EFFECTS OF MALE AGGRESSIVENESS ON BEHAVIOURAL TRANSITIONS IN THE REPRODUCTIVE CYCLE OF THE BARBARY DOVE

by

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(With 3 Figures and 1 Plate)

(Acc. 5-1-1976)

I. INTRODUCTION

Synchronization of male and female reproductive cycles is particularly important in avian species such as the Barbary dove (*Streptopelia risoria*) where both sexes participate in construction of the nest, incubation of the eggs and feeding of the young. This synchrony appears to be a function of certain heterosexual displays. Thus male courtship displays facilitate ovarian development (ERICKSON & LEHRMAN, 1968; ERICKSON, 1970). Similarly female courtship and nesting behaviour bring about transitions in male behaviour which serve to synchronize the development of male reproductive behaviour so that it is compatible with production of a nest and the laying of eggs (MARTINEZ-VARGAS & ERICKSON, 1973; MARTINEZ-VARGAS 1974). However, the function of displays termed chasing and bowing or collectively aggressive courtship patterns (LOVARI & HUTCHISON, 1975), which form a conspicuous part of the early courtship behaviour of the male, is unknown. It has been suggested that the bowing display may form part of the pair formation phase of the reproductive cycle, and indicate the readiness of the male to perform sexually towards or attack the bird to which it displays (DAVIES, 1970). This would be consistent with other avian species such as the chaffinch where the display of the male to the female is predominantly aggressive during the early stages of the breeding period (HINDE, 1959, 1963).

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2) We are grateful to Professor R. A. HINDE, F. R. S., and Dr Rosemary HUTCHISON for their critical readings of drafts of the manuscript, and to Dr Ariane ETIENNE for preparing the translation of the summary. We also wish to thank Miss Sally DRUMMOND for undertaking some of the statistical analysis and Mr Les BARDEEN for technical assistance.
1970). There is no evidence, however, to show that these aggressive courtship displays of the male Barbary dove serve to initiate or accelerate female reproductive development. In fact, in a recent study of transitions in male and female behaviour during the reproductive cycle (Lovari & Hutchison, 1975), there was some evidence that delay in termination of male aggressive courtship was positively correlated with latency to oviposition, suggesting that initial male aggressiveness may delay female reproductive development. The positive correlation on which this proposition is based may, of course, be indicative of the reverse causal relationship. Thus females whose reproductive development is slower may induce more aggressiveness than females with a rapid reproductive development.

The aims of the present study were to determine the effects of male aggressive courtship on both female reproductive development and the temporal sequencing of transitions in male and female behaviour during the preoviposition phase of the reproductive cycle.

2. METHODS

Experimental animals and maintenance.

Adult male and female Barbary doves at least 1½ years old and sexually experienced (i.e. each had undergone one or more reproductive cycles) were used. They were maintained in outside aviaries, two metres square, in heterosexual groups having a male/female ratio of 5:1. The observations to be described were carried out during Spring (April-May) after the recrudescence of the testes and sexual activity that occurs in males subject to normal seasonal climatic changes. One month before the experimental observations were to take place, the males were moved to cages (45 cm X 40 cm X 60 cm) which visually isolated each male, but allowed auditory contact. The maintenance of males in such cages has been described previously (Hutchison, 1970; Lovari & Hutchison, 1975). The birds were illuminated for 13 hours/day (from 08.00-21.00 h.) by fluorescent daylight strip lighting positioned 2 metres from the fronts of the cages. The photoperiod approximates mid-Spring conditions in Cambridge. Temperature was maintained at 18-23°C. Females used for the experiment were maintained under similar conditions, but were visually and auditorily isolated from the males.

In order to ensure that sexually active males were obtained for the experimental observations, individuals were selected which consistently displayed courtship activity during 4 successive daily tests of 3-minute duration with four standard test females. The cages in which these tests were conducted were similar in size and construction to the cages used for subsequent observations on pairs given continuous access to one another. The method of selecting sexually active males on the basis of a 3-minute test has been described previously (Hutchison, 1970). Two groups of males were selected which consistently showed either aggressive courtship alone, consisting of chasing and bowing (termed P males, see Hutchison, 1970), or full courtship consisting of aggressive and nest-orientated courtship (chasing, bowing and nest soliciting) (PS males). Individuals were selected on the basis of four successive daily tests of 3 minute duration with four standard test females. A total of 8 P males and 8 PS males were selected from a large sample so that the males within each group were as behaviourally homogeneous as possible.