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Pallid Harrier
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On the breeding biology of the Indian Spotted Eagle *Aquila hastata*

Niranjan Sant, Vidhyadhar Shelke & Shridhar Shelke

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Introduction

The Indian Spotted Eagle *Aquila hastata* was recently re-elevated to full species status (Parry *et al.* 2002; Rasmussen & Anderton 2005). It is a widespread species and has been recorded in very low densities in the lowlands of the Indian Subcontinent; occurring in Pakistan, Nepal, India, and Myanmar (Robson 2000; Parry *et al.* 2002; Rasmussen & Anderton 2005). It is classified as Vulnerable by the IUCN (BirdLife International 2013) and is distributed mainly across the Gangetic Plains up to Manipur, central India, Orissa, West Bengal, Uttaranchal, and Karnataka (Rasmussen & Anderton 2005). A woodland species, it breeds in isolated trees or groves within cultivation or public and botanical gardens, occasionally in thick forest or along forest margins (Naoroji 2006). Less dependent on marshes and river systems, it nevertheless exploits aquatic systems for food (Naoroji 2006). Very few published records of its breeding biology are available; from Bharatpur, Rajasthan (Prakash 1996), Mysore, Karnataka (Shivaprakash *et al.* 2006), and Sonapat, Haryana (Sharma & Chanda 2010). In this paper we give additional information on the breeding biology and food habits of this species.

Study area

This study was conducted in Belgaum, a city and municipal corporation located in north-western Karnataka (India) at an altitude of 752 m above MSL. It is the fourth largest city in the state after Bengaluru, Hubli-Dharwad, and Mysore. It receives an annual rainfall of around 125–135 cms. Temperature varies from 8°C to 40°C.

The nesting area was located on the eastern side of Belgaum, quite close to human habitation. To the south of the city is a lone hill with an old fort atop, and a few settlements at its base. The nesting area is three kilometers from here and one and one-half

kilometers from human habitation. The area is mostly under cultivation with paddy being the main crop, while in winter cereals and mustard are also grown. A large rain-fed stream, named Ballari and its smaller tributaries, drain the area. Large trees of *Mangifera indica*, *Terminalia arjuna*, *Syzygium cumini*, *Ficus racemosa*, and *Eucalyptus* spp., stand on the banks of the stream and its tributaries. Such trees are also scattered in the fields.

Methodology

The study period lasted from 27 January 2011 to 27 July 2011, coinciding with the eagle's breeding season. A single nest of a pair was located by coincidence while birding in the area in March 2009 and other breeding pairs were seen in the area frequently. In 2011 we searched for more nest sites to conduct a study on the breeding biology of the species by following flying adult eagles, and located three. The three authors kept watch on one nest each. Observations from a distance of 75 m were carried out from 0630 to 1000 hrs and from 1530 to 1830–1900 hrs. On a few occasions observations were carried out at a stretch from 0630 to 1830–1900 hrs. Breeding was observed through courtship to fledging, and 450 hours of observation were completed. We used 10x42 Nikon and Leica binoculars, and digital cameras with super telephoto lenses (500mm and 800mm) for observation. All activities were recorded on digital camera.

Results

Three nesting attempts were observed during the study period. The nests are referred to as 'A', 'B', and 'C' hereafter.

Nest characteristics

All nests were on live *T. arjuna* trees on the banks or near the stream and its tributaries. An alternate nest of pair 'A' was on a *S. cumini* tree. Nest 'A' was in a stand of few *T. arjuna* trees in the middle of fields [25]. Nest 'B' and 'C' were on the banks of the main stream. Indian Spotted Eagle nests were located at an average height of 12.20 m above the ground in trees typically 13.99 m in height. The average DBH of nest trees was 1.07 m. All nests were below tree crowns, averaging 1.79 m from the treetops. Nests were placed on main branches or on lateral branches with supporting branches ranging from three to five. The distance between two neighboring nest sites averaged 1025 m (range 1000–2000 m).



25. Nesting tree *T. arjuna* of Indian Spotted Eagle. Photo: V. Shelke.



26. Breeding pair of Indian Spotted Eagle *Aquila hastata*.



27. Indian Spotted Eagle *A. hastata* male carrying a stick to the nest.

Breeding biology

Courtship began by end-January. The period was marked by aerial displays consisting of a floating flight with much vocalisation. During inactivity the pairs were seen perched on trees near respective nest sites [26].

Vocalisations

Throughout the nesting period the eagles vocalised. A melodious "keeeek" was uttered as a contact call; the female, upon sighting the male, uttered a "cluck cluck" call. She uttered a louder and urgent "chhaaakkk" when an intruder was seen around the nest site. Vocalisation of a fully-fledged juvenile was similar to the adults but softer.

