Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 2010 – (October 1, 2009 to Sept 30, 2010)

Project Title: No. 2 Identification of Chukchi and Beaufort Sea Migration Corridor for Sea Ducks. Year 3 of a 3-year funding period.

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Partners: ConocoPhillips

Project Description: The development of offshore oil production facilities is currently underway off the Alaskan Beaufort Sea coast and is expected to expand to the Canadian Beaufort Sea and eastern Chukchi Sea in the near future. Hundreds of thousands of sea ducks, primarily Long-tailed Ducks, King Eiders and Pacific Common Eiders, migrate across the Beaufort and Chukchi seas on route between wintering areas west of the continent and breeding areas in northern Alaska and Canada. Although there is some information on migration, little is known about the specific migration pathways and habitats used by sea ducks. Hence, it is difficult to predict the degree of potential threat of expanded oil and gas development to these three sea duck species, all of which have experienced a population decline in recent years. 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 petroleum 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.

Prior to 2008, satellite transmitters had been successfully deployed on 67 Common Eiders, 46 King Eiders and 3 Long-tailed Ducks on breeding grounds east of the Beaufort Sea. During this 3-year funding period, we proposed to deploy 30 satellite transmitters on King Eiders in 2008, then up to 30 transmitters per year on Long-tailed Ducks in 2009 and 2010.

In mid-June 2008, King Eiders were captured using mist nets on ponds at a breeding area on Banks Island, Northwest Territories, Canada. In early August 2009 and 2010, Long-tailed Ducks were captured using suspended gill nets at a moulting location, McKinley Bay, Northwest Territories, Canada. In both instances, captured birds were surgically implanted with satellite transmitters and released. The transmitters were programmed with a variable duty cycle to maximize battery life and ensure adequate coverage, especially during migration seasons.

Objectives: The primary objectives of the study are: 1) to determine specific migration routes for western Canadian breeding populations of King Eiders and Long-tailed Ducks, 2) to document temporal and spatial relationships of migrating corridors 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 marine habitats for sea ducks, 2) collection of tissues for genetics, stable isotope and contaminant analyses, and 3) provision of information to develop more effective survey techniques to monitor the status of populations.

This study is providing information on population definition/delineation (high priority in Sea Duck Joint Venture Strategic Plan) and habitat requirements for two sea duck populations that have experienced substantial declines in recent decades.

Preliminary Results: From 11-18 June 2008, satellite transmitters were implanted in 30 King Eiders (17 males, 13 females) on their breeding grounds near Siksik Lake. Details of moult, fall and spring migrations, moult locations and other staging areas for these King Eiders were provided in the SDJV 2008 and 2009 project updates.

From 4-9 August 2009, 25 Long-tailed Ducks (23 females and 2 males) were captured and implanted with satellite transmitters at McKinley Bay. By mid- to late September, the ducks began to migrate along the coast of northern Canada, Alaska, and Russia to their winter locations in southern Alaska, Queen Charlotte Islands of British Columbia, and the Kamchatka Peninsula of Russia (Fig. 1). Although there were no surgery-related mortalities, only 15 transmitters were still providing locations by mid-winter, only nine (all females) were providing locations by the beginning of spring migration, and only six transmitters lasted through the entire spring migration. The birds moved northward along the Russian and Alaskan coasts during spring migration, and five of the six transmitters that made it through spring migration indicated that those birds likely bred in northern Northwest Territories, relatively close to McKinley Bay (Fig. 2). The sixth transmitter that made it through spring migration indicated that the bird moved along the Russian coast during spring migration, but it was unclear whether that bird nested in Russia because it never moved inland; however, that bird remained along the Russian coast during the breeding and moulting periods (until the end of August 2010). Another bird appears to have migrated westward along the northern coast of Russia, but the location data from that transmitter were sparse (only 15 locations for the entire life of the transmitter), and the transmitter ceased functioning before spring migration was complete. These two females that potentially migrated to locations in northern Russia are of interest because we had anticipated that females would display a high degree of site fidelity and would return to breeding and moulting locations in northern Alaska and/or Canada. By early September 2010, all of the 2009 transmitters ceased providing locations.

From 6-17 August 2010, 33 Long-tailed Ducks (22 females and 11 males) were captured and implanted with satellite transmitters at McKinley Bay; more males were implanted in 2010 than 2009 because it was more difficult to capture adequate numbers of females in 2010. By mid-September 2010, there was one mortality and the remaining 32 birds were still either at or near McKinley Bay.

Project Status: Good progress has been made towards meeting the objectives as they pertain to King Eiders. A high number of transmitters provided locations through spring migration, which facilitated identification of spring migration corridors and staging areas. A report summarizing the results of the King Eider tracking is forthcoming.

