

5. PHYSICAL FEATURES

5.1 INTRODUCTION :

To account behaviour patterns from a biological point of view and to analyse their significance it is necessary to evaluate particular trait from various considerations such as : age, sex, prior experience and many other parameters. While many animals including birds exhibit clear cut sexual dimorphism, many others are monomorphic. It is a difficult problem to detect sex of a monomorphic bird in the field. Though banding and different other types of marking make the problem a little bit easier ; large scale observation in the field always demands some morphological differentiating cues to distinguish different age and sex classes.

Though Baker (1929); Ali and Ripley (1968) highlighted some of the physical features of Little Cormorants and Night Herons not much is mentioned about useful age and sex differentiation characteristics of these species. In this chapter I have endeavoured to discuss some of the features of different age-sex classes of the species'.

5.2 METHODS :

Every year adults captured by net and nestlings prior to fledging were banded after measuring different physical parameters. On recapturing in subsequent years their physical parameters were measured again colour patterns, gap between bills, some specific behaviour etc. were used to determine the age structure of unmarked birds. A number of birds were colour marked with textile dyes and status of these marked birds were detected secondarily from their physical and behavioural characteristics. For each of these colour marked birds a identify card was maintained where the specific marking pattern was sketched for future identification. However, this second method is less precise and is operative for only one season.

5.3 RESULTS AND DISCUSSIONS

5.3.1 Age

It is not possible to detect the actual age of an individual bird with certainty unless marking is made prior to fledging. Although in some bird species it is possible to correlate different physical features with the age of the individual, no such procedures, are available for these species. For convenience three main divisions were recognised on the basis of age : fledgling, yearling and adult. Here I am furnishing some of the morphological distinctions of these three age classes which are easily detectable in the field.

5.3.2 Morphological features

5.3.2.1 Morphological features of Little Cormorant

5.3.2.1.1 Adult

Breeding Plumage

Black overall with (Bluish or greenish sheen) deep blue or blue-green gloss ; scapulars, inner secondaries, wing coverts, except the least, dark-silvery grey with black edges. A short crest on occipit and nape and a few scattered silky white feathers and plumes on the fore-crown and sides of the head and neck.

Non-breeding plumage

Crest and white feathers in the head disappear and throat becomes white.

Bare Parts

Iris : Green

Orbital skin and gular skin : Black in the non-breeding season. Purple in the breeding season.

Bill : Stout horny-brown, blackish at the tip and livid purple at the base. Compressed bill sharply hooked at the tip.

Legs : Legs and feet blackish, tinged with purple flesh-colour at breeding season.

5.3.2.1.2 Fledgling

Plumage : Neck is deep black, wings are with metallic black and forehead brown in colour.

Bare Parts

Iris : Black

Orbital skin and naked lores : Light brown

Bill : Light brown upper bill scalloped with black at certain spots. Lower bill brown.

Legs : Black

5.3.2.1.3 Yearling

Plumage

Neck is deep black. Breast is also black. Wings are black with brownish sheen. The back with paler scalloping. Tail light black. Throat and abdomen paler. Only center of abdomen is white. Feathers of flanks and breast fringed with brownish white.

Bare Parts

Iris : Light brown scalloped with whitish

Orbital skin and naked lores : Light brown or fleshy with line upto eye on both sides.

Bill : Upper bill is brown with blackish base, lower portion of lower bill is whitish but upper portion is black.

Legs : Black with lighten edges.

5.3.2.2 Morphological features of Night Herons

5.3.2.2.1 Adult

Plumage : Crown, nape and crest, back and scapulars black glossed with green ; above the lores, forehead and supercilium white ; two or three very long, narrow pure white feathers from the nape ; chin, throat, fore-neck,

centre of breast, abdomen and under tail-coverts white ; reminder of plumage pale ashy vinous-grey, palest on the neck, darkest on the wing-quills and tail.

