

4. GENERAL METHODS FOR OBSERVATION

4.1 INTRODUCTION

Study of animal behaviour in the wild requires patient observation from suitable spots with minimum interference to animal life. Ethological approach demands study of animal behaviour in natural conditions in one hand and experimental study on the other. The investigator collects data on basic facts which can be tested by experiments and as a result the facts and theories obtained become more precise and accurate (Scott, 1958). Thus modern behavioural study attains a special height with proper integration of observation of animal behaviour in natural habitats and the application of evolutionary theory to this behaviour with simple experiments which can be carried out in the field. Nevertheless, many questions about behaviour may be answered through simple but precise careful observations without experimental interferences. So, the most important thing in the study of behaviour is to record data systematically and precisely. Though technical innovations like microprocessors, portable tape recorders, digital camera, radiotransmitters, etc. Precision still appears to be a function of researcher's patience, devotion and intelligent resolution. It is possible to attain considerable accuracy with the aid of less sophisticated instruments like binocular, still-camera, stop-watch, etc. It is often necessary to correlate the observed behavioural data to time of the day, season, temperature, rainfall, humidity and other environmental variables which need to be measured with precision instruments.

In order to record behaviour systematically two basic sampling procedures viz. 'instantaneous sampling' and 'continuous sampling' were followed. The details of these methods are described in specific section.

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4.2 SELECTION OF THE STUDY AREA

Little Cormorants and Night Herons are common water birds in India and are found near waterbodies in many parts of the plains of West Bengal. Besides a few smaller breeding populations in parts of the District Dakshin Dinajpur, Malda, Murshidabad, Coochbehar and Kolkata Zoological Garden; Little Cormorants and Night Herons mostly breed in large breeding colony at the Raiganj Wildlife Sanctuary.

Although the Raiganj Wildlife Sanctuary encompasses a rather small area, in the course of a little more than several decades it has established itself as a successful breeding ground of these populations. The main reasons which determined selection of the sanctuary as the study site are :

(i) **The richness of breeding population**

Both the number of breeding Little Cormorants and Night Herons and number of other breeding waders are quite high in the sanctuary. This colony provides one of the largest congregations of waterbirds in the world.

(ii) **Stability**

The steady yearly turnover indicates its stability which reflects the richness of natural resources of this area.

(iii) **Easy accessibility**

It is easily accessible, particularly in comparison to the other areas of West Bengal. The huge feeding ground around the sanctuary further makes observation easier particularly on foraging.

(iv) **Diversity**

Within its small span this sanctuary exhibits considerable diversity in physical structure and vegetative physiognomy.

4.3 STUDY PERIOD

The present study was conducted in the field for about eleven years from June 1996 to December 2005. It covers a total of 7920 bird hours. In each month the study was interrupted for a period of 5 to 7 days for consultation and other such purposes at the department. Number of hours/day that could be employed to observations varied at different periods during the course of eleven years study due to obvious reasons. Occasionally the help of field assistant was utilized.

4.4 DAILY OBSERVATION SCHEDULE

Observations were made in all hours of a day. However, daily routine observations was divided in two main shifts, i.e. the morning shift (0600 to 1000 hrs.) and the afternoon shifts (1600 to 1830 hrs.), when the birds were more active. Attempts were taken so as to maintain an equitable distribution of observation hours at various parts of the day. Besides one day-long observation was taken in a week. Though it was the basic pattern, departure from this pattern was frequent and observations were made at any hours of the day whenever feasible. 16 wholenight observations (2100 to 0530 hrs.) were also made during the fullmoons in the months of May-June. Observations on foraging was made solely during day time during the nesting phase following the same schedule.

4.5 MODE OF OBSERVATION

General movements of the birds were recorded mostly from two types of observation spots the elevated spots and ground spots. The first category included a 10 m high bamboo 'Machan' suitably built in the island, another bamboo 'Machan' (platform on a tree) built on a tall tree in the island, a 11m high observatory in the Sanctuary, roof-tops of the rest house and Forest office and from adjacent trees without nests. Of the four ground spots

one is situated in the island and three were on the side of the canal. At the start of the season the birds were apprehensive of the observer (myself) but with the advancement of the season birds become habituated to my presence. Data were, however, recorded only on resumption of normal behaviour of the birds in all cases. Besides this general schedule of observation nest inspections were also made for various purposes with a higher frequency during the later part of the breeding season. Efforts were taken to complete inspection as quickly as possible in a way so as to make negligible disturbance to the birds and nestlings. Details of these observations will be discussed later in specific chapters.

Observations on foraging were made from ground sports. Sometimes a paddle boat and country boats were used to get closer of the birds. Most of the observations were made from a distance of 20 to 40m. Recording data from a distance of more than 60m was avoided.

4.6 EQUIPMENT USED

Observations were made with the aid of field binoculars (SAMSUNG, 7-15 x 35 with Zoom). Photographs were taken with a still camera (Olympus 700xB, Lens : 38-70 mm. f 5.6/9.6), and a digital camera Coloplux(6.2 mega pixel), Hong Kong, Japan. Some of the behaviour patterns were recorded with a movie camera which were analysed at later a period in Computer Monitor or TV Screen. Stopwatch (GEM License, Hanhert, West Germany) was used to record time. Slide Calipers, spring balance and a plastic scale were used to measure various parameters of eggs, youngs and adults. Tree heights and Nest heights were taken by a 50m cloth measuring tape and stick meter. A powerful sprayer was used to spray colour to mark the birds.

For capturing birds a nylon net was used. Thirty four adults of Little Cormorant and forty adults of Night Heron and two hundred hatchlings of each

species were individually marked with locally made engraved leg bands. A paddle boat is used to enter into the island (Zone 1) of the sanctuary.

4.7 METHODS IN RECORDING BEHAVIOUR

Observational data were tabulated in the data sheets prepared separately for different behaviour patterns and where necessary, for specific individual or pair. When previously prepared data sheets were not appropriate for some actual situations, recordings were made on a separate note-book simply pointing major events which were analysed in details immediately after the study period . In the field, note-books were also used to account descriptive aspects of quantitative data recorded in data-sheets which were checked on return to the camp. Occasionally a combination of these basic methods were used as required under specific situation.



Plate 4.1 The author proceeding to the island, Zone-1 of the nesting area in the sanctuary in a paddle boat.