Although we successfully deployed the intended number of transmitters on Long-tailed Ducks in August 2009, only 5 transmitters provided locations through spring migration in

2010. We worked closely with the manufacturer company in spring 2010 to attempt to identify why the 2009 transmitters may have expired early. The manufacturer's findings were inconclusive, i.e., the evidence did not clearly point to transmitter defects or bird mortality. However, the manufacturer did suggest some alterations to the duty cycles of the 2010 transmitters that would improve the likelihood that these transmitters would provide locations through August 2011 and may make it easier to determine why a transmitter ceases functioning prematurely. As long as a higher proportion of the 2010 transmitters provide locations through spring migration, then this project's objectives for Long-tailed Ducks will be met. With the tracking information to date, there is adequate information about fall migration and winter locations. Reports and publications will be produced once all of the data from the 2009 and 2010 transmitters has been collected and compiled.

Project Funding Sources (US$).

SDJV (USFWS) Contribution	Other U.S. federal contributions	U.S. non-federal contributions	Canadian federal contributions	Canadian non-federal contributions	Source of funding (name of agency or organization)
$34,184					
	$30,000				USFWS Region 7 & Avian Influenza
		$55,000			ConocoPhillips Alaska
			$46,000		CWS
				$20,000	ConocoPhillips Canada

Total Expenditures by Category (SDJV plus all partner contributions; US$).

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding (include only if this was a major element of study)					
Surveys (include only if this was a major element of study)					
Research			**$185,184**		**$185,184**

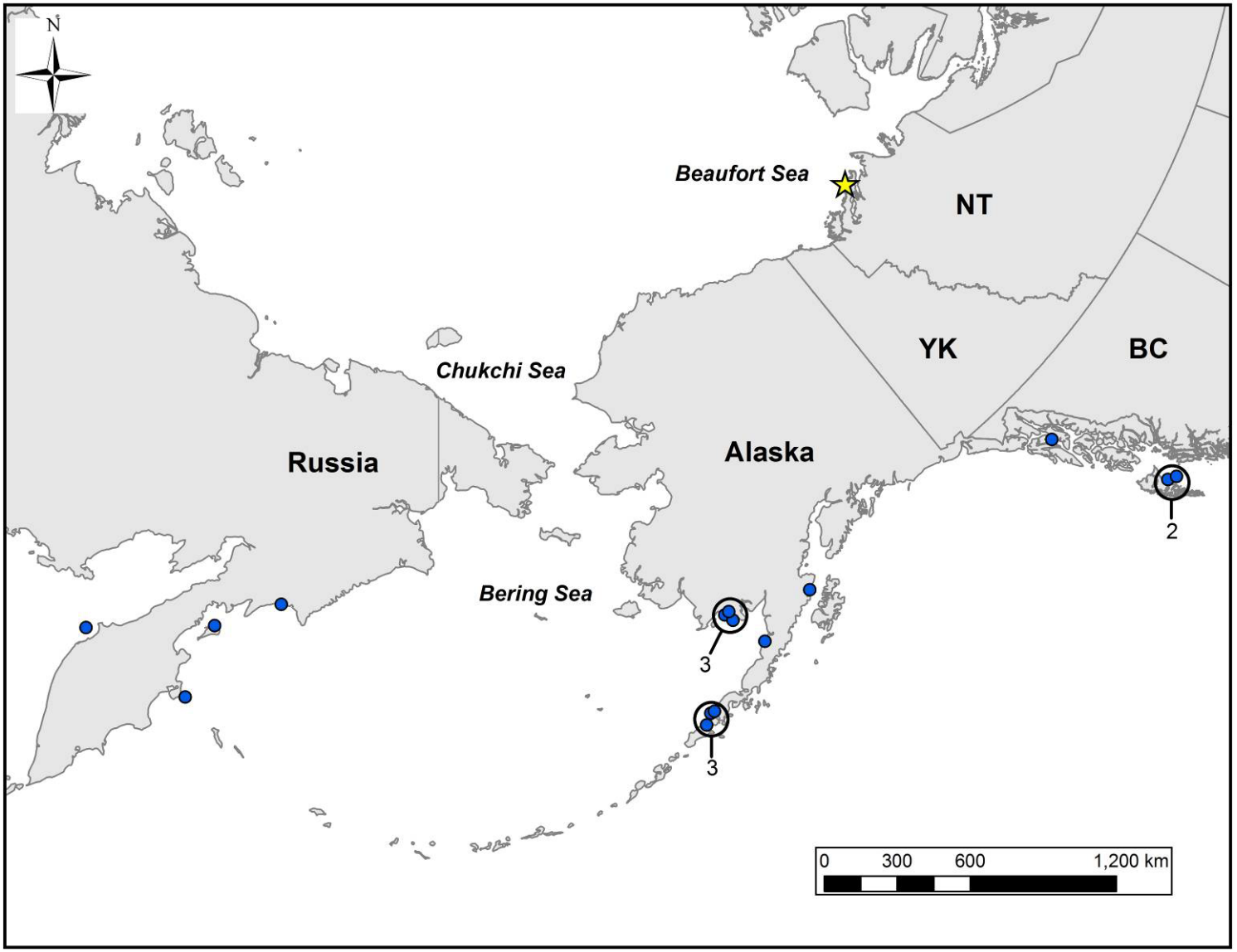

Figure 1– Winter locations of Long-tailed Ducks (*n* = 15) that were captured at McKinley Bay, Northwest Territories (yellow star) in August 2009. Each blue circle signifies a single location for an individual bird. Numbers beside black circles indicate the number of individuals at locations where the blue circles are overlapping. BC = British Columbia; NT = Northwest Territories; YK = Yukon Territory.