Nest-building

Collection of twigs for nest construction was observed at all three sites and usually commenced at 0630–0830 hrs. Nest material collection activity was observed only in the mornings and eagles spent an average of 105 min per day for the same [27]. Males brought a majority of the sticks (c. 79%) compared to females (c. 21%). At the start of nest building when the nest structure was small, an average of eight sticks were brought in two hours' time.

As the structure grew, average number of sticks brought to the nest reduced to an average of three. Females were seen either sitting in the nest arranging twigs or sitting on a nearby tree, while the males brought in nest material.

During nest building, only the male brought in prey, sometimes half eaten, held in its beak or talons. Interestingly, even if brought in its talons, the prey would be transferred to its beak mid-flight and delivered to the nest. This was perhaps done to avoid pirating of food by an ever-present pair of Tawny Eagles *A. rapax* or Black Kites *Milvus migrans*. If the prey was small, the female swallowed it whole. Bigger prey was taken to a nearby tree and consumed.

Copulation

The female eagle mostly initiated copulation with characteristic posturing by lowering the head and vocalising [28]. Many times the male landed directly on the female to copulate. Copulation usually occurred after the male had placed a stick in the nest and mostly took place on a nearby tree and sometimes on the nest tree. The male called continuously during copulation. The highest frequency of copulation recorded on a single day was between 0700–0930 hrs, (N=4 copulations).

Pair changes and mate loss

The male from nest site 'C' went missing from 10 April. We kept a watch on the site for the next ten days, but the male was not to be seen. The female was seen on and around the nest during this time. House Crows *Corvus splendens* harassed the female in the nest and she frantically called and drove them away. On 15 April eight crows were sighted on the nest. The female was perched some distance away and did not try to chase the crows, nor did she vocalise. After this incident she was never seen on the nest, but perched on a nearby tree for the next few days. Soon after she left the site completely.

At site 'A', a new individual replaced the female of the breeding pair during nest building. The old female had a broken leg. She was driven off from the nest and not seen thereafter. Pair 'A' started building a new nest on a *S. cumini* tree 500 m from the earlier nest site.

Incubation

Incubation started on 10 and 18 April in nest sites 'A' and 'B' respectively [29]. We could not determine whether eggs were laid or not in nest site 'C'. The clutch size for the other two sites



28. Indian Spotted Eagle *A. hastata* pair copulating.

was unknown (we did not check the nest contents, so as not to disturb the birds). The incubation period varied from 38–42 days (N=2 nest sites). Mostly females incubated. The male's responsibility throughout this period was to provide food to the incubating female. Males brought prey to the nest and females took possession and consumed the prey on a nearby tree. The males relieved females for short periods ranging from 10–75 mins (N=2 pairs), while their mates fed. As soon as a female returned to the nest, the male got up and flew away. Most of the prey deliveries were done between 0700 and 0930 hrs, but very rarely in the late evenings as well.

It is perhaps worth noting that Parry *et al.* (2002) hypothesized a probable reason for the large gape of the *A. hastata* was in facilitating hyperventilation when confined to the nest. We did not notice any marked hyperventilation by either incubating adults, or the juvenile.

Nestling and fledging period

Site 'A'

On 20 May we observed a single, small, grayish-white wobbly head near the female's wings [30]. On most days the male brought prey between 0700 and 0830 hrs to the nest. On one occasion we saw the male bring a small frog and commence feeding the chick even though the female was sitting in the nest [31]. By the second week the chick grew bigger and turned very inquisitive. By this time the monsoon was in full swing and we observed the female shelter the chick from the downpour. Once the rain ceased, the female would fly off the nest onto a nearby tree to dry her plumage. As soon as the rain resumed, she would fly back to attend to her offspring. Because of heavy rains and flooding in the fields we could not carry out observations between 8 and 12 June. We resumed observations on the morning of 12 June, and found the nest empty. The male was seen flying and vocalising a couple of 100 m away. It would perch on a nearby tree for a while and then again fly, vocalizing, circling the tree, similar to the courtship display flights. There was no sign of the chick. The pair did not come to the nest that morning. We checked the site for the next four days and searched for the remains of chick, but failed to find anything. Since the chick was too young (three weeks old) to have fledged, we presumed it had perished.

