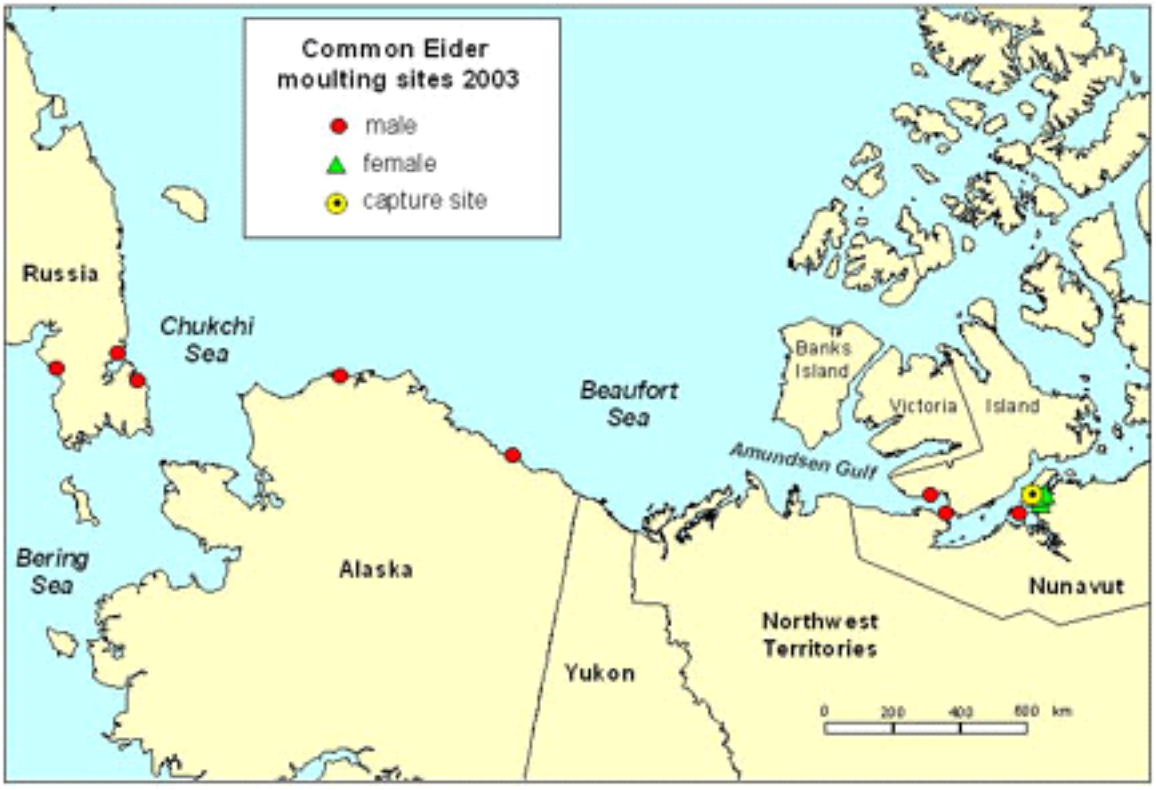
Project Status: The long-term goal of this study is to put satellite transmitters on an adequate sample of individuals of each species at three different sites on their Canadian breeding grounds, then track their movement to moulting and wintering areas. To date we have tagged 47 common eiders at Nauyak Lake (17 of these had transmitters with a manufacturer's defect resulting in erroneous duty cycles), 29 king eiders at Kagloryuak River, 5 king eiders on Banks Island and 2 long-tailed ducks at Kagloryuak River. As a minimum, we recommend tagging an additional 15 king eiders and 20 long-tailed ducks on Banks Island, 18 long-tailed ducks at Kagloryuak River on Victoria Island and 20 common eiders at a colony in Queen Maud Gulf. These additional markings should provide adequate samples from representative breeding areas for western Canadian populations of these three species to characterize their migration routes and habitats used throughout the annual cycle. These data can then be used to more effectively design and interpret subsequent research such as monitoring surveys and harvest studies.

