

RESEARCH PAPER

Nest and nest contents of near threatend Black Headed Ibis (*Thriskiornis melanocephalus*)

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Accepted : July, 2009

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ABSTRACT

For the study, nest and nest contents of near threatened Black-headed Ibis, Visnagar city and rural areas of Visnagar taluka were selected. Visnagar is a taluka place of Mehsana district, Gujarat state, India. Black-headed Ibis is a colonial breeder. Its nests on moderate sized trees like *Prosopis*, *Acacia* and various species of *Ficus*, which stand in or near water. For the study of nest and nest contents, direct observation method was applied. Measurements were recorded using 60 cm long ruler with 1mm accuracy. 12 plant species were recorded for nesting materials from the nests. Major portion of the nesting materials belonged to the tree on which the nest was located. On an average 59.95 % of the bulk of the nest materials were the twigs and leaves of the nesting tree.

Key words : Nest contents, Wetland, Nest diameter, Cup diameter, Cup depth, Crotches, *Threskiornis melanocephalus*

Family Threskiornithidae includes Ibises and Spoonbill. Distribution of all the species of the family is noticeable in Gujarat. Black-headed Ibis (*Threskiornis melanocephalus*) is a nomadic, ciconiiformes water bird that gregariously and frequents shallow wetland habitat in India. Black-headed Ibis is important wetland bird and is categorized as near threatened (Arun Kumar, 2006). It is a colonial breeder. Its nests on moderate sized trees like *Prosopis*, *Acacia*, various species of *Ficus*, which stands in or near water (Ali and Repley 1983, Hancock *et al.* 1992 and Dharmakumarsinhji, 1955).

MATERIALS AND METHODS

Study area :

For the study of nest and nest contents of near threatened black-headed Ibis, Visnagar city and rural areas of Visnagar taluka is selected. Visnagar (23°42' N and 71°34' E above 127 m.s.l.) is a taluka place of Mehsana district, Gujarat state, India. It is surrounded by wetland and cropland ecosystem. For the study 4 sites were selected where the birds breed, they were as follows:

- Paldi (as rural area)
- Dosabhai baug, Visnagar (as urban area)
- Civil hospital, Visnagar (as urban area)
- Ralisana (as rural area)

For the study of nest and nest contents, direct observation method was applied. As the Ibises are known to reuse the nest to certain extent, only three nests from different nesting trees were examined to observe the nest composition and weight, and eleven nests from different nesting trees were examined to observe the nest diameter,

cup size and cup depth. The composition included the number and frequency of nesting material to observe the preference towards any particular nesting material. The nesting materials were identified up to species levels when possible. The nesting materials other than plant species were also recorded. The data were collected on nest diameter, cup diameter, cup depth, type and quantity of nesting material to determine an average nest size and its different dimensions. Measurements were recorded using 60 cm long ruler with 1mm accuracy. Nest diameter was measured across the middle part of nest periphery from one end of the edge to the widest edge of other end. Sticks extending beyond the bulk of a nest were excluded from the measurement (Sykes, 1987). The depth of nest cup was measured from the centre of the nest bottom to the horizontal plane of the rim. Besides this the number and length of nesting materials like sticks and thread were also examined on *Acacia*.

RESULTS AND DISCUSSION

According to the observations the heronries was in 123 m range. The mean height of the nesting tree was 9.97 m (n=15) and height of the nest was 7.13 m (n=11). The mean distance from the tree trunk to the nest was 2.53 m (n=93). Mostly nests on the *Acacia nilotica*, *Pithecellobium dulce* and *Azadirachta indica* were positioned on the top of the canopy, while some of the nests were situated on the secondary crotches and usually nests were supported by average 03 crotches. Usually the nests were situated on the upper side of the canopy. Total 93 nests were observed. Out of it, 73.12 %, 23.66

% and 3.23 % nests were on *A. nilotica*, *P. dulcae* and *A. indica*, respectively. The average G.B.H. of all the nesting tree was 0.92 m (n=15). The average diameter of nest rim of the Black-headed Ibis was 28.37 ± 1.57 cm (n=11). The average diameter of cup size was 7.97 ± 0.80 cm (n=11) and the average depth of nest cup was 3.68 ± 0.43 cm (n=11). The average weight of nest was 927.00 ± 210.88 g (n=3). The average number and length of nesting materials like sticks and thread was 162.2 ± 14.45 (n=5) and 31.38 ± 13.10 cm (n=3) (Table 1).

safety to the nest against stormy wind and heavy rain. The thick canopy of *Acacia* prevents the chicks to fall down directly on the ground. The dense canopy reduces the thermal stress to the vulnerable young ones particularly when the tree is away from water. A well covered nest does not require the wing shading provided by the parents to their chicks, which benefits the parents considering the energy cost.

