Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 2009 – (October 1, 2008 to Sept 30, 2009)

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

Principal Investigator(s): Lynne Dickson, Canadian Wildlife Service, Room 200, 4999-98 Ave, Edmonton, Alberta T6B 2X3. lynne.dickson@ec.gc.ca; Tim Bowman, U.S. Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, Alaska 99503 tim_bowman@fws.gov

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, 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 *(include maps, photos, figures/tables as appropriate)*: 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 migration and moult locations for these King Eiders were provided in the SDJV 2008 project update.

Although the majority of eiders migrated from their moult location to a different winter location, 27 % of tagged eiders remained in the same area. By early February, 22 transmitters were still consistently providing locations (Fig. 1). Three males and four females wintered along the Alaskan Peninsula and Aleutian Islands, and two males were situated southwest of Kodiak Island, Alaska. The remaining 13 birds wintered along the Russian coast: 12 (6 males and 6 females) off Cape Chukotsk and 1 male farther south off Cape Olyutorsky.

When spring migration began, these 22 transmitters were still providing locations. Migration generally occurred from early April to mid-June, although two males began to move northward in mid March. Three males migrated along the north coast of Russia, whereas 19 eiders moved eastward to breeding areas in North America (Fig. 2). Eiders migrating through North America used the same staging areas identified in previous years: northern Bering Sea off eastern Chukotsk Peninsula, eastern Chukchi Sea off Alaska, and southeastern Beaufort Sea. Near the end of spring migration (circa 20 June 2009), 19 transmitters were still providing locations (ten females and nine males). All females had returned to their previous breeding areas on Banks Island, whereas the males had all moved to other breeding areas and were scattered throughout the western Canadian Arctic and Siberia.

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-September, there had been no mortalities, and tagged birds were either near McKinley Bay or slightly westward offshore of the Mackenzie delta region.

Project Status: Good progress has been made towards meeting the 2009 objectives. The high number of transmitters providing King Eider locations through spring migration will facilitate identification of spring migration corridors and staging areas. At this point, eight transmitters are still providing locations. Once all transmitters have quit operating (likely by December 2009), we will complete a more in-depth analysis and report.

We successfully deployed the intended number of transmitters on Long-tailed Ducks in August 2009. The high proportion of tagged females will maximize the amount of information not only on fall migration and wintering areas, but also on spring migration and on breeding locations in 2010. However, a second year of tagging female Long-tailed Ducks is recommended to obtain an adequate sample size, especially for spring migration.

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)
$36,600					
	$20,000				USFWS Region 7 & Avian Influenza
		$55,000			ConocoPhillips Alaska
			$97,000		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			**$228,600**		**$228,600**

