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

Project Title: SDJV 91-Movements of Common Eiders breeding along the north shore of the Gulf of St. Lawrence: relationships between breeding, molting and wintering sites.

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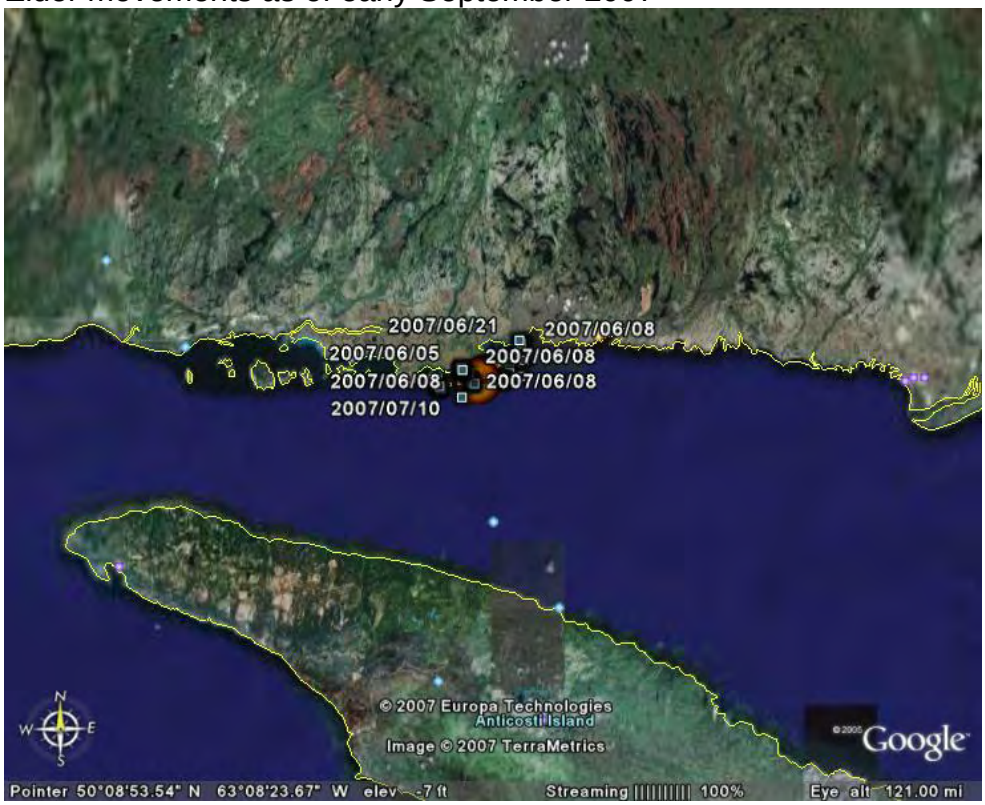
Project Description:
While our knowledge of Common Eiders (*Somateria mollissima dresseri*) breeding in the St. Lawrence estuary has increased over the last decade, little is known about eiders of the lower north shore (JWGMCE 2004). The population has been increasing in recent years due in part to better protection of breeding colonies from disturbance and poaching (Rail and Chapdelaine 2002). However, it is unknown whether the eiders of the St. Lawrence estuary and gulf interact in their population dynamics and/or overlap in their molting and wintering areas. Knowledge of the relationships between breeding, molting and wintering locations for eiders of the lower north shore will complement efforts toward implementing the Québec management Plan for the Common Eider (JWGMCE 2004). The information will also be crucial in the elaboration of a more comprehensive international management Plan for the subspecies *dresseri*. One male and nine females were captured with mist nets or with dip nets while on their nest and implanted with satellite transmitters by a team of experienced veterinarians. All birds survived implantation and their movements are being tracked.

Objectives *(should identify how the project addresses SDJV priorities)*:
1) Determine whether eiders breeding in the Gulf of St. Lawrence have different molting and wintering areas than the eiders breeding in the St. Lawrence estuary.
2) Determine whether their spring and fall migration are similar in terms of routes and timing.

