SURF AND WHITE-WINGED SCOTER GROWTH TRENDS AND BLOOD CHEMISTRY

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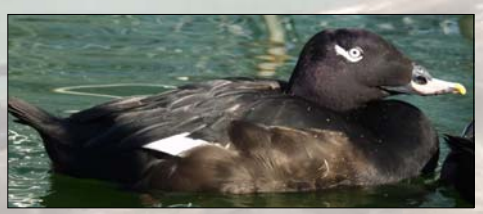
INTRODUCTION

Very little information is known about the Atlantic Flyway scoter populations. A few field studies have been completed on the breeding biology of surf and white-winged scoters in Lac Malbaie, Quebec and Redberry Lake, Saskatchewan, but very little is known about duckling growth. These species nest in very remote localities that are difficult to access for nest searches. Patuxent Wildlife Research Center established a captive flock of surf and white-winged scoters in 2003 for a study on energetics and physiology of these species. This study provides information on growth curves and blood chemistry of surf and white-winged scoter ducklings.

OBJECTIVES

- Collect surf and white-winged scoter eggs from their known breeding areas and establish a captive colony of seaducks.
- Determine growth trends of scoter ducklings.
- Create a baseline of scoter blood chemistry for future comparisons with wild birds.

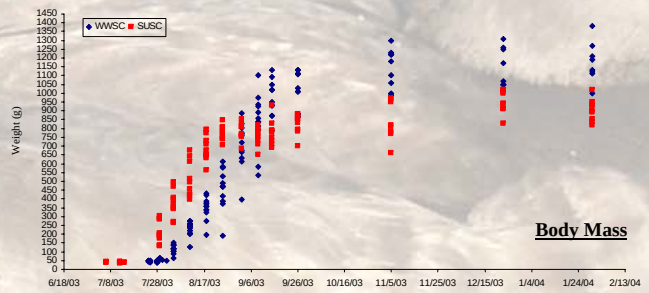


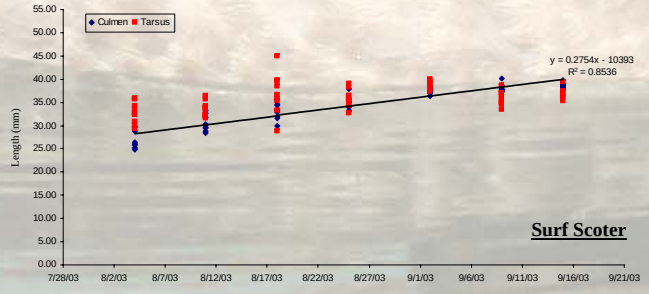
METHODS

Eggs were collected from the wild in northern Canada from nests of scoters (surf and white-winged) in areas where these species are successfully breeding. The eggs were incubated at 37.5°C and 70 % humidity until pipped and then they were transferred to a hatcher at 37.5°C with 80% humidity. Once the ducklings hatched they were individually web tagged and were transferred to an indoor fiberglass tank with access to 0.2 cm of water for approximately one week. Once the ducklings had become fully waterproofed, they were transferred to another tank with access to 3.5 cm of water. As the ducklings aged they were allowed access to deeper water and mealworms were used to encourage diving for food. All ducklings were fed Mazuri® Starter until they were a month old when they were fed Mazuri® Seaduck Diet. Measurements of the tarsus, culmen, and body weight were taken weekly to provide some background growth data for surf and white-winged scoters. Blood samples were also drawn from the jugular vein of the scoters to provide some baseline data for future comparisons.

RESULTS

A total of 9 surf scoters and 12 white-winged scoters hatched. The hatchability was over 70% which was normal for eggs incubated in an artificial environment (Table 1). The length and width of the eggs were similar for both species, but the weights of the white-winged scoter eggs were significantly heavier. Hatch weights of ducklings, however, were similar for both species. The growth (weight) pattern exhibited the expected asymptotic exponential increase over time. The white-winged scoter gained more weight over time than the surf scoter, probably due to genetic differences; white-winged scoters are ultimately larger than surf scoters. There was no apparent trend for surf scoter tarsus growth, but white-winged scoter tarsus growth exponentially increased until reaching a plateau. There was a linear increase in the length of the culmen for both species. The blood chemistry for both species was predominately similar, which was expected (Table 2). Hermatocrit, white blood cell count, absolute lymphocytes, phosphorus, potassium, chloride, and uric acid were all significantly different between species. Surprisingly, based on overall mortality (3 white-winged scoter, 0 surf scoter) the surf scoters appear to have a better resistance to aspergillosis, a disease of captive seaducks, than the white-winged scoters. The blood test for aspergillosis showed only 2 surf scoters testing slightly positive (been exposed to the disease but have not contracted it), whereas, all the white-winged scoters were slightly positive. This is an aspect that we are presently studying more intensively.





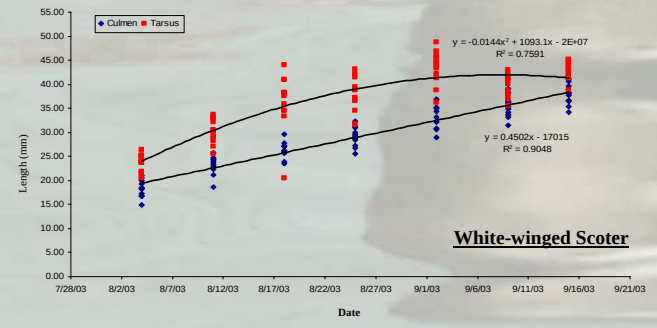


Table 1. Mean dimensions, weights (egg and hatch), and percent hatchabilities of surf scoter and white-winged scoter eggs collected from breeding areas along the Atlantic Flyway and incubated in a constant environment.

	n	Length (mm)	Width (mm)	Weight (g)	Hatch Wght	Hatch (%)
SUSC	16	6.23	4.26	57.25	40.55	87.50
WWSC	20	6.67	4.61	74.77	48.00	70.00

Table 2. Baseline blood chemistry for captive white-winged and surf scoters.

Blood Parameters	Means	
Species	WWSC	SUSC
Hermatocrit (%)	46.92	50.56
WBC	5.32	7.67
Het/Poly (%)	31.42	25.56
Lymphocytes (%)	65.08	72.44
Monocytes (%)	0.42	0.44
Eosinophils (%)	0.08	0.11
Basophils (%)	3.00	1.44
Morphology	NORMAL	NORMAL
Glucose (MG/DL)	208.25	168.67
Total Protein (G/DL)	4.35	4.87
Albumin (G/DL)	2.05	2.33
Ast (sgot) (U/L)	36.00	26.44
Cholesterol (MG/DL)	278.25	349.22
Calcium (MG/DL)	10.02	11.33
Phosphorus (MG/DL)	0.61	1.08
Sodium (MEQ/L)	152.92	153.89
Potassium (MEQ/L)	2.12	2.62
Chloride (MEQ/L)	114.92	110.33
Globulin (G/DL)	2.30	2.53
CPK (U/L)	259.25	457.67
Uric Acid (MG/DL)	8.17	3.72
Asper Antigen	2.44	1.28