Site 'B'

This site had one chick too. By the time it hatched, the monsoon



29. Nest 'A' with female Indian Spotted Eagle *A. hastata* incubating



30. Female Indian Spotted Eagle *A. hastata* and chick



31. Male Indian Spotted Eagle *A. hastata* feeding a frog to its chick.

had begun. The female alone brooded for the first 20 days, sheltering the chick from rain. The male was confined to bringing prey to the nest every morning. The female fed the chick with tiny morsels, and consumed bigger bones and head of the prey herself. By week two, the chick was seen moving in the nest and the following week small black-brown feathers started to emerge on its back and wings. With the growing chick, the frequency of prey delivery increased to three to four rodents a day. By week four, the female began leaving the nest unattended for differing periods of time, the maximum period being two hours. The female was observed reinforcing the nest with new material throughout the nesting period; mostly with live leafy twigs of *Eucalyptus* sp. By now the female resumed hunting, mostly from the nesting tree. By the sixth week the chick was almost covered with dark brown to black feathers, and was left unattended for hours at a time. Once in a while a parent would be observed circling around the nest.

The lone chick grew fast and by week seven its plumage was mostly dark-black with heavy spots all over except the lower belly down from the chest. The chick was now fully-fledged. It was observed flapping its wings a lot [32]. It sat on branches right over the nest and whenever Black Kites dived at it, uttered a loud call and jumped onto the nest. Frantic loud vocalisation by the fledgling indicated an adult approaching the nest with prey. As

soon as an adult came close to the nest with food, the fledgling jumped onto the nest and the prey was delivered to it inside. If the prey was small, it was swallowed whole, while larger items were torn up into pieces. The juvenile eagle made its maiden flight on 17 July. It flew a distance of 50 m and sat atop a tree, but was mobbed by House Crows and consequently flew back to the nest. With each passing day the juvenile flew regularly and seemed to gain in confidence. Even when the juvenile was on a nearby tree, the adults delivered prey to the nest. By 20 July the juvenile started to spend a lot of time away from the nest tree, perched in thick foliage of nearby trees. On 27 July, we observed the juvenile for the last time near the nest site. The monsoon made it impossible to access the nest site for further observations. The fledgling period was 57 days.

Reproductive success

In the three fully documented nest sites, two pairs bred chicks, out of which only one fledged successfully. The clutch sizes remained unknown, but we have observed two chicks successfully fledging in previous seasons. In the three breeding attempts during the current season, one nest failure occurred during incubation or just prior to it (site 'C'), while the other during nesting period (site 'A'). Causes for failure could not be determined. With the presented data, detailed conclusions cannot be reached on the reproductive success of Indian Spotted Eagles. This is an ongoing study and we intend to collect more data in coming years from more nest sites.

Intraspecific and interspecific interactions

Once the chicks hatched the eagles became more aggressive towards threats. At the slightest alarm, the male eagles chased away intruders. Even females were very wary of intruders, and vocalised loudly whenever Black Kites and House Crows came near the vicinity of a nest site. At site 'A' we observed a juvenile Changeable Hawk-eagle *Nisaetus cirrhatus*, which landed 100 m from the nest site. The response from the male eagle was very different from how it tended to react to a kite, crow or even an Oriental Honey Buzzard *Pernis ptilorhynchus*; it took off from its favorite perch, landed on the nest, and simply sat on it. Both male and female looked very 'uncomfortable' till the hawk-eagle flew away; there was no vocalisation.

At site 'B' some interactions were observed; as the chick grew bigger, the adults left it unattended for hours together, and the chick was harassed by crows and kites. It would vocalise loudly at the intruders. Adult eagles would respond to the calls and drive them away. We observed a Bonelli's Eagle *A. fasciata* land on an electricity pole 200 m from the nest site. The response was muted and similar to that of the site 'A' pair when they came



33. Male Indian Spotted Eagle *A. hastata* carrying a rodent to the nest

across the hawk-eagle; the female was on a nearby tree and she quickly flew onto the nest and sat there. The behavior of the eagles towards the more predatory Changeable Hawk-Eagle and Bonelli's Eagle was totally different from that towards Black Kites, Oriental Honey Buzzards, and Tawny Eagles.

Food Habits

During the entire nesting period, we observed the eagles preying mostly on rodents. Only on one occasion did we see a small frog being brought to the nest. Once the chick grew bigger, we observed the female from nest 'B' hunting, mostly from the nest tree. It would glide down smoothly into surrounding scrub or paddy fields to catch rodents. We observed it trying to flush prey from bushes, by jumping on the bush and flapping its wings, and as soon as the prey was flushed, it was caught. Almost every time the prey was brought to the nest held in the beak [33]. During the study period we recorded 90 Indian Spotted Eagle prey items (N=3 nest sites), mostly prey deliveries to nest. Rodents (lesser bandicoot-rat *Bandicota bengalensis*, roof rat *Rattus rattus*, little Indian field mouse *Mus booduga* and Asian musk shrew *Suncus murinus*) comprised 98% (N=89) and amphibians (unidentified frog sp.) comprised 1% (N=1). Males delivered 73% (N=66) and females 26% (N=24) of the 90 prey deliveries. It was observed that the number of shrews brought to the nest increased after the rainy season. It is safe to conclude that the Indian Spotted Eagles in the study area play a significant role in controlling rodent populations.

