

**Longevity and Age of Maturity of White-winged Scoters.**—Additional information on the longevity and age of maturity for White-winged Scoters (*Melanitta fusca deglandi*) nesting on islands in Redberry Lake, Saskatchewan, has become available since publication of our earlier results (Houston and Brown 1978). Of 1391 ducklings that were web-tagged in the nest during the summers of 1976–79, 3 were first found nesting at 2 years of age, and 7 at 3 years. Females first found at 3 years could have nested in the previous year, but were undiscovered, or their nests were abandoned or destroyed before we were able to capture them. The earliest age some females nest is 2 years, and some females may delay until 3 years of age.

A new longevity record was set by a female (847-90183) banded on her nest on 12 July 1969 and recaptured on her nest in 1977, 1979, and on 30 June 1980. This female was at least 13 years old because female scoters first breed at 2 years of age, and 11 years had elapsed since the hen was first captured on her nest.

Based on our recapture information (Table 1) and using methods outlined by Chapman and Robson (1960), we estimate the annual mortality rate for adult females between 1 to 11 years after banding to be  $36.2 \pm 2.8\%$ . The estimated rate of mortality for females 0 to 1 year after banding was not included in this estimate because the mortality rate for this interval was statistically incompatible with rates for the following years. Other factors affect the accuracy of our estimate: (1) sample sizes were consistently well below the 300 individuals per year recommended by Brownie et al. (1978) for accurate results; (2) banding and recapture efforts varied dramatically between earlier and later years; and (3) we captured a maximum of 50% of all nesting females on the lake in the best years. Considering these biases, our estimate should be viewed with caution. However, we believe that if our estimate of survival is inaccurate, it is probably too low.

Mortality rates of Velvet Scoters (*M. f. fusca*) nesting in Finland were lower (28%—recalculated using the Chapman and Robson 1960 method) than for our population, but these females nested in a coastal area near the wintering grounds and did not have to make a long overland migration (Koskimies 1957).

Of the waterfowl for which mortality estimates are summarized in Bellrose (1980), the Bufflehead (*Bucephala albeola*), Common Goldeneye (*Bucephala clangula*), and Hooded

TABLE 1. Number of adult female White-winged Scoters known to be alive in subsequent years on Redberry Lake, Saskatchewan.

Year banded	Num-ber banded	Minimum number alive										
		Years after banding										
		1	2	3	4	5	6	7	8	9	10	11
1966	8	4	3	3	2	1	1	1	1	1	1	0
1967	6	1	1	1	1	1	1	1	1	1	1	0
1968	2	0	0	0	0	0	0	0	0	0	0	0
1969	3	3	1	1	1	1	1	1	1	1	1	1
1970	6	3	2	1	1	1	1	1	1	0	0	
1971	9	4	4	4	4	4	4	3	3	2		
1972	8	7	7	7	5	4	3	3	1			
1973	6	3	3	3	3	2	1	1				
1974	0	0	0	0	0	0	0					
1975 <sup>a</sup>	31	13	12	10	6	4						
1976	38	22	19	15	11							
1977	55	28	25	11								
1978	51	27	18									
1979	54	11										
Total	277	126	95	56	34	18	12	11	8	5	3	1

<sup>a</sup> Intensive studies began on Redberry Lake and continued through 1980.

Merganser (*Mergus cucullatus*) have survival rates similar to our estimate for White-winged Scoters. These species are members of the tribe Mergini, and all are thought to require 2 years to reach sexual maturity (Bellrose 1980).

A minimum average age for females nesting on the islands in Redberry Lake can be estimated from our recaptures in 1980 (the year for which the most recapture data are available). Assuming that each female was 2 years old when first captured and banded, the average age for the population was 4.2 years. This estimate is certainly low, because it is unlikely that all females were banded in their first nesting season.

Our estimates of annual survival rate and the average minimum age of nesting females suggest that White-winged Scoters are long-lived waterfowl. The low annual mortality rate may be an important factor permitting White-winged and Velvet scoter populations to endure their consistently low annual production (Koskimies 1955, 1957, Hildén 1964, Brown 1981, Brown and Brown 1981).

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**Goshawks Prey on Radio-tagged Sharp-tailed Grouse.**—On 21 November 1977, at 1424, I observed a Goshawk (*Accipiter gentilis*) pursue a radio-tagged juvenile male Sharp-tailed Grouse (*Pedioecetes phasianellus*) 120 m across brush-prairie into a dense jackpine (*Pinus banksiana*) stand in Douglas County, Wisconsin. At 1431, 40 m from the jackpine stand, the Goshawk flushed from the grouse carcass and flew out of view. This Sharp-tailed Grouse weighed 935.0 g 24 days earlier when radio-tagged with a 26.7-g (2.8% of bird weight) radio-package similar in design to that used by Dumke and Pils (1973:43–44).