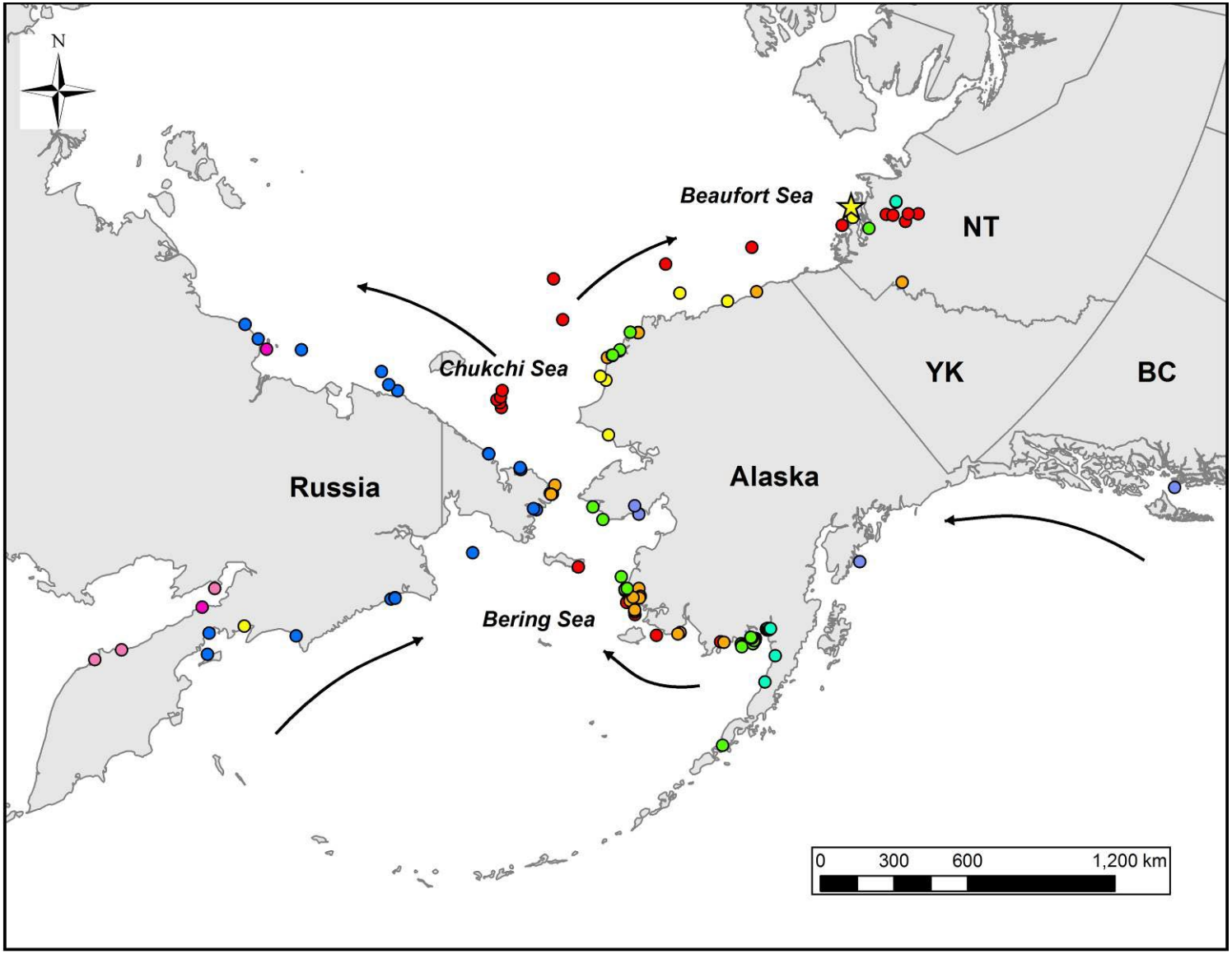

Figure 2– Spring migration 2010 of Long-tailed Ducks (*n* = 9) that were captured at McKinley Bay, Northwest Territories (yellow star) in August 2009. Each circle signifies a single location for an individual bird, and each colour is unique to an individual. The arrows represent the general direction of movement. BC = British Columbia; NT = Northwest Territories; YK = Yukon Territory.