Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 2007 – (October 1, 2006 to Sept 30, 2007)

Project Title: SDJV 87 - Molt ecology of White-winged Scoters (*Melanitta fusca*) in the St. Lawrence estuary

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Project Description

A recent compilation by the Sea Duck Monitoring Working Group suggests that White-winged Scoter (*Melanitta fusca*) harvest may represent as much as 14.1% of the eastern population (SDJV 2005). Although these figures are rough approximations, they raise serious concerns about the eastern population and at least about the need of better data on that population. White-winged Scoters are the largest and least numerous of the scoters in the east so that extreme caution is needed in their exploitation.

Management of the eastern population, is impaired by lack of knowledge on its ecology, distribution and behaviour (Brown and Fredrickson 1997, SDJV 2001). Little is known of the breeding distribution and post breeding ecology of White-winged Scoters in eastern North America (Brown and Fredrickson 1997). The first breeding evidence in Quebec dates from 1976 when a brood was sighted in northern Quebec (Savard 1977). Since then several other sightings were made (Limoges and Morrier 1996) and a relatively high density breeding area was found in the lowlands of the east coast of James Bay (Benoit et al. 1994, Bergeron et al. 1996). However, the number of birds breeding there accounts only for a small portion of the eastern population.

Brown and Fredrickson (1997), in their review of the state of knowledge on the species in North America, emphasized the absence of knowledge on the molting distribution and ecology of White-winged Scoters. Given the amount of research done in the last decade on Surf Scoters (*Melanitta perpicillata*), Black Scoters (*M. ni*gra) and the western population of White-winged Scoters (Bordage and Savard 1995, Brown and Fredrickson 1997, Savard et al. 1998, SDJV 2006) the eastern population of White-winged Scoters has become the least known of the scoter populations. The recent discovery of White-winged Scoter molting sites in the St. Lawrence estuary (CWS unpublished data; >4,000 birds) provides a unique opportunity to learn more about the eastern population of White-winged Scoters. Not only this molting population provides an opportunity to learn more about the molt ecology of White-winged Scoters, but also a way of getting at movements and harvest location and rates.

Objectives:

1) Develop an efficient capture technique for White-winged Scoters molting in the St. Lawrence estuary
2) Take blood samples for genetic
3) Take feather samples to look at stable isotopes signals
4) Document space use by molting White-winged Scoters
5) Quantify behavior of molting flocks