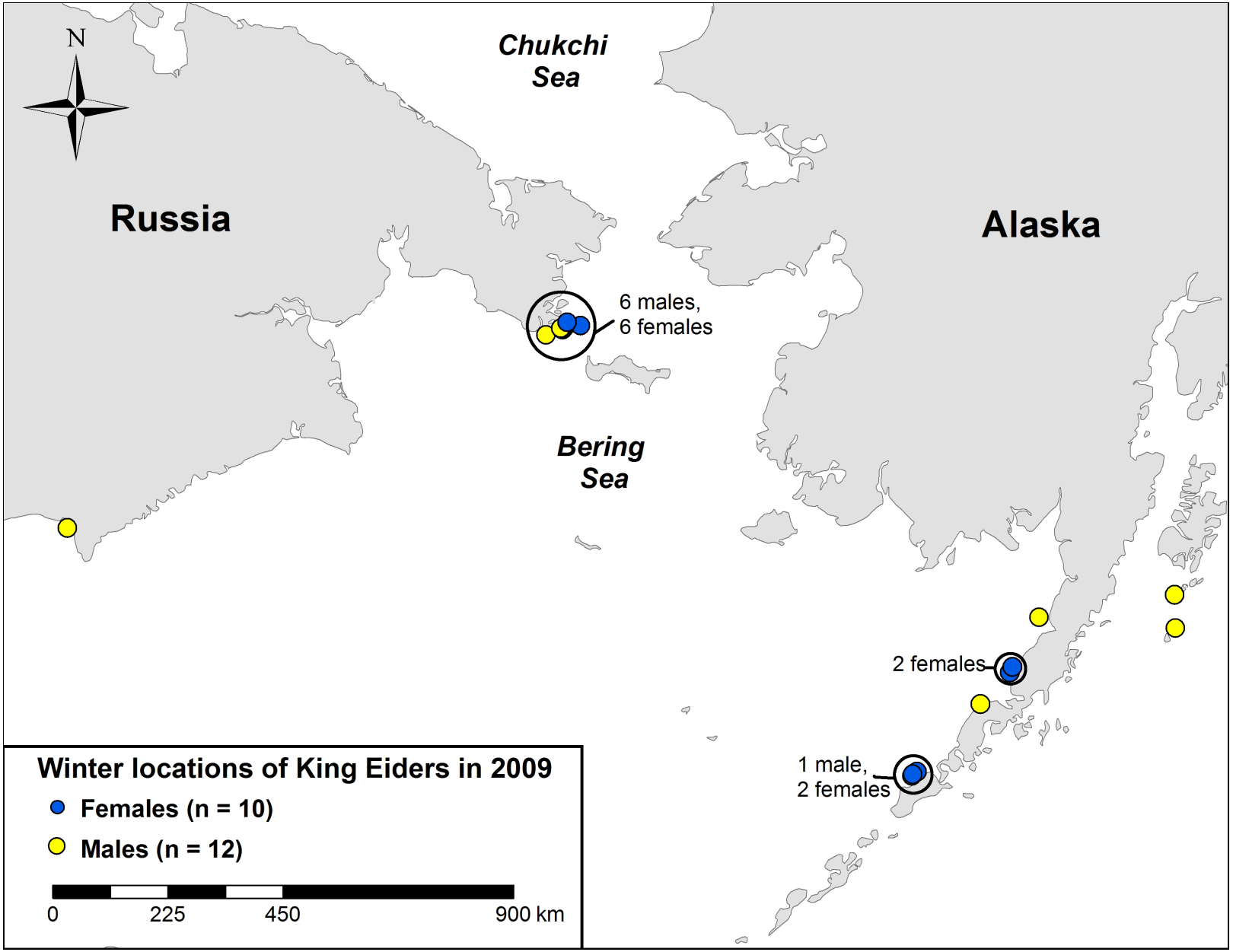

Figure 1 – Winter locations of King Eiders tagged with satellite transmitters. Each circle represents the first location for each individual reported in the month of February, 2009.

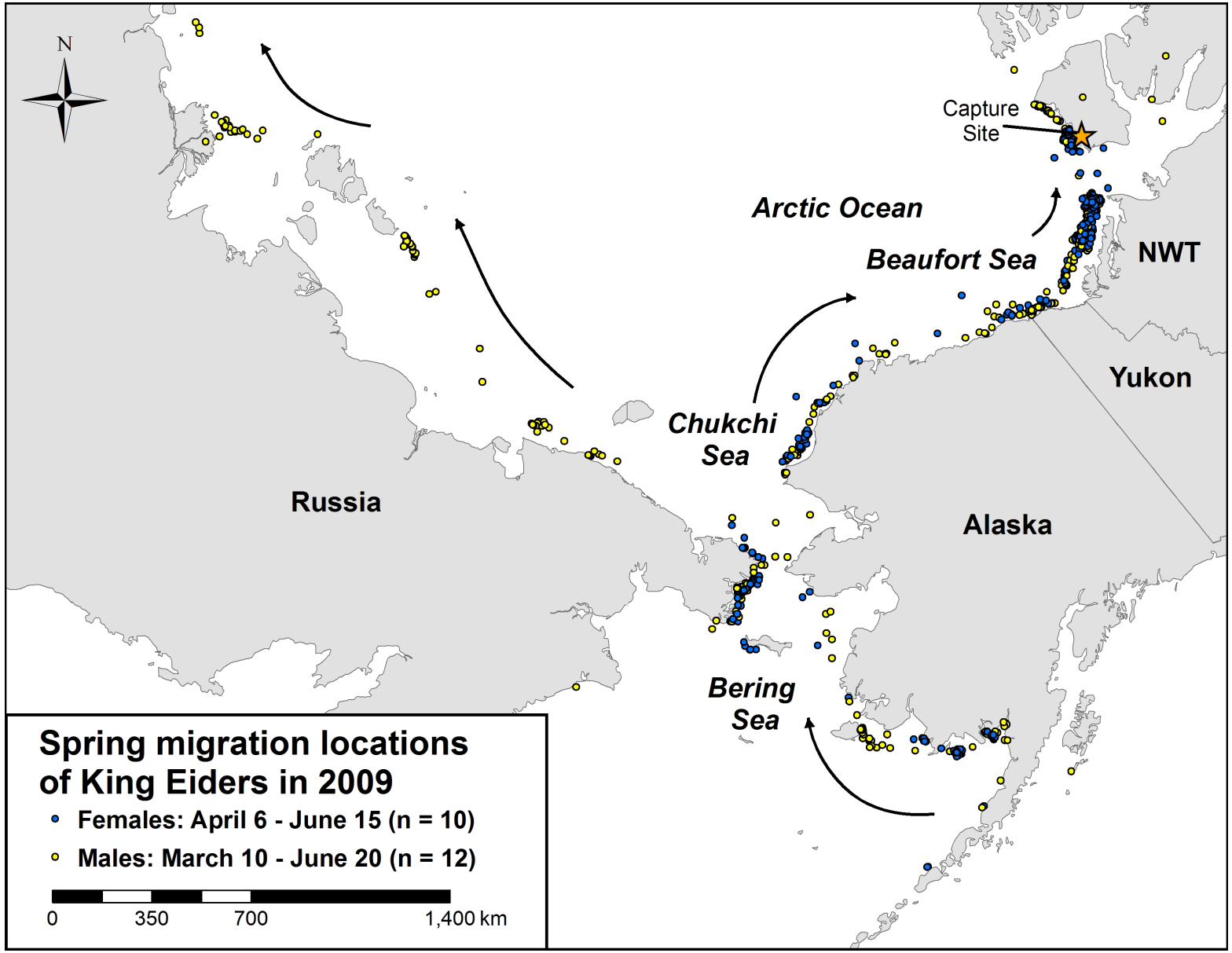

Figure 2 – Spring migration of King Eiders tagged with satellite transmitters. Arrows represent the general direction of migration, and each circle represents a location during spring migration. Final winter locations were included as start points for spring migration. NWT = Northwest Territories.