



## Ecology and Breeding Biology of Indian Stone Curlew (*Burhinus indicus*)

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### ABSTRACT

The ecology and breeding biology of Indian stone curlew was studied in two selected sites of Kurukshetra, Haryana. Indian stone curlew morphologically characterized by sandy black bill, large yellow eyes and prominent black and white wing bars. The nest was found to build on furrowed soil with fine clay, gravel or sand having free drainage during the months of March and April. The vegetation in breeding ground mainly comprised of species of Family Amaranthaceae, Solanaceae, Malvaceae, Euphorbiaceae, Polygonaceae and Asteraceae. During the breeding both the parents defend breeding ground against their natural enemies by maintaining the nest territory of 100 meters. Two eggs dirty white in colour with dark brown irregular patches were observed in each nest. The incubation period was 27 days. Both the parents participate in incubation and rearing the hatchlings. Hatchlings are precocial and start feeding after hatching. The young one migrates to feeding grounds after a span of approximately three to four months. Due to intensive anthropogenic activities, Indian stone curlew is facing habitat and breeding ground shrinkage. The farmers and town planners should be advised to manage some area with natural habitation to ensure its nesting, feeding and breeding success of this important species.

### INTRODUCTION

The Indian stone curlew *Burhinus indicus* or Indian thick-knee, is a wide spread resident species in most parts of India and inhabits chalky soils or steppe like grasslands and dried out river beds for breeding (Grimmett et al. 2013, Gupta & Kaushik 2012). Most of the stone curlews are threatened species of IUCN and are characterized by distinctive sandy brown colour, with long yellow legs, yellow and black bill, and large yellow eyes. The prominent black and white wings bars, which camouflage with background habitat (Ali 1996, Green & Taylor 1995). Curlew is a sensitive bird and usually squats with body pressed to the ground and stretches its neck when alarmed. Stone curlews build their nest on soil, which is light and free draining; it may be fine clay, chalky, gravel, lime stone or sand. The nests are normally present on bare soil or arid waste land. These birds feed on invertebrates, earthworms, insects, dung beetles, small frogs and toads (Green et al. 2000). In Haryana, stone curlews are summer visitors and were first reported by Gupta & Kaushik (2012). Till date no information is available on its breeding biology in fast changing agro-climatic environs of Haryana.

### MATERIALS AND METHODS

The field observations on Indian stone curlew were conducted during the months of March to May, 2014. The sur-

vey sites included Kurukshetra University Campus, and fields near Ayurvedic College, Kurukshetra (29°6' N, 76°50' E). The observations were recorded in the morning and evening hours. Photographs were taken by 5.3 mega pixel camera with 30X extend zoom.

### RESULTS

Indian stone curlews are morphologically characterized by sandy brown colour, with long yellow legs and more black and yellow bill, large yellow eyes and prominent black and white wings bars, which camouflage with background habitat (Fig. 1). The stone curlews initiated courtship behaviour in the month of March and built nest on furrowed land in University Campus slightly raised portion in the field (Fig. 2).

The vegetation in this breeding ground comprised of *Gomphrena globosa*, *Solanum nigrum*, *Sida* sp., *Ricinus communis*, *Coculus* sp., *Nicotiana plumbaginifolia*, *Rumex* sp., *Amaranthus* sp., *Ageratum* sp., *Silene* sp., *Euphorbia hirta*, *Argemone mexicana*, *Pluchea* sp., *Calotropis* sp. and *Ziziphus* sp. However, in site near Ayurvedic College in urban estate, the nests were built only on soil with scarce grass around having *Boerhaavia diffusa*, *Dichanthium*, *Chenopodium album*, *Convolvulus arvensis*, *Polygonum* sp., *Malvastrum* sp., *Alternanthera* sp., *Peristrophe bicalyculata* and *Phalaris major*.



Fig. 1: Stone curlew in the breeding ground. Note the characteristic morphological features.



Fig. 2: Breeding pair showing courtship behaviour postures.

The breeding season varies from February to July. However, most of the eggs were observed in March and April. During the breeding, both the parents defend breeding ground against numerous natural enemies like shikras, kites, crows, lapwings, mongoose, snakes, squirrels and some rodents species. The nest territory, maintained by stone curlew, was 100 meters. The nest territory was defended aggressively against the intruders.

In each nest two eggs were observed. Each egg was approximately 50 mm long and 35 mm broad and dirty white in colour with dark brown irregular patches. Eggs were at broad in one end and pointed at other end. The egg coloration, camouflage with the nest background. Eggs were incubated by both the parents for 27 days (Fig. 3).

Precocial chicks were hatched out in the third week of

April. Hatchlings and fledging success was approximately 100% in the Kurukshetra University Campus in contrast to approximately 50% in sites near Ayurvedic College. Hatchlings were very active (Fig. 4) and left the nest on the date of hatching. Lapwings also shared the same breeding site and defend the predators along with curlews. The chicks started self-feeding after one day and preferred to feed on insects and earthworms. Both the parents equally participated in the parental care (Fig. 5). The young one migrates to feeding grounds after a span of approximately three or four months (Fig. 6).

Due to intensive agricultural practices and urbanization in Haryana, Indian stone curlew is facing habitat and breeding ground shrinkage. Poaching, hunting, grazing and deforestation are serious threat for the survival of this bird. Stray dogs are posing a great threat to these birds.





Fig. 3: Stone curlew incubating the eggs.



Fig. 5: Parent curlews equally participating in the rearing and training the young ones.



Fig. 4: Pair of curlews with newly hatched chicks.



Fig. 6: Young Stone Curlews before migrating to the feeding ground.

## DISCUSSION

The vegetation in the nesting sites observed during the present study was similar to nesting sites earlier reported by Andrew (2000) and Green & Griffiths (1994). During current study, two eggs observed in each nest, were dirty white in color with dark brown irregular patches, camouflaging with the nest background. Similar observations were made by Nadeem et al. (2014) and Anderson (1991).

The mean clutch size of stone curlew inhabiting Nag Valley was 1.42 in Pakistan (Nadeem et al. 2014) in contrast to 1.81 in Spain (Solis & De Lope 1995). Whistler (1949) has recorded the breeding season in stone curlew extended from March to August, and most nests were in a scrape on the ground near the base of bushes which is consistent with the present observation. Nest territory defended by stone curlew against intruder was recorded 100 meters during the present study in contrast to 200 meter radius recorded by earlier workers (Nadeem et al. 2014, Andrew 1997 and Anderson 1991).

The incubation period was 27 days similar to the observations recorded by Nadeem et al. (2014) i.e., 24-27 days.

Hatchlings and fledging success was approximately 100% in the Kurukshetra University Campus and approximately 50% in sites near Ayurvedic College, which was similar to hatchling success rate recorded in different habitats of Pakistan by Nadeem et al. (2014).

## CONCLUSION

Indian stone curlews build their nests on furrowed soil during months of March and April. Both the parents participate in incubation and rearing the hatchlings. The young one migrates to feeding grounds after a span of approximately three or four months. Stone curlew is a threatened species of IUCN. Due to intensive agricultural practices, urbanization, poaching, hunting, grazing and deforestation stone curlew is facing serious threat. The farmers and town planners should be advised for timing of plot management and must leave some area with natural habitation to ensure its nesting, feeding and breeding habitat.

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