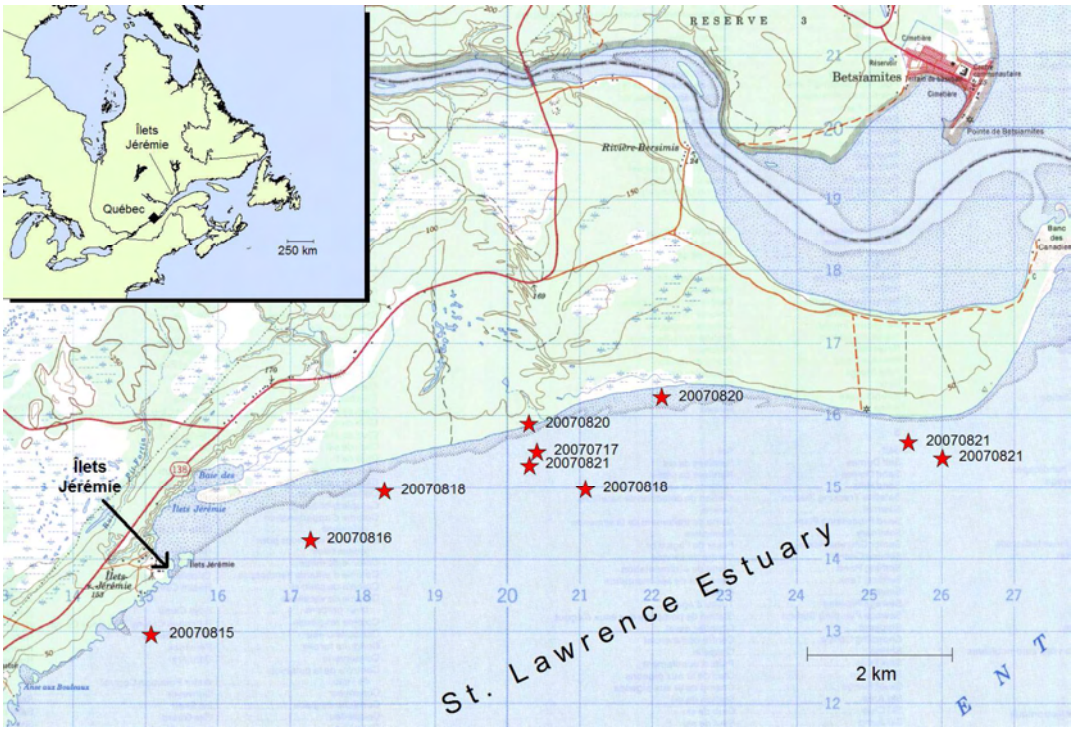
Preliminary Results

The major objectives of the study were to determine whether molting White-winged Scoters could be captured at their molting sites in the St. Lawrence estuary using techniques developed on the Labrador coast and if so, to obtain blood and feather samples for future genetic and isotopic analysis. This objective was highly successful as we succeeded in catching 330 molting scoters with the gillnet method.

Surveys.- Preliminary ground surveys were done (6-9 August) to confirm the presence and location of molting White-winged Scoters along the north shore of the St. Lawrence estuary. These surveys indicated the presence of molting White-winged Scoters at the two known molting sites, Pointe à Boisvert and Îlets Jérémie, and indicated that the scoters were still flightless. Surveys also indicated that Surf Scoters as well as Common Eiders (Somateria mollissima) molted at the same sites. Both sites supported each over 5000 molting sea ducks. For logistical reasons we attempted captures only at Îlets Jérémie (Figure 1).

Capture and Banding.- The capture and banding operations were conducted through 10 catches over 6 days (15-21 August), along a stretch of 15 km east of Îlets Jérémie, Québec (Figure 1).

Figure 1. Localization of the 10 catches, 15-21 August, St. Lawrence estuary



We banded 185 White-winged Scoters, 135 Surf Scoters and 10 Black Scoters (see Table 1). We took blood samples from 47 White-winged Scoters, and collected feather samples from 104. We collected 9 White-winged Scoters for future dissection for contaminants analyses. On the last banding day (21 August), we recaptured two of our White-winged Scoters males (caught on 18 and 20 August). Finally, we gathered useful information to develop a more efficient capture technique adapted to the St. Lawrence estuary conditions.

Table 1. Number of birds banded for each species of scoters, St. Lawrence estuary, Québec, 15-21 August 2007

No. banded	WWSC	SUSC	BLSC	Total
Males	120	70	5	195
Females	65	65	5	135
Total	185	135	10	330

Molt Chronology.- Molt chronology was highly variable within and between species. For White-winged Scoters, even though there were males and females in all classes of 9th primary length, 72% of males and 74% of females were in middle to late molt stages (classes 61-140 mm). The pattern of molt stages for both sexes was very close for this species (see Figure 2). However, there were more males than females in the later stages of the wing molt. For Surf Scoters, 83% of females were in the early molt stages (0-60 mm) compared to 26% of males in the same stages. 67% of males were in middle to late molt stages (61-120 mm). For this species, females were definitely in earlier molt stages than males (see Figure 3). Differences in the relative timing of molt of Surf and White-winged scoters are intriguing and may indicate a greater proportion of subadult females in molting White-winged Scoters at this site. Earlier molting of male Surf Scoters reflect known differences in molt migration timing between males and females (Savard et al. 1998; Savard et al. 2007).

