

Sea Duck Joint Venture
Annual Project Summary
FY 2015 – (October 1, 2014 to Sept 30, 2015)

Project Title: SDJV Project#141: Canadian Barrenlands Experimental Breeding Sea Duck Survey, Year 2

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Partners:

Canadian Wildlife Service
U.S. Fish & Wildlife Service

Project Description:

The 2013-16 Sea Duck Joint Venture (SDJV) Implementation Plan identifies the three scoter species (surf scoter (*Melanitta perspicillata*), white-winged scoter (*M. fusca deglandi*), black scoter (*M.nigra americana*)) and long-tailed ducks (*Clangula hyemalis*) as four of the five highest priority species. Priority information needs for these species included population delineation and development of survey techniques for effective monitoring, particularly if the techniques are linked to breeding areas and at a sufficiently large geographic scale.

The May Waterfowl Breeding Population and Habitat Survey (BPOP survey) is currently the only large-scale monitoring survey for breeding sea ducks. Waterfowl managers agree, however, that the BPOP survey is of limited value for monitoring breeding sea duck populations due to transect locations and timing of the survey. Recently, the SDJV's high-priority Atlantic and Great Lakes Sea Duck Migration Study has provided a completely new view of black scoter breeding range and demonstrated that the majority of females (~ 70%) migrated to breeding sites just outside of the BPOP survey area in a portion of the region known as the Canadian Barrenlands, an area that encompasses portions of Manitoba, Saskatchewan, Northwest Territories, and Nunavut and, as a result of the migration study, has been identified as an Area of Continental Significance to North American Ducks, Geese and Swans under NAWMP 2012 Revision. Exploratory surveys of the area were recommended to determine extent of breeding area and relative breeding densities for sea ducks and other waterfowl species.

Year 1 was successful in documenting breeding sea ducks and other waterfowl species in the previously unsurveyed area. To gain insight into some measure of variability and to further determine breeding sea duck and other waterfowl species ranges a hybrid approach was implemented in Year 2. A portion of 2014 transects were flown and additional transects were developed in a general northerly direction.

The survey followed standard operating procedures for aerial waterfowl surveys. A Quest Kodiak turbine wheeled airplane flew a single pass along straight-line transects at a height of 46 m (150 feet). Two observers recorded the number and species of waterfowl observed within 200 m (660 feet) on each side of the aircraft. Additional wildlife species, such as moose, muskox, caribou, and ptarmigan, were also recorded. Each observation was geo-referenced and stored on computers onboard the aircraft. Traditional population-size estimates were not determined due to the lack of visual correction estimates and establishment of strata sizes. However, observation densities, by segment, were compared to other breeding waterfowl surveys using the Jenks Algorithm to gain an understanding of the importance of the Barrenlands. The analysis is a data-clustering method designed to determine the best arrangement of values into different classes. This is done by seeking to minimize each class's average deviation from the class mean, while maximizing each class's deviation from the means of the other groups. In other words, the method seeks to reduce the variance within classes and maximize the variance between classes. For our purpose, we arranged observations in three classes (low, medium, high).