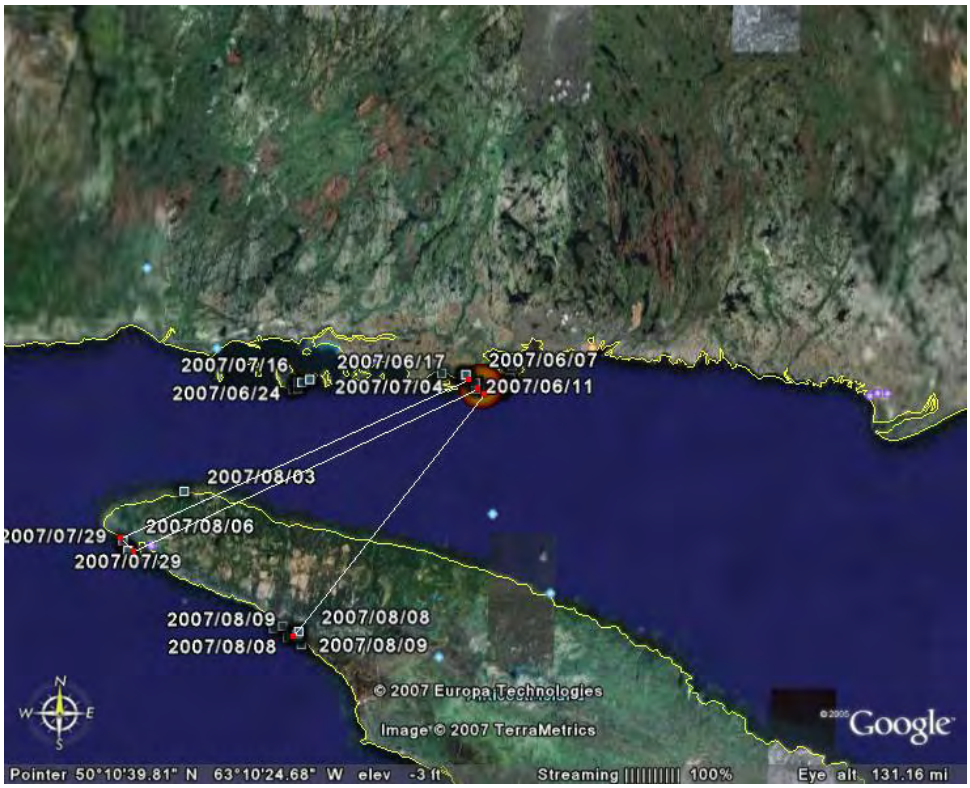
Preliminary Results:
We were successful in implanting radios in 10 birds. Preliminary results indicate that most birds stayed near the breeding colony following implantation of transmitters. Two females may have died or their radio failed a few days after the surgery. The other 8 birds are still transmitting. We update regularly the data on movements in a Google Earth file which can be accessed at the following address: ftp://brouillard.wul.qc.ec.gc.ca/depot/ARGOS_CWS/.

Females were captured with dip nets or in mist nets while the male was captured in a mist net. All females implanted were captured on the nest. (Photo by Frédérick Dagenais**).**

