

## 12. HUMAN INTERFERENCE, CYCLONIC STORMS AND MANAGEMENT

### 12.1. INTRODUCTION

The response of colonial birds to human and other biotic interference on their breeding success varies greatly depending upon the species, timing of interference and nature of it. Milstein *et al.* (1970) cited several European studies showing a correlation between corvid predation, particularly by the Eurasian Crow (*Corvus corone*), and human disturbance in heronries. Drent *et al.* (1974) and Pratt (1970) took the advantage of colonial birds nesting on cliffs in their studies of herons and cormorants to obtain data on breeding success without human interference. Goering and Cherry (1971) concluded from their study of a heronry inhabited by colonial birds visited four times vs. one visited 16 times that human disturbance was "not necessarily detrimental during the later stages of reproduction." Ellison and Cheary (1978) on the other hand suggested another effect of human interference is, to discourage late nesters from settling in the disturbed sites in Double-crested cormorant of Great Pelerim. Tremblay and Ellison (1979) found in *Nycticorax nycticorax* that human disturbance reduced nesting success by inhibiting laying, increasing either nest desertion, egg predation, and increasing nestling mortality. It is obvious that human interference affects breeding bird populations more adversely than many other factors (Anderson and Keith, 1980 ; Anderson 1988 ; Keller, 1989). However, some bird species are known to have successfully developed counter adaptive measures in order to increase their individual fitness ( Knight & Fitzner 1985 ; Dhindsa *et al.* 1989 ; Keller, 1989) despite these interferences.

Raiganj Wildlife Sanctuary, popularly known as Kulik bird sanctuary, is one of the largest bird sanctuaries in the world. It is already mentioned that in

this sanctuary six species of <sup>Pelacaniiformes and</sup> Ciconiiformes birds live together in close association with man. Pelacaniiformes and Ciconiiformes breed colonially but lack precise nest-defence behaviour. The effects of human interference on the nesting of the Little Cormorants and Night Herons were studied in the present study and attempts were made to assess possible adaptations of the birds to the prevailing situation.

## **12.2. METHODS**

Data on disturbance due to human activities were collected mostly by direct observations. Number of days affected by human interference was recorded. For convenience the nesting area of the two bird species was divided into two zones. Zone I is in the tongue-shaped island of the sanctuary surrounded by manmade canal and Zone II is the bank of the canal close to rest house and living quarters of the forest personnel. The visitors are not allowed to visit Zone I but they can get close to Zone II. Thus the Zones are different from one another in the level of protection.

## **12.3. PROTECTIVE MEASURES OF THE SANCTUARY**

Although this breeding population is one of the largest breeding group of its kind its protective measures are very poor. A 1845 metre long barbed-wire fencing around the core nesting area was erected 1996 to 1998 by Forest Department for protection. However, fencing is lacking at many other areas. Besides the conditions of the fencing is very poor which affords little resistance to the unwanted human invasion. There is only one permanent security guard for the whole sanctuary. Again the guard is neither trained nor capable of watching tresspassing round the clock. Actually the river and the canals provides the most effective security to the sanctuary.

## **12.4 HUMAN INTERFERENCE**

Kulik Sanctuary is subjected to varying degrees of human interference since its very inception. Starting from 1984, the factor of human interference has attained new dimension with the settlement of a colony of low-income labourers in close vicinity of the sanctuary ( Fig. 3.1). For convenience the nature of human interference in this sanctuary is discussed under the following heads.

### **12.4.1. Indirect interference**

The sanctuary is a common destination for ornithologists, birdlovers, bird-watches, photographers and tourists. local inhabitants and even press-reporters visit the sanctuary regularly. They visit the sanctuary mainly because it is a pleasurable feeling to watch and listen to the birds in their natural habitats. Besides many students of higher secondary schools and colleges visit the sanctuary along with their teachers to fulfil their academic requirements particularly following inclusion of 'Environmental Science' as a compulsory. They almost always also visit the newly constructed eco-tourism park in the south-western part of the sanctuary. Again due to the presence of forest office, rest house, residential quarters and movement of automobiles in the NH 24 the birds in Zone II receive lot of disturbance almost daily round clock. As a result they soon get habituated to these kinds of stimuli i.e. they learn not to make any response as they are mostly harmless. However, in case of extremely noisy movements of man or incidents of pelting stones the birds do get frightened and fly away from their nests leaving it unguarded. When such incidents occurred by day during the laying

period the crows invariably utilize this opportunity and attacked the clutch or nestlings.

#### **12.4.2. Direct Interference**

Mainly three types of human activities seriously impair bird life which are as follows :

##### **a) Poaching of egg, young and adult birds**

Local people and day labourers in the sanctuary reported poaching incidents of eggs, nestlings and adults. During the study period a number of such incidents were observed which are as below :

- i) An elderly man was found capture two nestlings and an adult Night Heron for selling in the hotel. He was caught and handed over to the police.
- ii) A teenage boy was found to collect eggs of Little Cormorants and Open-bil Storks for selling in the market. He was also caught and handed over to the police.
- ii) It is reported that selling of eggs and meat of sanctuary birds along with poultry birds in the local markets is not of infrequent occurrence.

##### **b) Attack for breeding plumage**

Ormental plumage of large, median and Little egrets is of demand for fancy use, especially among the ladies. A number of children of neighbouring low income people collect shedded feathers form the ground as also from the nesting trees for money. Collection of feathers from the nesting trees by climbing up hinder breeding of egrets along with other bird species nesting on the same and nearby trees.