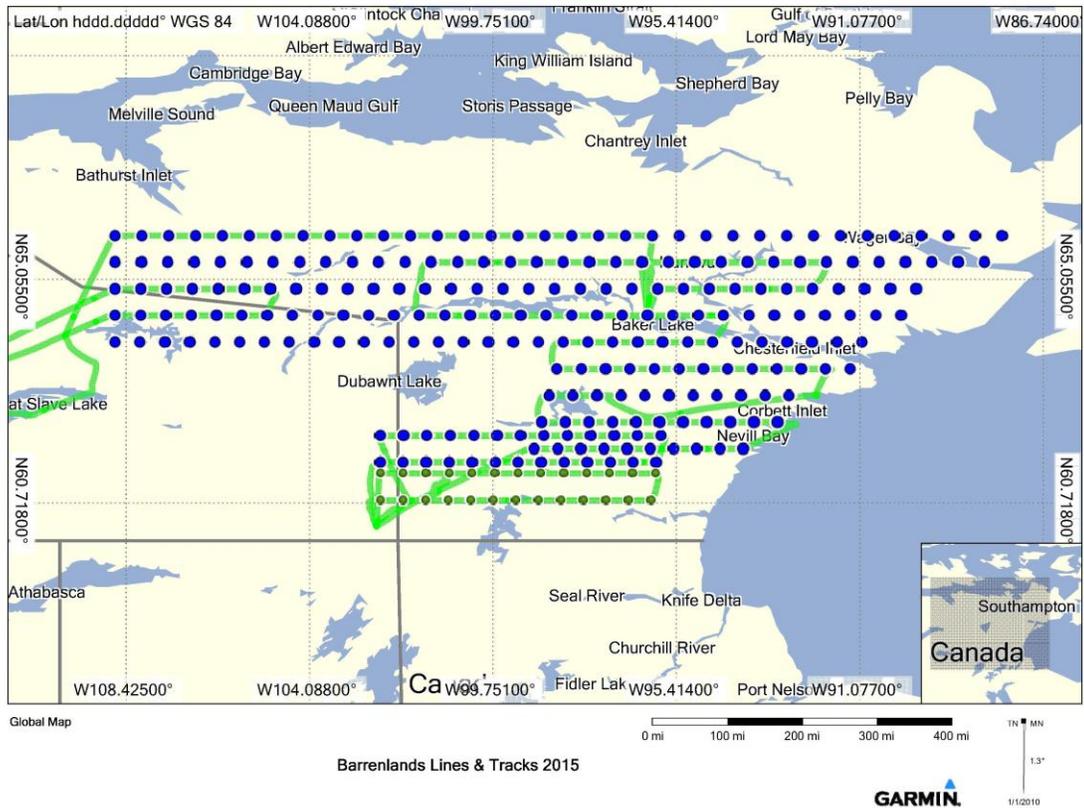
Objectives:

A large-scale and systematic breeding waterfowl survey has never been conducted in the Barrenlands. As such, the project had multiple objectives: 1) determine the feasibility and logistics to operate in the region; 2) determine population size and delineation for a host of waterfowl species, particularly sea ducks; 3) develop information to inform population objectives; 4) identification of important waterfowl habitats; and 5) verification of Atlantic & Great Lakes Migration Study results.

Preliminary Results:

The air crew was USFWS pilot-biologists Walt Rhodes and Fred Roetker, who flew a total of approximately 2,763 miles on 15 transects that covered an area of approximately 192,000 mi² on 20-29 June with three weather days. A portion of these miles were on 2014 transects but an explicit objective for 2015 was to attempt to determine the limit of scoter breeding range. As such, new transects were laid in a northerly and westerly fashion. The top five waterfowl species observed were Northern pintails, long-tailed ducks, Scoter spp., Scaup spp., and mergansers. While pintails were the highest number of indicated ducks nearly 50% of the total birds were classified as flocks or groups compared to <22 percent in 2014. This meshes with 2015 BPOP data that indicated some measure of an overflight. No scoters were noted north of 61.77° latitude in the east or north of 64.86° latitude on western side of surveyed area. Scoter species are typically hard to differentiate during aerial surveys but an effort was made to do so again in 2015. Unidentified scoters accounted for only 2.1 percent of all scoter observations and black scoters comprised 89 percent of total scoter observations. Both observers felt that if scoter species identification is important more quantitative efforts are needed to determine species composition. Again and by far, the most numerous waterfowl species encountered was Canada geese, but the majority (~91 percent) of these individuals were grouped in molting flocks of assumed temperate-breeding geese. While not particularly a SDJV interest unless there is some effect on breeding sea ducks, the number Canada geese molting in the region is noteworthy.

A more thorough analysis of 2015 data using the Jenks algorithm and comparison with 2014 data remains to be completed.



Project Status:

Because this region has never been systematically surveyed every waterfowl observation from this survey broadens the knowledge base of the continent’s waterfowl resource and accomplishes the project’s objectives. Two years of surveying has proven that operation within the region is possible with adequate pre-planning. Resources, such as emergency landing strips, fuel caching, lodging, and other logistical matters, have been identified. Like any aerial survey, weather is the biggest obstacle in accomplishing the mission in a timely fashion. Current plans are to finish the analysis of the 2015 data and compare it to the 2014 data to determine if there are data gaps that need addressing in the future. Following the analysis, more specific recommendations will be put forward.

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)
\$25,072					SDJV
	\$11,700				USFWS - DMBM
			\$11,375		Canadian Wildlife Service

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)	\$48,147				
Research					