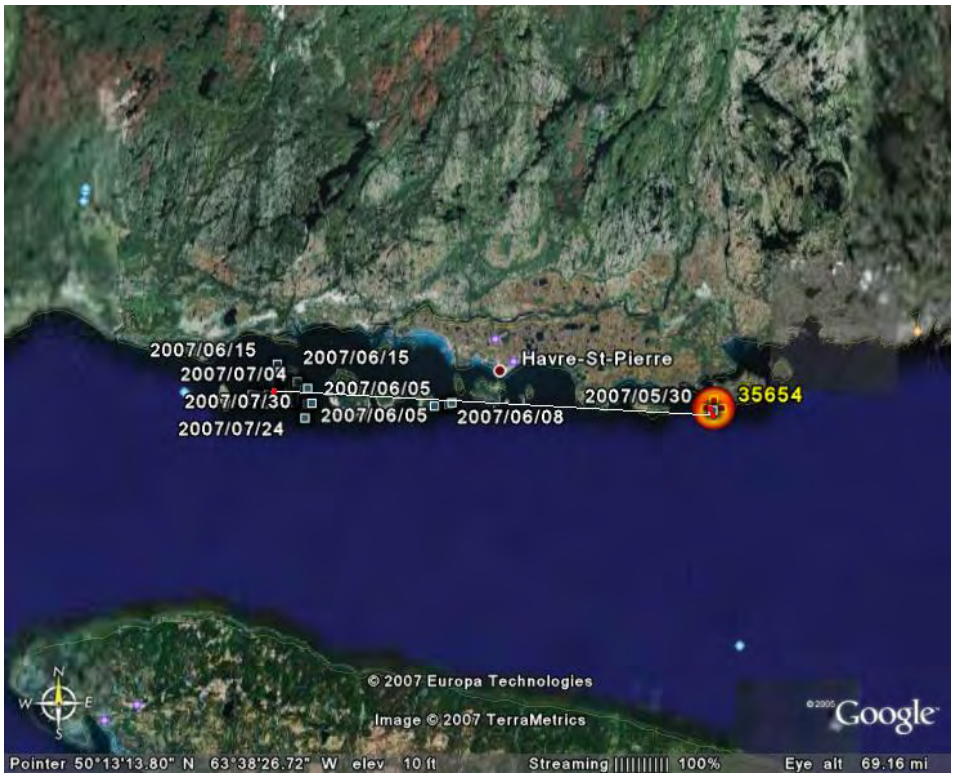
Eider movements as of early September 2007



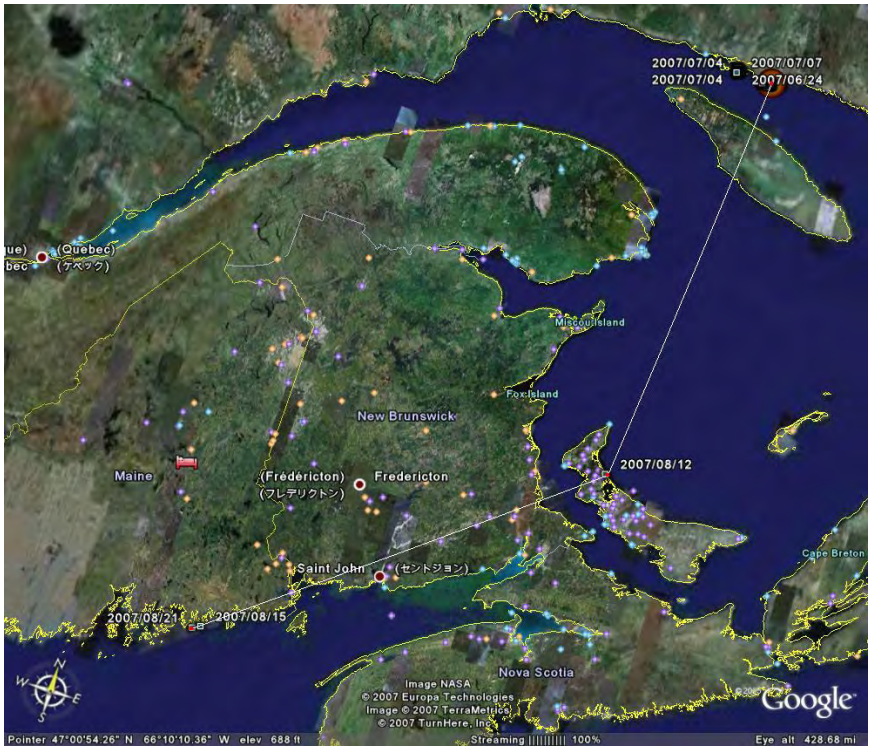
Three females were still in the vicinity of their breeding colony (circle) at Mingan in early August, one 5 km away, one 8 km and the other 4.5 km. They all moved subsequently with two migrating to the coast of Maine near Petit Manna Island.



