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Cattle Egret *Bubulcus ibis* habitat use and association with cattle

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Cattle Egret *Bubulcus ibis* has a worldwide distribution. In India it is common in a variety of habitats, especially wetlands, throughout the peninsula. Freshwater marshes and paddy fields were identified as the most important foraging habitats by Meyerricks (1962) and Seedikkoya (2004), although there are pronounced seasonal variations in the usage of these habitats. Cattle Egrets are often found associated with cattle and occasionally with pigs, goats, and horses, and also with moving vehicles such as tractors. The birds appear to exploit their 'beating effect' whereby insects and other prey are disturbed by the larger animal (or vehicle) and hence are easier to detect and/or capture.

METHODS

We studied habitat use, association with cattle, and foraging behaviour of Cattle Egrets in Malappuram and Kozhikode districts, Kerala, India, as part of a larger study on the ecology and biology of wetland birds during 2000–2001. Although seven habitats were studied (Table 1), hillock and riverine were excluded from the analysis of habitat use as very few birds were recorded in them.

In each habitat we walked along a fixed route every week, counting all egrets within a 100×100 m area. We

made five counts per day from 06h00 to 18h00. Egrets were defined as associated with cattle if they were found <1 m from an animal and were alert to its movements. We carried out focal observations on randomly selected foraging egrets, during which we recorded number of strikes, successful captures (identified by the characteristic head-jerk swallowing behaviour: Heatwole 1965, Dinsmore 1973, Grubb 1976, Scott 1984) and number of steps in a two-minute period. Assuming that the size and quality of food gathered by egrets associated with cattle or alone is the same, we used the number of steps taken for each successful capture to assess the energy expenditure per capture of foraging egrets. Means are shown with ± 1 standard deviation. One-way ANOVAs were used to test the significance of differences between capture rates, strike rates and steps per capture for foraging egrets associated with cattle or alone.

RESULTS

In the study area Cattle Egrets mixed with Intermediate Egret *Mesophoyx intermedia*, Little Egret *Egretta garzetta* and Indian Pond Heron *Ardeola grayii* in groups of hundreds of individuals, roosting at night in large rubber plantations. They left roosts at

Table 1. Salient features of habitat types.

Habitat	Location	Features
Paddyfield	Mampad, Malappuram district, 11°14'24"N 76°11'47"E	10 ha; first crop: Jun–Sep; second crop: Oct–Feb
Grass	A: Vadapuram, Malappuram district, 11°15'21"N 76°11'58"E; B: Mampad College, Malappuram district, 11°14'17"N 76°11'47"E	A: 10 ha; abandoned paddyfield overgrown with grass; floods in monsoon; B: 10 ha, unirrigated, uncultivated dry open land; wetter in monsoon
Jheel (shallow water body)	Azhinjilam, Malappuram district, 11°11'56"N 75°52'5"E	30 ha; flooded Jun–Nov; max. 2 m deep
Plantation	Pongallur, Mampad Panchayath, Malappuram district, 11°14'6"N 76°10'24"E	10 ha; rubber plantation, sparse ground vegetation
Hillock	Pongallur, Mampad Panchayath, Malappuram district, 11°14'1"N 76°10'20"E	5 ha; grass, shrubs and trees used for grazing cattle Oct–Jan
Riverine	Karimpuzha River, Nilambur Panchayath, Malappuram district, 11°18'20"N 76°15'8"E	10 ha; scanty vegetation on exposed banks maximal in Mar–Apr
Waste dump	Njaliyanparambu, Kundayithode, Kozhikode, 11°12'2"N 75°48'60"E	15 ha; municipal waste-dumping site; waterlogged Jun–Sept

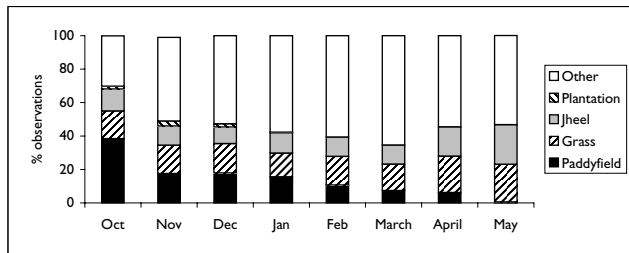


Figure 1. Percentage of observations of Cattle Egrets in each habitat each month.

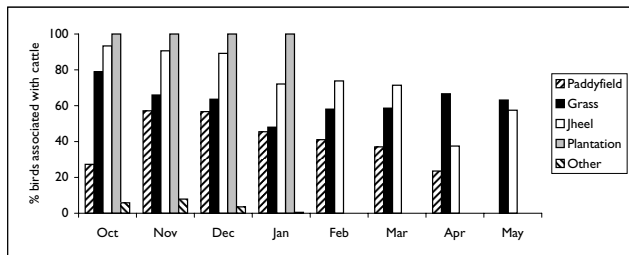


Figure 2. Percentage of Cattle Egrets associated with cattle in each habitat each month.

c.06h00–06h15 in small groups to disperse to different areas. In the evening, small groups returning from foraging areas often congregated in flocks of hundreds of individuals on riverbanks and paddyfields near to roosts, to which they returned at c.18h00–18h15.

