BASIC DATA FROM WILDFOWL COUNTS

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A Summary

IT was desired to test the assumptions that errors due to the spacing of the counts, to the mobile nature of the birds and to the estimation of numbers will cancel out. The detailed results of the study are being published in the Proceedings of the 12th International Ornithological Congress 1958.

Miss Eileen Palmer, in the course of three seasons (late July to early April) counted the duck present on Durleigh Reservoir, Somerset on 565 days. In the last two seasons she hardly missed a day. Although Miss Palmer's marathon efforts are unmatched, less complete data over single seasons from Barn Elms and Lonsdale Reservoirs in London (108 counts) and Blagdon Reservoir, Somerset (67 counts) collected by teams led by Mr. D. A. Pomeroy and Mr. B. King are used for some comparative purposes.

The mean value of near daily counts gives a good measure of the population level within the month. The count made on the Count Date was found to err, on the average, by between a quarter and a half of this true monthly mean value. Some species are more likely to deviate in this way, due to more rapid fluctuations in their population. This instability is measured by a statistic (V), the coefficient of variation. For Durleigh the species present can be arranged in increasing order of V (i.e. increasing instability):— Mute Swan, Tufted Duck, Teal, Shoveler, Mallard, Pochard, Wigeon. The value of V is not wholly a species characteristic, but will be affected by the topography of the water, its degree of disturbance, relation to migration flyways, etc. Thus Blagdon gave similar values for Teal and Wigeon, but both there and on the London reservoirs, Tufted Duck gave a higher and Mallard a lower value. Extensive data from other waters are badly needed.

Under Durleigh conditions only the Swan and Tufted Duck populations are sufficiently stable to be adequately described on that one water by monthly counts. This stability is affected by short-term fluctuations caused by disturbance, feeding flights and movement in and out of cover; by medium term fluctuations caused by weather movements; and by long term fluctuations caused by seasonal migrations. By grouping the data into periods of varying lengths it was shown that counts would have to be made at weekly intervals if there was to be a substantial improvement in accuracy over the monthly counts. The improvement would not be commensurate with the increased effort involved.

The assumption that movements of birds between waters would cancel out was tested by comparing the values of V obtained from two waters considered first as separate units and then as one unit. For Lonsdale and Barn Elms, only half a mile apart, a big reduction in V (i.e. considerable cancelling out) did occur in the latter instance. Reductions of the same order were obtained when Durleigh and Blagdon, 18 miles apart, were combined. There is not necessarily an interchange between these two waters, but at least fluctuations in different senses were occurring on them.

A number of phenomena, particularly weather, affect stability but, being largely unpredictable, cannot be allowed for in planning. Predictable

phenomena could be taken into account if it were shown that they produce important effects. Stability is greatest in certain months, but not the same for all species, and the monthly counts have to extend over a sufficient period to cover all these. No great difference was found between morning and afternoon counts; between counts made at high tide and low tide (Durleigh is only 6 miles from the coast); between counts made at the full moon and new moon periods. The latter result contrasted with suggestions that there would be much greater variation at Full Moon on account of increased migration activity and nocturnal feeding.

In most British wildfowl counts the individual birds can actually be *counted* and errors from this source would be small. When large numbers of birds are present, when they are restless or liable to disturbance or when they are in flight it is necessary to make *estimates*. The accuracy of such estimates was tested by asking more than a hundred people, of widely differing experience, to estimate the numbers (71—948) of geese, in flight and on the ground, on a series of twelve full plate photographs. Errors were large, averaging about one-third. Persons with much field experience of counting were only slightly better than those with none, but they were more consistent in their estimates. From a relatively low level there was no tendency for the errors to become proportionately larger as the number of birds increased. The errors of individuals tended to cancel each other out, the overall error for the whole series of tests being less than 10%.

Problem

Photographs of geese in flight appear on page 207. It would further our investigations if you could *estimate* the number of geese in each case, looking for 30 seconds *only*. Please send your honest answer on a postcard, indicating whether you have had experience of counting and estimating in the field. The correct answer will be published in the next Bulletin, but you can, of course, count the birds yourself if you like.