

**FACTORS AFFECTING THE GROWTH AND DISTRIBUTION OF TRUMPETER SWAN POPULATIONS IN ALASKA FROM 1968-2005 (PRELIMINARY RESULTS)**

**Joshua H. Schmidt, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, AK 99775**

**Mark S. Lindberg, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, AK 99775**

**Devin S. Johnson, National Marine Mammal Laboratory, Alaska Fisheries Science Center, NOAA, Seattle, WA 98115**

**Bruce Conant, U.S. Fish and Wildlife Service, 3000 Vintage Blvd., Suite 240, Juneau, AK 99801**

**James G. King, Address, 1700 Branta Road, Juneau, AK 99801**

---

**ABSTRACT**

Surveys of all known Trumpeter Swan breeding habitats in Alaska were first conducted in 1968. Beginning in 1975 and every 5 years thereafter the survey has been repeated, and the numbers and locations of every swan sighting were recorded. The number of swans counted increased from 2,845 in 1968, to 17,157 in 2000, and the amount of area surveyed increased four-fold during the same period in response to perceived expansion of the population. This increase in coverage creates substantial problems for standard analytical techniques because it is difficult to separate increased coverage from actual increases in the population. Recent advances in computing power and statistical methods have allowed us to create models that account for the increased area and provide accurate estimates of population growth rate. Our preliminary analysis of the 1968-2000 data shows that the number of adult swans has increased at an annual rate of 0.076 (95%CI 0.072-0.080) after controlling for individual survey unit and latitude. The best model also indicates that adult swan numbers in later years increased at higher rates at higher latitudes, which had been suspected previously based on pilot observations. One possible reason for this pattern could be an increase in the average number of ice-free days at higher latitudes, which may allow Trumpeter Swans enough time to nest and rear young. Cygnet numbers grew at a slower rate than adults and show evidence of slowing in later years, which may indicate that breeding habitats are becoming saturated. Future analyses will investigate the influence of fire, elevation, vegetation, and development activities on Trumpeter Swan nesting and brood-rearing locations. Final analysis of the 5-year survey data is expected to be completed by the Spring of 2006, and the analyses of the nesting and brood-rearing data should be completed by the summer of 2007.

---