Seasonal pattern of abundance and habitat use

Cattle Egrets show local migration patterns during the breeding season, which coincides with the monsoon in June to September. During this period they were absent from the study area, apparently moving northwards from Kerala to breed. Cattle Egrets showed marked seasonal variation in the habitats they used (Fig. 1). Grass fields followed by jheels (shallow water bodies) were the most frequently used habitats throughout the season. Paddyfields were used heavily in October, but declined in importance through the season as they became drier, with very few birds seen in this habitat by May. Plantations were used least frequently, and not at all after January (Fig. 1).

Association with cattle

Of 1,082 birds on which focal observations were made, 653 (59.6%) associated with cattle. The percentage of birds associated with cattle was highest in plantations (100%), followed by jheel (73.2%), grass (62.9%), and paddyfield (36.0%), with 0% in the waste dump. This pattern largely reflects the distribution of cattle. As we did not quantify this distribution, we were unable to test whether egrets associated with cattle preferentially in particular habitats. The percentage of egrets associated with cattle showed little seasonal variation in grass, but declined through the season in jheel and paddyfields (Fig. 2). Cattle egrets showed highest frequency of association with cattle from 09h00 to 12h00 and 14h00 to 16h00, with low association early in the morning, late in the evening and during the middle of the day. This reflects the peaks in grazing by cattle, which rest in the shade during the hottest part of the day.

When egrets associated with cattle, they usually fed near the front legs of the animals. Egrets associated with cattle caught prey items at a significantly higher rate (1.3 ± 0.86 vs. 0.9 ± 0.75 items per minute; $F_{1,168} = 13.6$, $P < 0.001$). They probably used less energy to achieve this higher foraging rate, as they took fewer steps between successful captures (19.8 ± 2.1 steps per capture vs. 29.1 ± 2.5 ; $F_{1,168} = 754$, $P < 0.001$). They also had a higher rate of capture attempts (strikes): 4.8 ± 1.8 vs. 3.6 ± 1.3 strikes per minute; $F_{1,168} = 27.6$, $P < 0.001$). There was no significant difference in the strike success between associated and unassociated birds: the mean strike success was 27.2% and 27.6% respectively.

DISCUSSION

Cattle egrets that associated with cattle in the study area caught prey items at a faster rate and apparently expended less energy to achieve this, as has been noted in other studies on this species (Heatwole 1965, Grubb 1976). This association appears to be an example of facultative commensalism (Rand 1954, Heatwole 1965). Egrets were not seen to prey upon cattle ectoparasites, as has been noted elsewhere (Heatwole 1965, Seedikkoya 2004). Association with other egrets foraging near cattle also may result in group benefits such as improved vigilance or reduced probability of attack by predators (Brown 1964, Hamilton 1971, Vine 1973, Powell 1974, Barnard 1980, Bertram 1980, Caraco *et al.* 1980, Elgar and Catterall 1981).

ACKNOWLEDGMENTS

We are grateful to SACON, Farook College and Mampad MES College for facilities, and P. R. Arun for valuable critical comments on the previous drafts of the paper.

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Longevity record of a colour-ringed Black-faced Spoonbill *Platalea minor*

YAT-TUNG YU

Black-faced Spoonbill *Platalea minor* is endemic to the eastern fringe of Asia. The known population is small, only 1,200 individuals (Yat-tung Yu 2004) and therefore the species is listed as Endangered (BirdLife International 2001). In the 1990s, to rescue this species from the brink of extinction, conservationists started to study its previously poorly known distribution. On 14 July 1995, the first two Black-faced Spoonbill chicks were colour-ringed in a breeding colony in North Korea. Both birds were given a yellow ring on the left tibia; on the right tibia one bird was given a red ring over a green one and the other had a red ring over a blue one. Both birds were sighted in the first winter; the former in Japan and the latter in Vietnam (S. Chan *in litt.* 2005). The first bird was also seen again in its fifth winter and thereafter several times. Later, some tens of individuals were captured and marked with unique colour-ring combinations in their wintering areas in Taiwan and Hong Kong for a satellite-tracking project in 1998 and 1999 (Ueta *et al.* 2002).



Plate 1. Colour-ringed Black-faced Spoonbill *Platalea minor* photographed at Mai Po, 4 November 2003. (Photograph by Yat-tung Yu).

OBSERVATIONS

On 9–19 December 1999, Cornelis Swennen and I visited Xuan Thuy Nature Reserve, Red River delta, Vietnam to study the wintering ecology of Black-faced Spoonbills. On 15 December, we noticed a feeding spoonbill in a drained aquaculture pond. Through a 38× telescope I saw that the bird had a yellow ring on the left tibia and red over green rings on the right tibia. The bird was identified as an adult by its red iris, black upper mandible with some transverse ridges in the middle, and an almost totally black lower mandible. The presence or absence of black tips on the primary feathers could not be established. The bird was not



Plate 2. Colour-ringed Black-faced Spoonbill *Platalea minor* photographed at Mai Po, 23 November 2004. (Photograph by Phippen Ho).