Three females flew to Anticosti Island to molt, a journey of about 70 km. Travel from Mingan to Anticosti Island occurred between 16-23 July; 31July-3August; 17-26 July respectively for the three females. The coastal waters of Anticosti Island have been identified as a major molting site for male eiders but the use of this molting area by females suggests that at least some females molt there as well. These three females departed and reached their molting site earlier than the two females that went to Maine.



The only male implanted molted 59.5 km west of its captured site (circle). He was located there for the first time on 12 July indicating an earlier movement than the females towards its molting site.



Two females left the Mingan area in early August for the Maine coast, a few weeks after the females that went to Anticosti Island, a journey of about 800km.

We captured the first female on her nest on 25 June 2007. This female had been banded on 29 August 2002, six miles south of Milbridge, Maine by Brad Allen and his group during an eider molt drive. We implanted her (35646) with a radio satellite and as of 2 August she was still near her breeding island (8 km east). The next signal we had from her was on 15 August and she was on the coast of Maine. The second female (35647) was still in Mingan on 5 August and was relocated on the east coast of Prince Edward Island on 12 August. On 21 August, she was in the same general area as female 35646 on the coast of Maine. This indicates that at least some females travel south to molt in Maine and that one (35646) has molted there before. Three other females from the same colony molted around Anticosti Island.

Project Status

Unfortunately, we could only capture one male instead of 4 as planned. However we implanted radios in 9 instead of 6 females and obtained better data for these. We accomplished our objectives and are hoping that the transmitters will last long enough to provide data on the fall migration as well as on the wintering areas. Given that the number of transmitters deployed was relatively small, we hoped that information gathered will help us understand movements of eiders between breeding, molting and wintering areas. The qualitative data gathered so far will help formulate better hypothesis.

Relationships between molting and breeding areas appear much more complex than previously thought. For example, we already had indications from the band returns from the molting birds banded in Maine that some probably bred on the north shore of the St. Lawrence. Indeed, some females banded during the molt had been killed in the spring on the north shore of the St. Lawrence (Brad Allen, unpublished data) but their breeding area was not known. The recaptured banded female indicated that some females from the Mingan

breeding colony on Innu Island molted in the past in Maine. This recaptured female returned molting in Maine, suggesting some fidelity to previous molting areas. Now we also have evidence from three females that some of the females breeding in Mingan on Innu Island molt along Anticosti Island which was not known before. As we receive more locations from these birds, we should be able to better understand the dynamics of molt and migrations. As resources become available, we plan to fit other eiders from this area with satellite transmitters to better quantify the qualitative results obtained to date.

These results as well as others on other sea ducks raise the intriguing question as how do sea ducks select their molting sites? Why would a female travel over 800 km to molt on the Maine coast when there are adequate molting sites just 70 km away? Data on other sea ducks confirm the same pattern, with birds not using necessarily the closest molting area but traveling thousands of kilometers to a particular molting site (Brodeur et al, 2002; Robert et al. 2002). Also we have indication of some level of molting site fidelity as well as changes in molting locations between years (Brodeur et al. 2004; JPLS unpublished data). One hypothesis is there might be some genetic component to the selection of a molting area, which could explain why females from the same colony molt in very different locations with original molting areas possibly linked to past conditions during the last glaciation. An other, is that the molting location is selected somehow during the subadult years and that birds become imprinted to that site, returning to it in subsequent years. In the Northern Common Eider (*Somateria mollissima borealis*), birds from the same breeding colony winter either in Greenland or in the Gulf of St. Lawrence (Mosbech et al 2007) again suggesting similar selection mechanism.

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