Figure 2. Length of 9th primary for White-winged Scoters

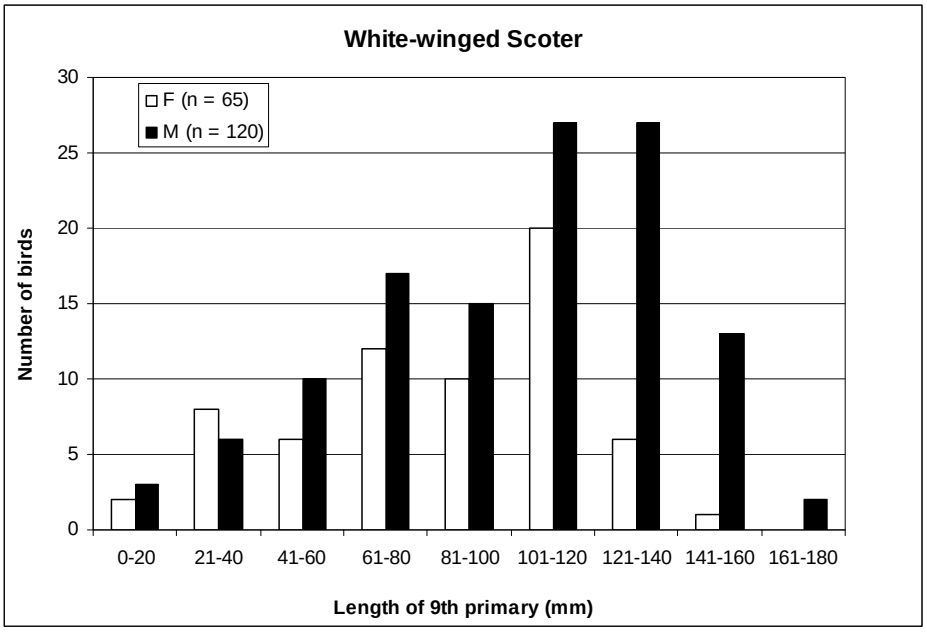
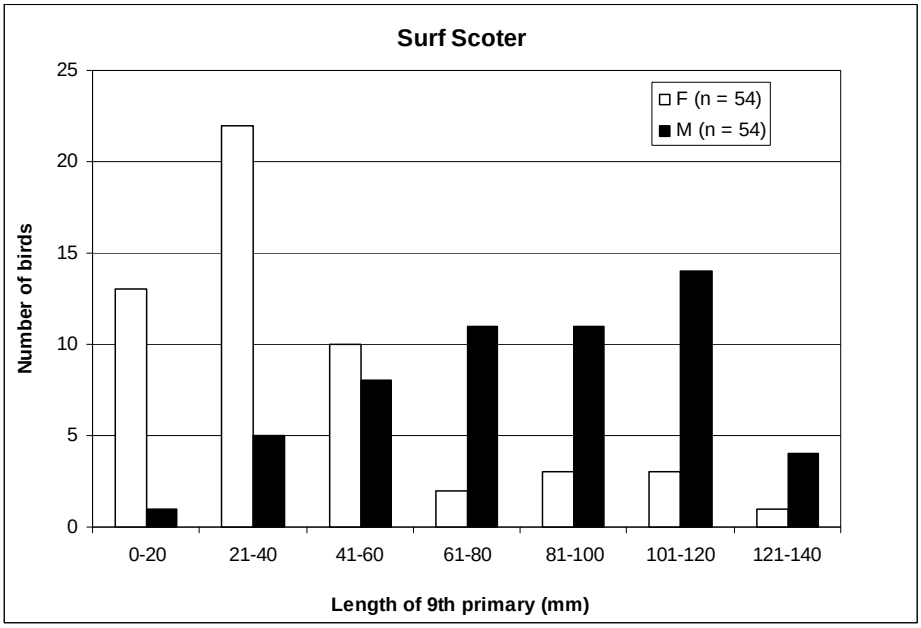


Figure 3. Length of 9th primary for Surf Scoters



The secondary objectives of documenting the space used by molting White-winged Scoters and to quantify the behavior of molting flocks was only partially achieved as we could not obtained sufficient sample sizes mostly because of the greater efforts necessitated by the capture of birds and by the associated disturbance related to capture attempts. However, observations indicate that White-winged Scoters were largely associated with flocks of Surf Scoters and sometimes with a few Common Eiders and Black Scoters. They spent relatively little time feeding (but larger sample sizes needed). Tide seemed also to influence feeding behavior.

Project Status

The successful capture of White-winged and Surf scoters in the St. Lawrence estuary opens the way for future more detailed research. For example the implantation of satellite transmitters to determine the fall migration pattern of the molting birds, the location of their wintering grounds and also of their breeding areas. Recoveries from banded birds will help identify migration routes and wintering sites. It was obvious after the first big catch that larger boats will be needed in the future to minimize bird injuries and reduce plumage wetness. We also explored the possibility of capturing eider flocks but did not attempt to do so. We however located potential sites for the setting of drive traps similar to those use successfully in Maine by Brad Allen.

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Pictures of the capture drives:

Pulling in the net with the scoters caught.
Photo: Francis St-Pierre, UQAM

Scoters caught waiting to be unmeshed.
Photo: Christine Lepage, CWS

Unmeshing the scoters: need lots of patience and dexterity!
Photo: Francis St-Pierre, UQAM

Identifying species, sexing banding, measuring and weighting the scoter. Photo: Christine Lepage, CWS

Black Scoter male; White-winged Scoter male; and Surf Scoter male. Photo: Michel Robert, CWS

Release of banded scoters.
Photo: Christian Marcotte, CWS