Bare Parts

Iris : Blood red

Orbital skin and naked lores : Yellowish green

Bill : Horny bill has arching mandible and narrow gap between the two bills. Tip portion of upper bill is acutely curved. During breeding season upper bill is black with greenish black at base and lower portion of lower beak is redish.

Legs : Legs and feet dull green. During the breeding season legs and feet lemon-yellow, (slight redish yellow) or orange red.

5.3.2.2.2. Fledglings

Plumage : Dorsal body is brownish black with deep brown spots. Below slightly whitish at the abdomen. Head with brownish black and white threads extended from each plumage. Neck portion with brownish spots. Brown chest and belly streaked with buff and white. Tails are brownish black with slight brown spots at the end of the tail feather. Wings and back darker brown with less extensive white spots on upper wings and a dark cap.

Bare parts

Iris : Yellow or Amber

Orbital skin and naked lores : Blakish with reddish brown.

Bill : Upper beak is redish brown. Lower beak is brownish. Yellow at the base. Tip of the upper beak is slightly curved and hooked.

Legs : Dull greyish with greenish yellow prominent claw.

5.3.2.2.3. Yearlings

Plumage : Down sparse, crown with stiff and erect ; down absent

from parts of head, hind-neck and belly ; down reddish-brown above, white on thighs.

Bare Parts

Iris : Greyish or golden yellow

Bill : Greyish

Legs : Legs and feet greyish-green.

Apart from these rather easily recognizable morphological features the age-groups also differ in measurements of some external body parts and weight. Though range of some of the measurements overlap to some extent, particularly among yearlings and adults ; some other characteristics such as body and bill length differ significantly in all three groups (Table 5.1 and 5.2).

5.3.3 Sex

Sexes are alike in both the species. Distinctive morphological features seem to be absent. In general males appear bigger than the females (Coulter *et al.*, 1989). Besides body size some other external parts such as the length of the body, bill, wings, tarsus and tail are larger in males than the females (Table 5.3 and 5.4). However, no attempt was made to sex the birds depending on external morphology.

The age-group differentiation on the basis of morphological characteristics are more easier and effective than dimorphic characteristics. However, the age-group characteristics also has some obvious limitations as it lacks data for the different age classes of adults and presents only a generalised feature.

In general the external differences between the sexes is indeed very marginal. However, in some cases, particularly at the later part of season, larger females have been found to mate with smaller males. Probably these were the deserted females who mated with younger males. Despite these shortcomings body size, bill characteristic indices along with behavioural features are more effective in practice than any other cues.

Table 5.1 : Measurements of different physical parameters in three age classes of Little Cormorants

Physical Parameters	Fledgling	Yearling	Adult
Body weight (gm)	498 (490-515)	580 (560-595)	640 (620-700)
Body length (cm)	38 (34-41)	47 (42-53)	62 (55-70)
Bill length (mm)	36 (32-42)	49 (45-54)	57 (55-64)
Wing length (mm)	190 (180-200)	210 (195-220)	221 (215-228)
Tarsus length (mm)	35 (30-38)	41 (40-43)	47 (45-50)
Tail length (mm)	80 (75-84)	99.5 (98-102)	139 (133-146)

The figure in parentheses indicate range

Table 5.2 : Measurements of different physical parameters in three age classes of Night Herons

Physical Parameters	Fledgling	Yearling	Adult
Body weight (gm)	470 (452-484)	510 (485-530)	725 (625-900)
Body length (cm)	41 (38-43)	47 (44-51)	62 (52-72)
Bill length (mm)	53 (50-57)	62 (60-66)	72 (67-80)
Wing length (mm)	256 (250-276)	283 (280-298)	304 (298-320)
Tarsus length (mm)	59 (54-62)	65 (60-70)	81 (75-85)
Tail length (mm)	45 (40-51)	75 (70-82)	100 (96-115)

The figure in parentheses indicate range

Table 5.3 : Measurements of different physical parameter in adult male and female of Little Cormorant