The Black-headed Ibis use variety of nesting materials to build a nest. They collect sticks from the

Table 1 : G.B.H. of nesting trees, nest size and nest weight

Sr. No.	Name of the nesting tree	No. of nests	G.B.H. (meter)	Nest diameter (cm)	Cup size (cm)	Cup depth (cm)	Weight of Nest (g)
1.	<i>Acacia nilotica</i>	68	0.80 (n = 13)	28.76 ± 1.56 (n = 5)	8.37 ± 0.85 (n = 5)	3.59 ± 0.42 (n = 5)	1170
2.	<i>Pithocelobium dulcae</i>	22	0.70 (n = 1)	26.80 ± 1.09 (n = 3)	7.44 ± 0.70 (n = 3)	3.63 ± 0.59 (n = 3)	792
3.	<i>Azadirachta indica</i>	3	1.40 (n = 1)	29.31 ± 0.93 (n = 3)	7.83 ± 0.62 (n = 3)	3.90 ± 0.35 (n = 3)	819

The Black-headed Ibis usually collects the nesting materials from various trees to weave large and untidy nest. A total 13 plant species were recorded from the nests. Besides the plants materials, small amount of threads and pieces of plastic bags were also recorded to be used in the nest buildings. Major portion of the nesting materials belonged to the tree on which the nest was located. On an average 59.95 % of the bulk of the nest materials was the twigs and leaves of the nesting tree. The nests were lined with grass and threads (Table 2).

According to Leck (1972) the breeding season is characteristic of geographical area rather than a particular species. According to this, breeding season of Black-headed Ibis varied over different geographical areas. Usually nesting takes place after the rains and varies according to monsoon. It was observed that the Black-headed Ibis has no very strong site-fidelity. The selected nest sites were characterized by significantly high richness of the canopy cover that provides an ideal nesting platform. The most preferred nesting tree was *Acacia nilotica*, where 73.12 % of total nests of entire study period were recorded in single breeding season of the year 2008. In the study area 32 different species of tall trees were recorded. Of these Black-headed Ibis utilized only 3 species of trees for nesting. The maximum numbers of nests were recorded from the *Acacia nilotica*. The thorny nesting tree provides safety from the ground predators. Besides that, the top of *Acacia* provides ideal nesting platform. The thorny twigs of *Acacia* provide

grounds as well as from the nesting trees. About 59.88% of the nesting material was collect from the nesting tree itself while very little material was collected from the nearby trees. The collection of nesting materials from the nesting tree itself was beneficial. Because male could spend maximum time in the vicinity of its nest and minimize

Table 2: Composition of nesting material (%) used by Black-headed Ibis

Sr. No.	Nesting material of plant species	Species of nesting tree and % of sticks / leaves used		
		<i>A. nilotica</i>	<i>P. dulcae</i>	<i>A. indica</i>
1.	<i>Acacia nilotica</i>	70.39	-	6.48
2.	<i>Pithocelobium dulcae</i>	-	56.70	-
3.	<i>Azadirachta indica</i>	-	11.59	52.57
4.	<i>Eucalyptus globules</i>	-	4.27	-
4.	<i>Ficus glomerata</i>	-	-	-
5.	<i>Peltophorus pterocarpum</i>	-	18.90	-
6.	<i>Syzygium cumini</i>	-	1.22	-
7.	<i>Prosopis julifera</i>	5.26	2.44	11.11
8.	<i>Achyranthes aspera</i>	7.24	3.05	12.03
9.	<i>Xanthium stomarium</i>	2.63	1.83	10.18
10.	<i>Capparis sepiara</i>	1.97	-	-
11.	<i>Cynodon dactylon</i>	6.58	-	5.55
12.	<i>Ficus religiosa</i>	-	-	-
13.	Thread	1.97	-	-
14.	Pieces of plastic bag	-	-	1.85
15.	Total no. of species	7	8	7
16.	No. of sticks	152	164	108

the chances of extra-pair copulation to be taken place. Besides of that, it saves lot of time and energy in going away from the nest site for the collection of nesting material. As the Black-headed Ibis collect the fresh twigs from a living tree, probably it could easily select the sticks of required size and shape.

The green leaves of trees were observed in the nest cups. There are several views on green materials used by birds in nesting. According Newton (1979) the function of green materials is to provide sanitation by covering the debris. Green material also protects eggs and nestlings by environmental extreme (Mertens, 1980; Newton, 1979; Collias, 1964). Rodgers *et al.* (1988) worked on the selectivity of certain green nesting material by avian species and demonstrated the importance of thermal conduction or insulation. They sighted that the greenery may be important in reducing the energetic cost of incubation and provides easy brooding and to some extent green materials act as an insect repellent.

Acknowledgement :

We are grateful to Principal Dr. M.I.Patel, M.N.College, Visnagar for his guidance, invaluable suggestions. We are thankful to Prashant Desai and Yatin Patel for their help for identification of plants materials. We are also thankful to UGC (Rajiv Gandhi National Fellowship Scheme for SC/ST students) for providing financial assistance.

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