BEHAVIOURAL RESPONSES OF BIRDS TO THE RINGING PROCEDURE

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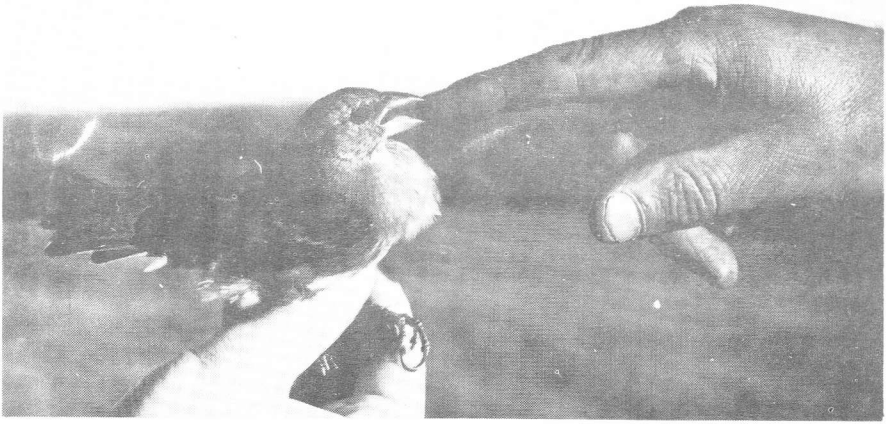
A bird when netted or handled will display a range of behavioural responses typical of that species. The experienced ringer handles the birds familiar to him according to this typical response. However, this knowledge is often limited to the bird's ability to defecate, to vocalize and to inflict injury upon the ringer. Many are the stories concerning the damage inflicted upon unsuspecting innocents by Thick-billed Weaver, Black-collard Barbets and the like.

Much more information can be derived by studying the birds' behaviour. In an attempt to do this, I undertook an over-ambitious B.Sc. Honours project on the subject. Although results were limited and not statistically significant in many instances, because of the lack of time, some ideas worked on may interest the ringer.



A dull-plumaged female Masked Weaver attacks a ringer's finger.

Why does the bird behave as it does? The present bird species are the product of selection pressures over thousands of years, and their behavioural repertoire is equally a product of this evolutionary process. The ringing procedure can be thought of as a way of comparing the response of a wide variety of species to a standard test situation. That the situation is not natural is not important. The response obtained must reflect genetic programming as a result of selection pressures operating upon the species. If the behaviour of ecologically similar species is compared, it is possible to understand selection pressures acting in such situations. For example, the waders (Charadriidae and Scolopacidae) showed primarily escape-orientated behaviour, and little aggression. The explanation is that as waders inhabit open areas, the most successful response to potentially dangerous predators is escape, as opposed to attack.

A similar characteristic e.g. highly contrasting plumage can be chosen and the behavioural responses of such bird species compared. As an example, the study indicated that species with contrasting

plumage tended to vocalise less than sombrely-coloured species. The explanation is that in birds with conspicuous contrasting plumage vocalisation is less important as a means of communication, as plumage displays are used in communication.

These two examples indicate the type of result that can be obtained. However, it must be remembered that many selection pressures act upon the species, some of which will tend to produce opposite trends.

One cannot always expect the behavioural response to netting and handling to be appropriate to the situation i.e. whether it has survival value to the species. Survival value is a term which is somewhat confusing in this context, because all ringed birds are supposed to survive the ringing procedure. The behaviour may be inappropriate because ringing is a novel occurrence in the evolutionary history of the species - it has not occurred in the past.

Thus, a Malachite Kingfisher erects its elongated crest feathers and twists its head from side to side. Yellow-eyed and Forest Canaries may sing - see the first two issues of Safring for other instances of singing during handling.

The hypothesis put forward is that this inappropriate behaviour is the result of conflict behaviour. The bird is stimulated to flee and is conversely stimulated to attack the "predator" - the ringer. Conflict may result from the physical obstruction of escape. Anthropomorphically, the bird does not know what to do, so it undertakes a third course of action. Bronze Mannikins occasionally lifted one wing vertically upwards during handling. This was recognised as the one-up wing display described by Morris (1957), which has a function during aggression between two Bronze Mannikins. In the ringing procedure, it was out of context and inappropriate - it has no survival value.

Upon being netted, the bird is aroused physiologically by the sympathetic nervous system. This arousal is similar in birds and mammals and involves physiological changes in heart rate, blood distribution, hair and feather erection, sweating, defecation, etc. In addition, the bird is "emotionally" aroused and aggression, fear and such responses are released. Such arousal is stressful and dangerous to the individual over long periods of time.

The study showed that when the ringer was visible to the bird, arousal and hence stress was greatest. Vocalization, indicative of emotional arousal, and defecation, indicative of physiological arousal was greatest at this time. In addition, heart rates of domestic pigeons were lower when temporarily blinded during handling, than when not blinded - 158 beats per min. average as opposed to 218 beats per min. average. Further, the period of greatest stress appears to be when the bird is disentangled from the net.

Practically, ringers should keep birds in holding bags and boxes, in preference to hand holding, in order to reduce stress. In addition, it is often suggested (without any factual basis) that the upside-down funnel weighing harms the bird. Apart from possibly disorientating the bird, this procedure is less stressful than being hand-held, as indicated by defecation, vocalization and heart rates.

However, my opinion is that if a bird is handled with the usual care and over short periods of time, the stress of ringing is no

more than the escape from any other dangerous predator.

(Ref. Morris,D. (1957) The Reproductive Behaviour of the Bronze Mannikin Lonchura cucullata. Behav. 11:156-200)

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BIRD-RINGING ON DASSEN ISLAND

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From February 1971 to June 1972, I lived permanently on Dassen Island, as a field worker for the S.A.National Foundation for the Conservation of Coastal Birds (SANCCOB). Dassen lies about 10 km off shore, halfway between Cape Town and Saldanha Bay. It is the largest of the Government Guano islands, and is administered by the Division of Fisheries of the Dept. of Industries.

During my time on the island, I studied the Jackass Penguin Spheniscus demersus especially its breeding biology and population size. Ringing played an important part in the study and about 5 000 penguins have been ringed on Dassen to date. As part of minor studies, I ringed a number of Bank Cormorants Phalacrocorax neglectus, Rock Pigeons Columba guinea, and European Starlings Sturnus vulgaris.

When I first settled on the island I had little experience of ringing seabirds and had to pick up most of the necessary techniques from scratch. Strong leather gauntlets are essential for ringing Jackass Penguins. I would defy anybody to suggest a bird that can bite as painfully as our local penguin. It also beats with its flippers and the bruising so induced is almost as painful as the bites. One of my major problems with penguins was that I had to do much of the ringing on my own. Two hands are needed for putting on a flipper band and so I found I had to hold the bird (encased in a sack) with my feet!

On several occasions large ringing parties came out from Cape Town for a long week-end. Most of the active ringers in Cape Town have visited Dassen and found that penguins were more of a handful than Curlew Sandpipers. Over a three day ringing visit I and 12 visitors have ringed over a thousand birds. The main problem of ringing penguins en masse is to be able to catch the birds in numbers. Pairs of ringers can work through a breeding colony ringing birds on the nest, but one does not like to disturb breeding birds except for special breeding studies. We started off by trying to catch the large groups of 100 or more birds which stand on the edge of the beach. But nothing could be done to move them away from the sea and at the first signs of drivers closing in on them, they headed for the water and the total catch was usually only two per drive at the most. We then noticed that groups of non-breeders also stand around on the breeding flats inland. A W-shaped pen was erected between the sea and the breeding flat and the non-breeders