

Sea Duck Joint Venture Annual Project Summary for Endorsed Projects FY05 – (October 1, 2004 to Sept. 30, 2005)

Project Title: The effect of hunting and avian cholera on the St. Lawrence Estuary common eiders (SDJV # 30)

Principal Investigators:

- Jean-François Giroux, Département des sciences biologiques, Université du Québec à Montréal, P.O. Box 8888, Station Centre-ville, Montréal, QC H3C 3P8 giroux.jean-francois@uqam.ca
- Jean-Pierre L. Savard, Canadian Wildlife Service, Quebec region. jean-pierre.savard@ec.gc.ca
- Gilles Gauthier, Département de biologie and Centre d'études nordiques, Université Laval gilles.gauthier@bio.ulaval.ca
- André Dallaire, Département de pathologie et microbiologie, Faculté de médecine vétérinaire, Université de Montréal. andre.dallaire.2@umontreal.ca

Partner:

- Jean Bédard, Société Duvetnor Ltée.

Project Description – Despite intensive management of nesting habitat in several colonies of the St. Lawrence River estuary (SLE), the population of Common eiders has not increased. Recurrent epizootics of avian cholera and suspected high harvest levels are the most obvious limiting factors but their relative importance on the population dynamics is currently unknown. In 2005, we continued our banding program of adult females nesting on the SLE islands by capturing them with dip nets. Blood samples and swabs were also collected on a sub-sample of birds caught in different colonies to assess the prevalence of *Pasteurella multocida*, the bacteria responsible for avian cholera.

Objectives – In 2003, we initiated a long-term banding program of the SLE common eiders to 1) assess survival rates of adult females and juveniles, and 2) to determine the relative contribution of hunting and natural mortality including disease (avian cholera). Ultimately, we want to test the hypothesis that hunting mortality is additive to natural mortality. In 2004, we added another objective that aimed at understanding the epizootiology of avian cholera. The specific objectives of this project is first to determine the variation in the prevalence of *Pasteurella* in live birds among colonies and years. Secondly, we want to assess how the bacteria are carried over years by repeated sampling of the same birds. Finally, we propose to compare the serotypes of the bacteria sampled in live birds in different colonies and years as well as with those found in dead birds during recent outbreaks.

Preliminary results – In 2005, we captured 790 nesting females on 13 islands of the St-Lawrence estuary. This included 96 recaptures of birds banded in previous years. Recaptures will greatly improve our survival estimate of adult females because the number of recoveries remains low (less than 20 birds so far). We double marked 274 females with stainless steel and standard aluminium bands to estimate wear/loss of aluminium bands. To our knowledge, this has not been done for any sea ducks that are probably more susceptible to band wear/loss than other waterfowl species, which could bias any estimates of survival rate. This brings our total of banded birds to 1885. No juveniles were captured this year because of low production. Our

annual survey along a 200-km stretch of the south shore revealed the presence of only 325 juveniles (classes 2b or 2c) in late July compared to 579 in 2004 and 2,169 in 2003.

Blood samples, cloacal and oral swabs were taken on 173 birds (Fig. 1). Although no outbreak was observed in 2005, *Pasteurella multocida* was detected in 30.5% of the birds which is much higher than the 8.7% established in 2004. Serotyping of the bacteria will be initiated shortly. Nine birds were sampled for a second time. Four were negative in both years, three became positive and two positive birds in 2004 became negative in 2005. To our knowledge, this type of information has never been gathered and will greatly help to understand the epidemiology of avian cholera. More data are needed, however, to understand these variations.



Figure 1. Oral swab taken on a nesting female Common eider in the St. Lawrence estuary.

Project status - The banding project will be continued next year and we aim at capturing 1000 nesting females. We hope to get funding to pursue this effort for at least three more years and to recruit a Ph.D. student to carry the analyses based on recaptures and recoveries. In 2006, we propose to collect additional samples from nesting females to assess the presence of *Pasteurella*. The originality of this work is the possibility to monitor the condition of the same birds in successive years. This will help to understand how the bacteria are carried over the years. Our results on eiders could also be applied to other wildfowl species.

Project Funding Sources (US\$)

SDJV	Other US federal	US non-federal	Canadian federal	Canadian non-federal	Source
14,250					
			8,500		CWS
				4,250	Duvelnor

Total Expenditures by Category (US\$)

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding	12,000				12,000
Surveys					
Research	15,000				15,000
Communication					
Coordination					