

FEATURE ARTICLES

SOME PROBLEMS OF SOUTHERN AFRICAN WATERFOWL BIOLOGY

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In a previous issue of Safring News (Vol.3 (1):23-25) I described the regular and repeated trapping of individual Black Duck Anas sparsa. While this work was part of a larger and more extensive research programme, the retrap data have provided us with much important information. For the benefit of those who might be interested in taking up duck ringing I would like to outline some



**A Hottentot Teal being ringed at
Barberspan Nature Reserve.**

problems in waterfowl biology. People regularly handling duck can contribute significantly to the solving of these problems. Since bird ringers regularly obtain information on moult and weight, the problems outlined below relate to these activities.

The body moult cycle(s) of southern African waterfowl is one problem that needs investigating. In the northern hemisphere male duck undergo two body moults per year (winter eclipse plumage - dull; spring/summer breeding plumage - bright; autumn/winter eclipse plumage - dull). As the dull female type eclipse plumage and the bright breeding plumage are markedly different this twice yearly body moult is a readily observed phenomenon. As our southern African duck lack this striking bright male breeding plumage it has been assumed that these birds generally undergo one body moult per year. There is evidence that this may not be so and one specific exception is already known. This is the Maccoa Duck which has two

body moults per year. We require additional data.

The problem could be investigated by clipping the distal half of about 50 contour feathers in each of the following regions - neck, breast, flanks, belly and undertail coverts. This should not materially affect the birds, but should be sufficient to enable rapid detection of feather replacement. If birds are being handled at more frequent intervals pin feather counts per unit area should be carried out. Unimodal or bimodal annual peaks of pin feather numbers should occur.

It is important that this study be carried out on individual birds. The timing of body moult is dependent on the time of breeding. As breeding is more or less synchronous throughout the northern hemisphere the phenomenon of body moult is clearly defined. In the southern hemisphere breeding seasons are more spread out so that it is likely that, at any one time, a population of duck will contain individuals exhibiting a range of moult stages. Therefore one cannot solve the problem satisfactorily by summing the means of a number of birds trapped throughout the year. It must be carried out on individuals. Full sexing and ageing criteria for southern African waterfowl have not been worked out. However the surest method of sexing and ageing, by cloacal examination, has been described by David Skead (Safring News 2(1):14-17).

Another field of research that requires investigation is the pattern and magnitude of weight fluctuations throughout the year. If we accept that gross changes in body weight reflect changes in body condition, it should be possible to relate these fluctuations to periods of stress such as breeding, moult or food shortage (reflected in low or decreasing body weight) or weight increases associated with increases in fat reserves preceding moult or breeding.

Weight increases and decreases associated with breeding are of particular interest. Over and above the energy required to lay up to two-thirds their body weight in eggs the energy cost of incubating these eggs cannot be balanced by the amount of food ingested by the female during her brief periods off the nest. As a result the bird must live off its fat reserves. This results in daily weight losses in the region of 1% body weight per day which adds up to a considerable weight loss over the 25 days or so of incubation. The pre-egg production body weight increase will therefore affect not only the clutch size but also the ability of the parent bird to incubate the clutch successfully. As southern hemisphere waterfowl habitats appear to sustain a lower standing crop of waterfowl foods than equivalent northern hemisphere habitats, the problem arises as to how our waterfowl are adapted to this situation. Possibly they feed more intensively or for a longer period prior to egg laying, or they lay smaller eggs and smaller clutches, or they spend more time off the nest feeding. While these latter problems require intensive research there is little doubt that data on the body weight fluctuations of individual birds would be invaluable. Once again it is necessary to sex and age the birds and to obtain some index of general body size such as wing length. In addition it would be as well to know the phase in the annual cycle that the birds is in. These data can be obtained by a combination of information taken from the bird in hand (signs of recent moult, plucking of belly down to line nest, body moult) and field observation. Individuals in the field can be recognised by colour rings or by nasal saddles (Heřl, 1971, Safring News 1(1):19).

One other problem that can be investigated is the degree of

fidelity to natal area. In the northern hemisphere the female returns faithfully to the area from which she fledged. The males on the other hand, who pair with the females on the wintering grounds, follow the female to her natal area. Therefore the return of a male to his natal area depends entirely on the female with whom he pairs. As the duck in these winter concentrations are often drawn from diverse geographical areas, the importance of this behaviour from the point of gene flow through duck populations is considerable. There are also important management implications. In North America, and recently in South Africa, experiments have been carried out on the value of 'seeding' waterfowl breeding grounds with reared birds. If few of these birds return after the non-breeding dispersal period then the exercise has little value. If only the females return in numbers then they should be stocked preferentially. Cassie Heÿl described his work on this problem on the Cape Teal in the first issue of Safring News. We urgently need data for other species.

If large numbers of juveniles in the pre- or immediate post-fledging periods can be caught, sexed and banded then it may be possible to retrap some of these individuals in later years. Differential recovery rates and distances may provide some clues as to the degree of natal area fidelity.

Finally one might look at nest site tenacity of females from year to year. Do females return to nest at the same water from year to year? Do females remate with their original mates? In the northern hemisphere (where pair bonds are short lived) this phenomenon appears to be of rare and fortuitous occurrence. There is some evidence that in at least some anatids in the southern hemisphere pair bonds are both longer and the number of rematings higher. Shoveler and Redbill would be good species to investigate from this point of view. Colour-rings would be essential for marking the birds.

These therefore are some problems that a team of ringers could investigate. The basic requirements would appear to be a suitable locality, a variety of traps (nets, walk-in and decoy traps, nest traps and clap nets) colour-rings and plenty of patience. However the data obtained would be most valuable to waterfowl biologists. Moreover such information provides us with much needed back-up data used in presenting arguments for the conservation of important wetlands. Problems such as those outlined above are a starting point to a wider understanding of our waterfowl populations.

RINGING AND COLOUR MARKING THE RED-BILLED OXPECKER IN THE KRUGER NATIONAL PARK

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1. Introduction

The Red-billed Oxpecker Buphagus erythrorhynchus is a bird with a very close relationship to certain mammal species. Very little is known about this strange bird and a two year project was