Physical Parameters	Male	Female
Body weight (gm)	652.34 (590-680) ^a	620.62 (570-650)
Body length (cm)	58.2 (52.0-65.0)	52.8 (48-60)
Bill length (mm)	47 (41-51)	38.5 (35-42)
Wing length (mm)	212 (195-220)	195 (187-210)
Tarsus length (mm)	45 (43-48)	42 (37.5-44)
Tail length (mm)	143.8 (139-147)	136.7 (133-138.5)

a = Range of the parameter in parenthesis

Table 5.4 : Measurements of different physical parameters in adult male and female of Night Heron

Physical Parameters	Male	Female
Body weight (gm)	720 (690-745) ^a	650 (625-680)
Body length (gm)	65.8 (61-72)	58.7 (52-62.3)
Bill length (mm)	74 (67-80)	68 (63-75)
Wing length (mm)	298 (290-320)	292 (280-305)
Tarsus length (mm)	81.3 (75-90)	76.2 (74-80)
Tail length (mm)	106.5 (100-112)	99.4 (94-105)

a = Range of the parameter in parenthesis



Plate 5.1 An adult Little Cormorant with open bill perching on a branch of Jarul tree

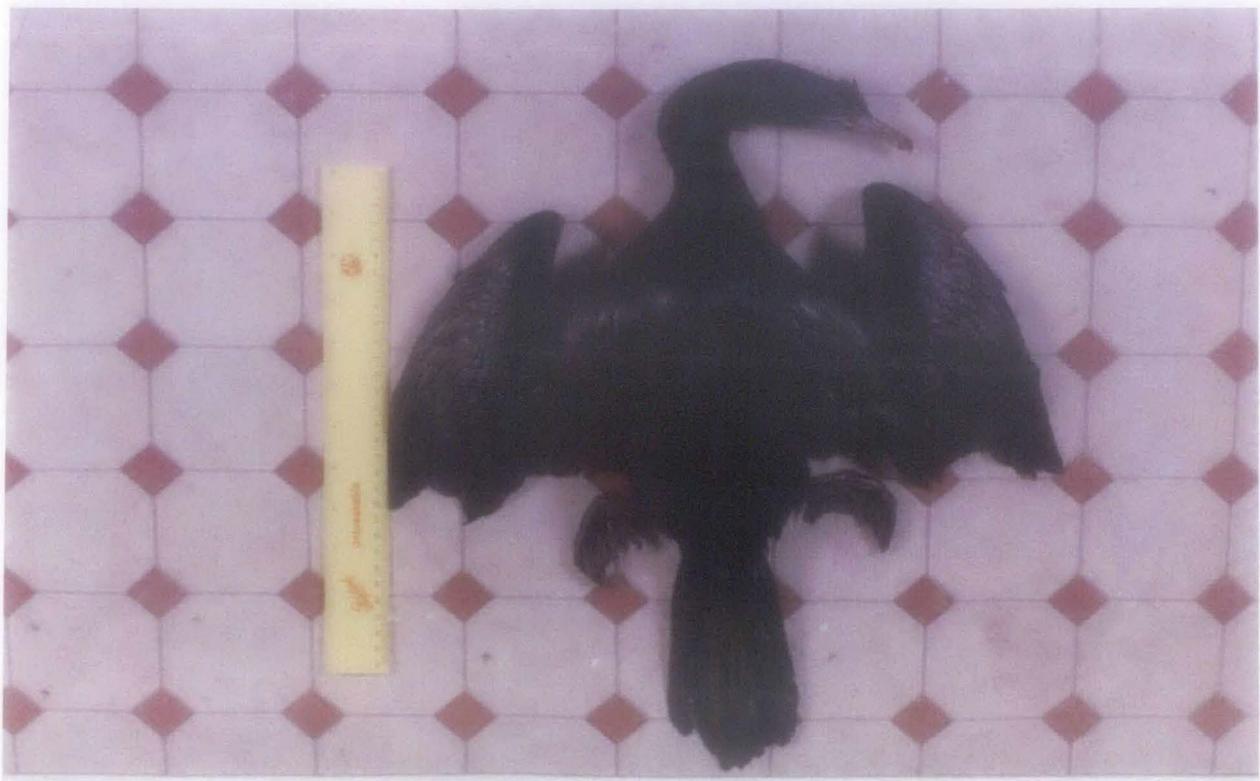


Plate 5.2 Measurement of body length of a Little Cormorant

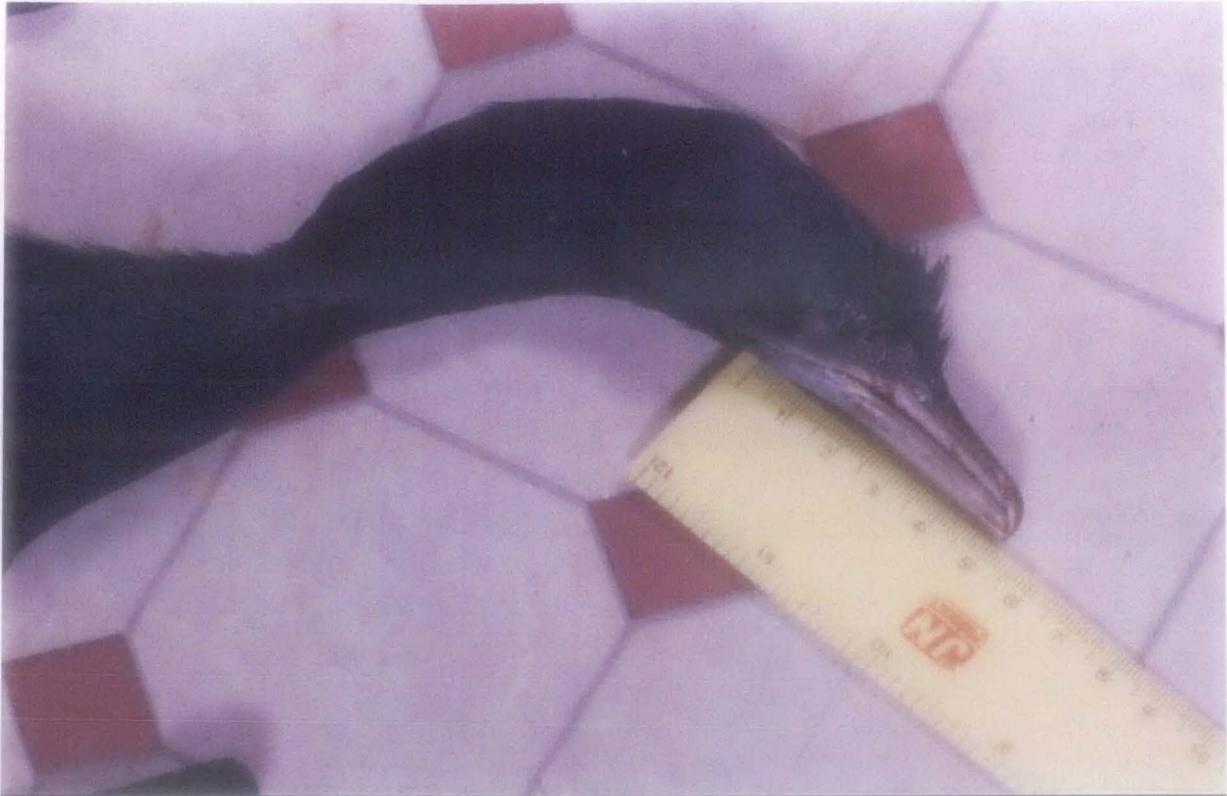


Plate 5.3 Measurement of bill length of a Little Cormorant



Plate 5.4
Measurement of tail feather
of a Little Cormorant



Plate 5.5 **An adult Night Heron with splendid plume on the crown**