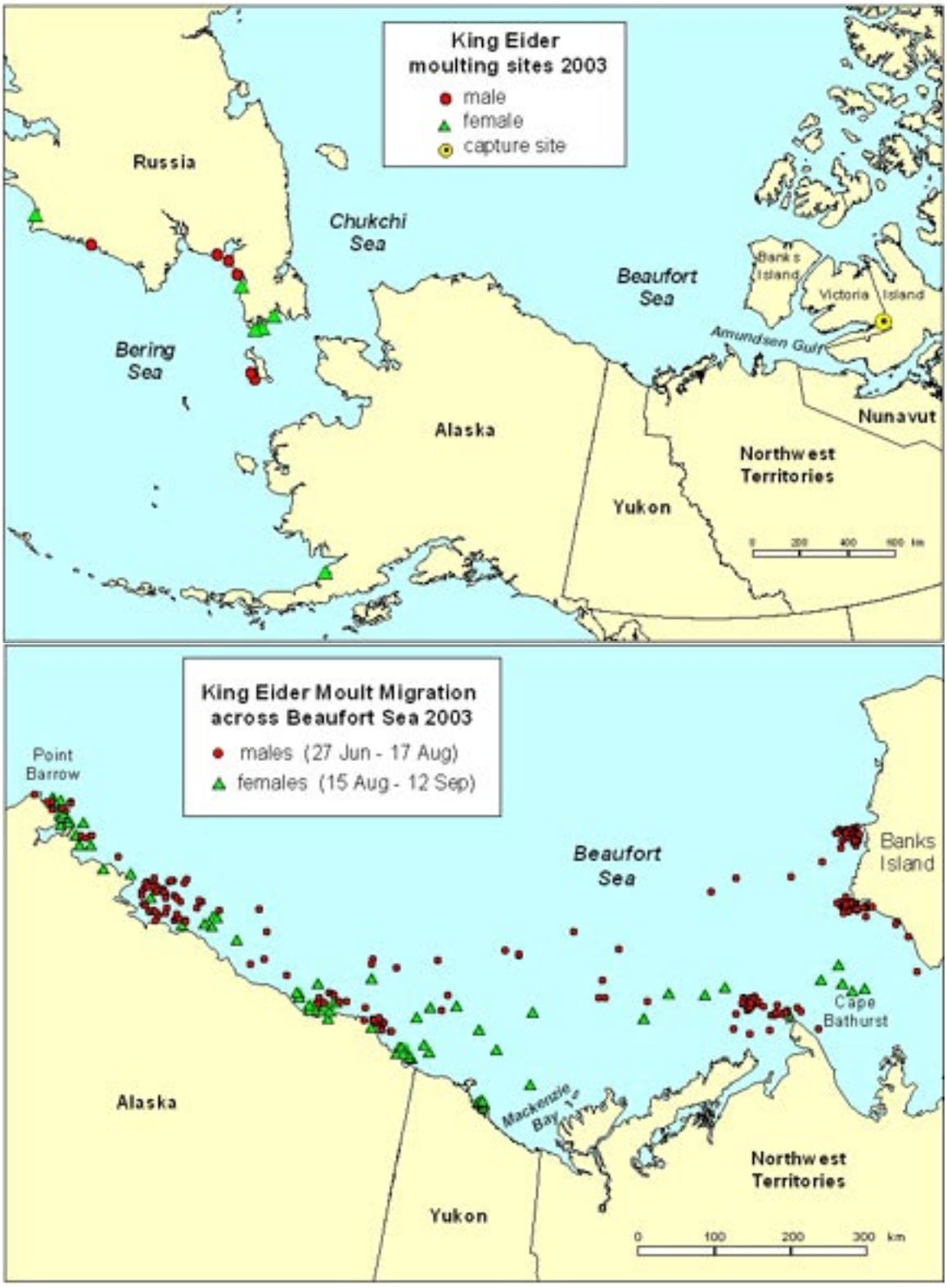
Project Funding Sources for FY 03:

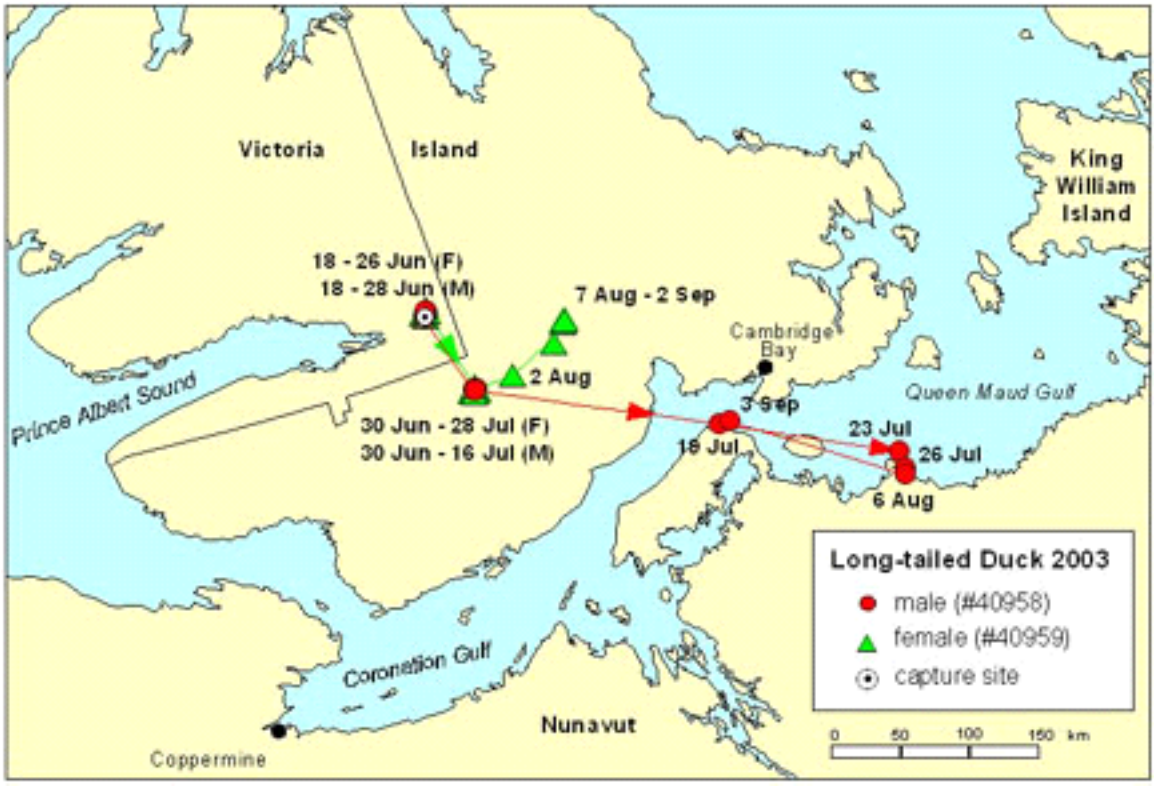
SDJV (USFWS) Contribution	Other US federal contribution	US non-federal contribution	Canadian federal contribution	Canadian non-federal contribution	Source of funding (agency or organization)
$72,000					USFWS, SDJV
		$55,000			Microwave Telemetry
	$30,000				NFWF
			$40,000		CWS, PCSP

Total Expenditures (SDJV plus partner contributions) by Category in FY 02:

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding					
Surveys					
Research			$197,000		$197,000
Communication					
Coordination					




King Eider moulting sites 2003
male
female
capture site
Russia
Chukchi Sea
Beaufort Sea
Bering Sea
Alaska
Banks Island
Victoria Island
Amundsen Gulf
Nunavut
Northwest Territories
Yukon
0 200 400 600 km
King Eider Moult Migration across Beaufort Sea 2003
males (27 Jun - 17 Aug)
females (15 Aug - 12 Sep)
Point Barrow
Beaufort Sea
Banks Island
Cape Bathurst
Alaska
Mackenzie Bay
Northwest Territories
Yukon
0 100 200 300 km


Victoria Island
King William Island
18 - 26 Jun (F)
18 - 28 Jun (M)
7 Aug - 2 Sep
2 Aug
Cambridge Bay
Prince Albert Sound
Queen Maud Gulf
3 Sep
23 Jul
26 Jul
18 Jul
6 Aug
30 Jun - 28 Jul (F)
30 Jun - 16 Jul (M)
Long-tailed Duck 2003
male (#40958)
female (#40959)
capture site
Coronation Gulf
Nunavut
Coppermine
0 50 100 150 km