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More Rapid Wear of Bands on Common Goldeneye than on White-winged Scoter

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Adult female Common Goldeneyes, (*Bucephala clangula*), recaptured in nest boxes at the University of Saskatchewan Field Station at Emma Lake, Saskatchewan, have shown evidence of unusually rapid band wear. From 44 banded adult females recaptured in June of subsequent years, seven have carried bands so thin that the numbers were barely visible. In spite of the unpleasant extra work entailed in band schedule reporting of rebanded birds, these bands were replaced. Only in 1985 did we weigh the badly worn bands removed from 3 of 8 recaptured females, all having been banded as adults. The weight of bands 786-38175 and 786-38174, placed in June 1980, was 510.7 mg and 581.2 mg, and that of 786-38174, placed in June 1980, was 510.7 mg and 581.2 mg, and that of 786-38190, placed in June 1982, was 584.7 mg.

Unfortunately reference archive bands of the same size 6 series were unavailable from the Bird Banding Laboratory. On their advice, we took the mean weight of three unused bands, 836-90929, 930 and 931, weighing respectively 862.9 mg, 861.0 mg and 857.6 mg, as roughly representative of the weight of the 786-series. From this we calculated the rate of wear for the three goldeneye bands, yielding weight losses of 41% and 32% for the 5-year-old bands and 32% for the 3-year-old band. The annual weight losses from this small sample of size 6 bands are respectively 8.2%, 6.4% and 10.7% per year, with a mean of 8.4%.

This greatly exceeds the weight loss of 5.45% per year reported for size 3 bands on Common Terns by J.P. Ludwig (1981), and of 4.08% per year for size 2 and up to 6.62% per year for size 3 bands reported on Common Terns, *Sterna hirundo*, by Hatch and Nisbet (1983). Hatch and Nisbet (1983, 1983) have also reported annual loss rates of 5.67% for size 2 bands on Roseate Terns, *S. dougallii*, but only 0.91% for size 3 bands on Arctic Terns, *S. paradisaea*. Ludwig (1967) reported annual wear rate of 9.55% for size 5 bands on Ring-billed Gulls, *Larus delawarensis*. Such differences may represent increasing

wear on larger bands, but may also depend on where the bird winters; although Hatch and Nisbet expected, as we did, to find more rapid wear in salt water, bands from inland tern colonies wore more rapidly than those from coastal colonies.

In handling 79 recaptured White-winged Scoters, *Melanitta fusca*, at Redberry Lake, Saskatchewan, we have found a much lower rate of wear in size 7A bands. All 36 scoters recaptured in 1985, up to 16 years after banding, carried well preserved bands, but an adult female dead on her nest that year carried a thin band, 1037-81316, place in 1977, weighing only 1.13 g. In addition, in 1984, 2 of 43 adult female scoters recaptured on their nests carried bands that were unduly thin and were replaced. Band 577-29704, placed on an adult female scoter in 1972, weighed 1.19 g at recapture; 1007-88847, placed in 1976, weighed 1.13 g. Unworn bands from the same series weighed 1.49, 1.49 and 1.50 g. Annual rates, for these selected individuals demonstrating band wear, were only 1.7%, 3.0%, and 3.5%.

The difference in band wear between the two species is unequivocal to the observers, though the sample size of weighed bands is as yet too small to be statistically significant. All birds were banded as adults and recaptured as adults, on their nests. Neither species breeds until two years of age.

Confounding variables are nevertheless difficult to interpret. 1. The scoters tended to be older when recaptured, a finding that should have offered, if anything, a better opportunity to detect band wear. Our oldest goldeneye needing a new band was only five years after the initial banding, perhaps only seven years old, and our youngest scoter showing evidence of band wear was seven years after banding, at least nine years old. One might presume that the smaller goldeneyes don't live as long as scoters, but it is also quite possible that some of the opposite bias, that annual band wear tends to diminish over years, seems

improbable. 2. In spite of the usual tendency for band wear to increase with increasing band size, it could be that 7A bands have reached a point of sufficient mass to be more resistant to band wear. 3. Though one would have predicted a greater corrosive effect in salt water, causing increased band wear (e.g. aluminum windows are inappropriate for homes exposed to sea spray, Dix et al 1961), it is the scoter that spends all of its wintering hours offshore on ocean (Bellrose 1976).

Our sample size of weighed bands is small and clearly biased towards individual birds with major band wear. We did not remove and weigh bands on all recaptured birds. We have nevertheless concluded that aluminum bands are no longer adequate for the type of long-term lifetable study we have underway (DuWors and Houston 1984). We agree with Hatch and Nisbet's 1983 recommendation: "... incoloy bands should be used for any study in which age of banded birds is an important parameter." Since 1986 we have been using incoloy stainless steel bands for Common Goldeneyes.

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