NOTES ON THE RELATIVE MORTALITY OF ADULT AND YOUNG PINK-FOOTED GEESE

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Lack, Farner and others have shown for a number of species that young birds survive less well than adults, but none of the birds they dealt with were the quarry of sportsmen. Thus it is of some interest to see whether the mortality of geese in their first winter differs much from that of older birds. This has been done for a population of the Canada Goose (*Branta canadensis interior*) (see H. C. Hanson and R. H. Smith, 1950, Canada Geese of the Mississippi Flyway, *Bull. Illinois Nat. Hist. Survey*, vol. 25, art. 3, 210 pp.), but not hitherto for grey geese. Bellrose (in Hanson and Smith, *loc. cit.*) has suggested a measure of the difference in mortality rates which he terms the Vulnerability Quotient (V) and which is obtained from the equation

$$V = \frac{\dfrac{\text{number of first-winter birds recovered}}{\text{number of first-winter birds ringed}}}{\dfrac{\text{number of adults recovered}}{\text{number of adults ringed}}} .$$

A value of V significantly greater than 1·0 implies that first-winter birds are more vulnerable than adults.

If the ringing and recovery figures for Pinkfeet obtained in the last two winters are substituted in the equation we have

$$V\,(1950\text{–}51) = \frac{\frac{23}{170}}{\frac{22}{200}} = 1{\cdot}23\,;\quad V\,(1951\text{–}52) = \frac{\frac{102}{902}}{\frac{67}{757}} = 1{\cdot}28\,;$$

$$V\,(1950\text{–}52) = \frac{\frac{125}{1072}}{\frac{89}{957}} = 1{\cdot}27.$$

It appears that the mortality of first-winter birds is somewhat greater than that of adults : but applying the χ^2 test to the numbers of birds recovered and not recovered in the two age classes (using the data for both seasons together) we have $\chi^2 = 3{\cdot}02$, $\cdot 10 > P > \cdot 05$, i.e., such a discrepancy between the mortality rates for adult and young birds might be obtained by chance once in twenty such samplings, perhaps as often as once in ten, even if no significant difference existed in the population as a whole, so that it is by no means certain that there is a difference in the mortality rates.

This result is in striking contrast with those obtained by Hanson and Smith for the Canada Geese of Horseshoe Lake, Illinois. In the winter of 1943–44 the value of V for that flock was 8·34, and from breeding-ground recoveries in 1942–44 V was 2·8. The difference between Canada Geese and Pinkfeet is believed to result from differences in the methods of shooting and the much more extensive use of decoys (dummies) in North America.

There is no significant difference between Iceland-ringed and British-ringed Pinkfeet in the relative proportions of adult and first-winter recoveries.