

**Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 2006 – (October 1, 2005 to Sept 30, 2006)**

WINTERING COMMON EIDER SURVEY OF EASTERN NORTH AMERICA

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Project Description:

Two sub-species of Common Eiders (*Somateria mollissima dresseri* and *S. m. borealis*) over-winter along the eastern seaboard of North America are among the most heavily hunted sea ducks in North America. To date, estimates of their population sizes are based on uncoordinated surveys, using different techniques conducted over the last 25 years in different geographical areas.

We attempted to implement a coordinated, standardized survey throughout Canada and USA. The survey utilizes comparisons between visual estimates and photographic counts to account for observer error in flock estimation. This technique has been developed for winter surveys and proved useful under certain circumstances (Bordage et al. 1998).

Samples of eider heads were collected from late hunters to permit to better delineation the winter distribution of the two races. Identification of important wintering areas will also permit the elaboration of a comprehensive management plan for the species in eastern North America.

Objectives:

- Provide regional and global estimates of the total number and number of adult male common eiders wintering in eastern North America
- Establish a standardized survey protocol that controls for variability in flock estimation among observers and sea state.
- Determine the winter distribution of the *borealis* and *dresseri* sub-species.

Preliminary Results:

Aerial Surveys--. Only the Canadian component of the survey was completed. The Quebec and Newfoundland portion of the survey was flown with a Cessna 337 Skymaster with a pilot plus three observers, and the Nova Scotia and New Brunswick portion of the was flown with a USFWS Partinava with a pilot observer and two additional observers.

The survey covered about 12,000 km during which we counted about 196,000 eiders (Table 1). Major concentrations of birds were located along the North Shore, the Madeleine Islands and St. Pierre & Miquelon in the Gulf of St. Lawrence, off the northeast and east coasts of Newfoundland, along the eastern side of Cape Breton and the along the New Brunswick Maine border (Fig. 1). These estimates are not corrected for photo counts.

Photo Counts--. We tested a digital 35 mm SRL camera with a 35-135 mm image stabilized lens to photograph flocks. The camera appeared to work exceptionally well and had several features making it more suitable than the medium format camera traditional used on the survey. For example, high and low altitude photographs were required to produce corrected estimates of white and brown birds using the medium format camera (Bordage et al. 1998), whereas only high altitude photographs were required using the digital camera. Another advantage was the large image storage capacity of the digital camera allowed many more images to be taken of flocks increasing the probability of obtaining a countable image. It also appears that age-ratios of males maybe obtained from images taken from low-altitude; however, further work is required to fully evaluate this feature.

Over the entire survey, we took about 2,000 images of which 520 were selected to be counted. A contract was let in February to count the images and was completed in October. Final estimates are anticipated in January 2007.

Head Collections--. In 2006, we collected about 321 eider heads from Newfoundland, New Brunswick, St. Pierre and Miquelon (Table 2). Based on previous experience (SGG), it takes a couple of years to develop appropriate contacts and we will continue to collect heads in 2007 to more fully evaluate the relative distributions of *dresseri* and *borealis*.

Project Status:

2006 was an unusually mild winter, which affected the development of sea and land fast ice throughout eastern North America. This increased the area that had to be searched and had impacts on flocking behaviors of eiders. For example, in a similar survey in Quebec and Newfoundland in 2003 flocks were larger in size and fewer number than in 2006 (2003: mean=380±820, n=276 vs. 2006: mean=90±230, n=743). This had to potential impacts on the survey. First, the potential survey area was much larger. As we

had only budgeted for a “normal” year, there were not enough funds to completely search the entire area. Second, flocks were much smaller than expected, and smaller flocks likely have a lower detection probability that may have resulted in birds being missed.

We also encountered significant logistical constraints. The diplomatic paperwork that is required for USFWS planes to conduct aerial surveys in Canada terminated on 31 January. We were not aware of this deadline and preparation of the documents delayed the availability of the USFWS plane to the third week of February. To complete the survey on schedule, we chartered a local aircraft to complete the Quebec and Newfoundland portion of the survey. Because of delayed start and increased costs of the charter, we had to drop the exploratory survey of the Labrador coast. This may have resulted in missing birds as Labrador also experienced reduced sea ice cover and unusually large numbers of eiders were later reported by hunters wintering on the coast of Labrador (SGG).