##### **c) Firewood collection**

This is the most serious problem to the birds of the sanctuary. Everyday women and children of the neighbouring labourer settlement roam around

the sanctuary to collect firewood for domestic purposes. Usually they enter the sanctuary in a group in the noon period of the day. They indiscriminately cut lower branches of nesting trees and collected dry leaves from the ground and dry branches high up the nesting trees with a long bamboo pole fitted with a iron hook at the tip. These activities frightened the birds who desert the nest, move to higher branches or to nearby trees. During this activity many grown up nestlings fall down and die. Firewood collectors even do not hesitate to collect the nests with their hooked poles when forest people are not around. This incident of total nest collection becomes more frequent after the second week of October and a regular feature after October.

From the results (Table 12.1) it is clear that indirect human interference is very common to both the nesting zones of Little Cormorants and Night Herons. Direct human interference is, however, more common in zone I.

## **12.5 DISCUSSION**

The Little Cormorants and Night Herons nest predominantly in the island ( Zone I ). This area is encircled by a man made canal with perennial water. So at the early phase of the breeding season direct human interference is almost absent in this zone. On the other hand Zone II is closer to the Rest House and Forest quarter complexes and the area meant for visitors. Thus although disturbance due to human is more in this zone invasion by firewood collectors is less than in Zone I. At the end of the breeding phase, the water level of the canal recedes permitting easy invasion by firewood-collectors increase.

It may be mentioned that the Little Cormorants and Night Herons nest in many areas close to human settlements that are without much disturbance and breed successfully. The Zone II of Kulik substantiate the earlier statement in that breed successfully although breeding seasons appears to be a little less than in Zone I. This, however, is only a reasonable surmise and

cannot be substantiated with adequate data. From 1997 to 1998 it is observed that they also nest in the Raiganj Township area. Birds are known to use their prior experience in nest-site selection (Wicklund, 1982 ; Marzluff 1988 ) and it was found that to minimize the menace of human interference they nested on taller trees mainly in the island of the sanctuary. Such type of nest placement is also found in many other species (Dhindsa *et al.*, 1989 ; Datta and Pal, 1993 ; Grieco, 1995).

## **12.6 CYCLONIC STORMS**

Death of birds due to heavy cyclonic storms and rains during the study period occurred in many years. During this time nests and branches of nesting trees with nests are damaged and break off causing extensive damage and death of nestlings and adults. Sometimes nestlings that fell from the trees were also predated by fox and jungle cats. Therefore devastating violent storms as observed to recur in the sanctuary is worrisome for the bird populations. Table 12.2 shows the date of occurrence of cyclonic storms and death of total number of birds (irrespective of species) inhabiting the sanctuary during the 5 year study period ( 2002-2006).

## **12.7 SUGGESTIONS**

1. No. of permanent security guards should be increased as per requirement .
2. The whole sanctuary should be protected by a tough and durable fencing to prohibit trespassing.
3. Area of the sanctuary should be increased. Some populations inhabiting the sanctuary are already invading nearby suitable human settlements which is not desirable in view of the fact that birds are in zoonotic association with a large number of human diseases. Thus increase of the sanctuary area is a necessity.

4. A buffer-area around the sanctuary should be established.+
5. No outsiders should be allowed inside the nesting zone particularly during the breeding season.
6. All sorts of human settlements close to the sanctuary should be removed.
7. A Rescue Center for dropped and morbid nesting birds.
8. Effective education and publicity in relation to Wildlife Management should be undertaken, so that people become aware of the value of Wildlife.
9. Nature Interpretation Center (NIC), Watch Tower should be established and Wildlife Conservational Education arrangements should be provided.
10. Library, Documentation Center, Information Center should be established immediately.
11. A research wing should be created to study the bird populations to frame out suitable conservation strategy.

**Table 12.1 Average numbers of days affected by human interference in the two nesting zones during the breeding season in 1997, 1998 and 1999.**

Type of interference	Month	Zone -I (Island)		Zone -II (Bank of canal near Rest House)		
		No of days	Total	No of days	Total	
Indirect human interference	July	02	32	0	50	
	Aug	04		08		
	Sept	05		10		
	Oct	08		18		
	Nov	10		12		
	Dec	03		02		
Direct human interference	Attack on clutch or brood	July	-	05	-	01
		Aug	-		-	
		Sept	-		01	
		Oct	03		-	
		Nov	02		-	
		Dec	-		-	
	Attack for breeding plumage	July	-	08	-	11
		Aug	-		-	
		Sept	02		03	
		Oct	05		07	
		Nov	01		01	
		Dec	-		-	
	Invasion for firewood	July	-	58	-	27
		Aug	-		02	
		Sept	-		04	
		Oct	20		07	
		Nov	23		10	
		Dec	15		04	
Grand Total			71		38	

**Table 12.2 : Death of birds by cyclonic storms in the sanctuary.**

<b>Date of occurrence of cyclonic storms</b>	<b>Death of total no. of birds inhabiting the sanctuary</b>
24-09-02 to 25-09-02	16721
08-10-03 to 10-10-03	3645
05-10-04 to 07-10-04	2500
22-08-05 and 22-10-05	1032
21-09-06 to 24-09-06	1148



**Plate 12.1** A firewood collector collecting dried tree branches of nest with a bamboo pole.



**Plate 12.2**      **Death of two Little Cormorant nestlings as a consequence of human disturbance.**



**Plate 12.3**      **Death of a Night Heron nestling as a consequence of human disturbance.**



Plate 12.4 Barbed-wire fencing around the core nesting area of birds



Plate 12.5 Water flowing into the sanctuary after heavy rain.



Plate 12.6 A dead Little Cormorant Nestling after cyclonic storm



Plate 12.7 Birds fall from the nests on the ground after cyclonic storm.