Reduced ice cover in the New England states increased time commitments of USFWS planes for completion of the Mid-Winter Inventory. This impacted the plane and crew availability for this portion of the survey. In addition, the crew leading this portion of the survey felt that it was not realistic to completely cover the Maine coastline and the USA portion of the survey was canceled.

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 (agency or organization)
			52.3		CWS
	2.0				USGS
				0.5	St. Pierre and Miquelon

Total Expenditures by Category (SDJV plus all partner contributions; US\$). Complete only if project was funded by SDJV in FY06; total dollar amounts should match those in previous table.

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding (include only if this was a major element of study)					
Surveys				54.8	54.8

(include only if this was a major element of study)					
Research					
Communication (ignore incidental communication expenses)					
Coordination (ignore incidental coordination expenses)					

Table 1. Aerial coverage and visual counts of eiders in Eastern Canada, 6 to 27 February 2006.

Region	Distance (km)	Eiders		
		Adult Males	Brown	Total
Quebec	2,900	20,240	20,070	40,310
Newfoundland	4,448	44,616	55,107	99,723
St. Pierre ¹	243	3,995	6,396	10,391
Nova Scotia	2,865	12,433	19,926	32,359
New Brunswick	1,440	5,528	7,371	12,899
Total	11,896	86,812	108,870	195,682

1. French Islands of St. Pierre and Miquelon.

Table 2. Sample size of eider heads collected by region in 2006.

Region	Sample Size
Quebec	0
Newfoundland	130
St. Pierre ¹	50
Nova Scotia	9
New Brunswick	132
Maine	0
Total	321

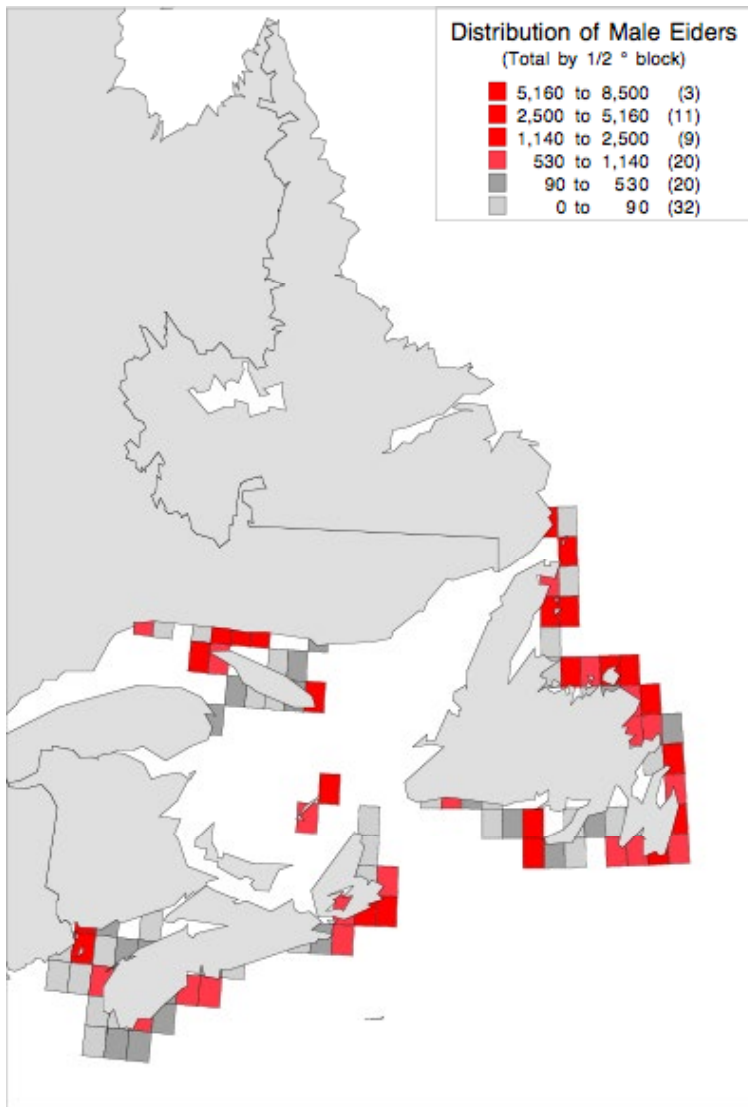


Figure 1. Distribution of male eiders in Eastern Canada, 6 – 27 February 2006. Estimates are summarized by 1/2-degree blocks of longitude and latitude.