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32. Juvenile. Photos: N. Sant.

Some observations of the Pallid Harrier *Circus macrourus* from Keoladeo National Park, Rajasthan, India

Ashok Verma & Deepali Sharma

Verma, A., & Sharma, D., 2013. Some observations of the Pallid Harrier *Circus macrourus* from Keoladeo National Park, Rajasthan, India. *Indian BIRDS* 8 (2): 33–36.

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Abstract

The Pallid Harrier *Circus macrourus* is a rare, highly dispersed, and poorly studied raptor. Any information, especially from its wintering grounds, contributes greatly in targeting measures for its conservation. The present study collects information on its communal roost habitat, roosting behaviour, and winter diet in India. A communal roost comprising six individuals was located at Keoladeo National Park, Bharatpur (eastern Rajasthan) during February–April 2008. Direct observations on the roost were made, both in the evening and morning, using telescope (20x) and binoculars (8x35). Additionally, one of the individual roosts was marked with a Teflon ribbon to collect information on the use of individual roost-site and to investigate roost territoriality and pellet regurgitation strategy. Most harriers arrived at the roost from outside the park. They roosted in the park's Koladhar area in tall grasslands of *Desmostachya bipinnata* and *Vetiveria zizanioides*. Prior to roosting, they were observed pre-roosting on trees, stumps, and on the ground. Each harrier had an individual roost site and the continuous use of the site ranged from three to 34 days. The evidence against holding same site was also confirmed by their pellet deposition. Pellets however were not regurgitated daily and the frequency of regurgitation decreased as summer approached. Pellet analysis (N=101) showed small birds, rodents, and reptiles, especially the common garden lizard *Calotes versicolor*, comprising the winter diet of the species.

Introduction

Harriers as top predators are an essential component of the environment as they provide a link for ecosystem-level conservation, act as bio-indicators of their ecosystem's health, and appear to be sensitive to global change (Viverette *et al.* 1996; Bildstein 2001; Sergio *et al.* 2006; Bird *et al.* 2007). Monitoring migrating raptors can offer considerable potential for assessing human activities that influence local, regional, continental, and global ecosystem processes (Bildstein 2001). Of the 16 species of harriers in the world, the greatest diversity, six species, is reported from India (Simmons 2000). The Pallid Harrier *Circus macrourus* [34] is rare, highly dispersed, and poorly studied (BirdLife International 2003). It breeds from Eastern Europe to western-central Asia, and winters in Africa, India, and Sri Lanka. The largest wintering communal roost of harriers, over 3,000 birds, has been recorded from India of which 15–25% were Pallid Harriers (Clarke *et al.* 1998). However, in the recent past, it has been listed globally as Near-threatened

(IUCN 2011). Recent literature suggests that both, India, and Africa, once holding large wintering population of the species, now show a reverse trend (Ali & Ripley 1983; Ferguson-Lees & Christie 2001; BirdLife International 2003; Verma 2005). In India, degradation of roosting and hunting habitats as well as the use of pesticides, overgrazing, and decrease of food availability are potential problems for harriers (Verma 2007). The little information that exists about the species' ecology refers to their breeding grounds (BirdLife International 2003; Terraube *et al.* 2009). Recently, a detailed study on the species' sex- and age-related foraging habitat preferences was done in its African wintering grounds (Buij *et al.* 2011). Most published information from India, to date, mainly concerns numbers, distribution, and migratory movement (Ganesh & Kanniah 2000; Verma 2010a, b). The present study was an attempt to collect preliminary data on the roost site characteristics, roosting behaviour, and winter diet of the Pallid Harrier at Keoladeo National Park (KNP), Bharatpur, north-western India.

Study area

The study was conducted in the Koladhar grassland area of KNP, which is located on the extreme western edge of the Gangetic basin in the semi-arid biogeographical zone (27°7.6'–27°12.2'N, 77°29.5'–77°33.9'E). This 5 km² grassland is the last remnant patch of *Vetiveria zizanioides* and *Desmostachya bipinnata* spp., in the region. The KNP is both, a world heritage, and a Ramsar site known for its wintering palearctic waterbirds. The temperature ranges between 0.5°C in January and 50°C in May (Vijayan 1991). The average rainfall received in Bharatpur from 1980 to 1990 was approximately 655 mm (Vijayan & Vijayan 1990). The lowest annual relative humidity recorded at 0830 hrs was 84.9 (±12.9%), which occurred in 1999, and the highest, 90.6 (±4.9%) in 1997.



34. Pallid Harrier *Circus macrourus* quartering over grassland. Photo: A. Verma.

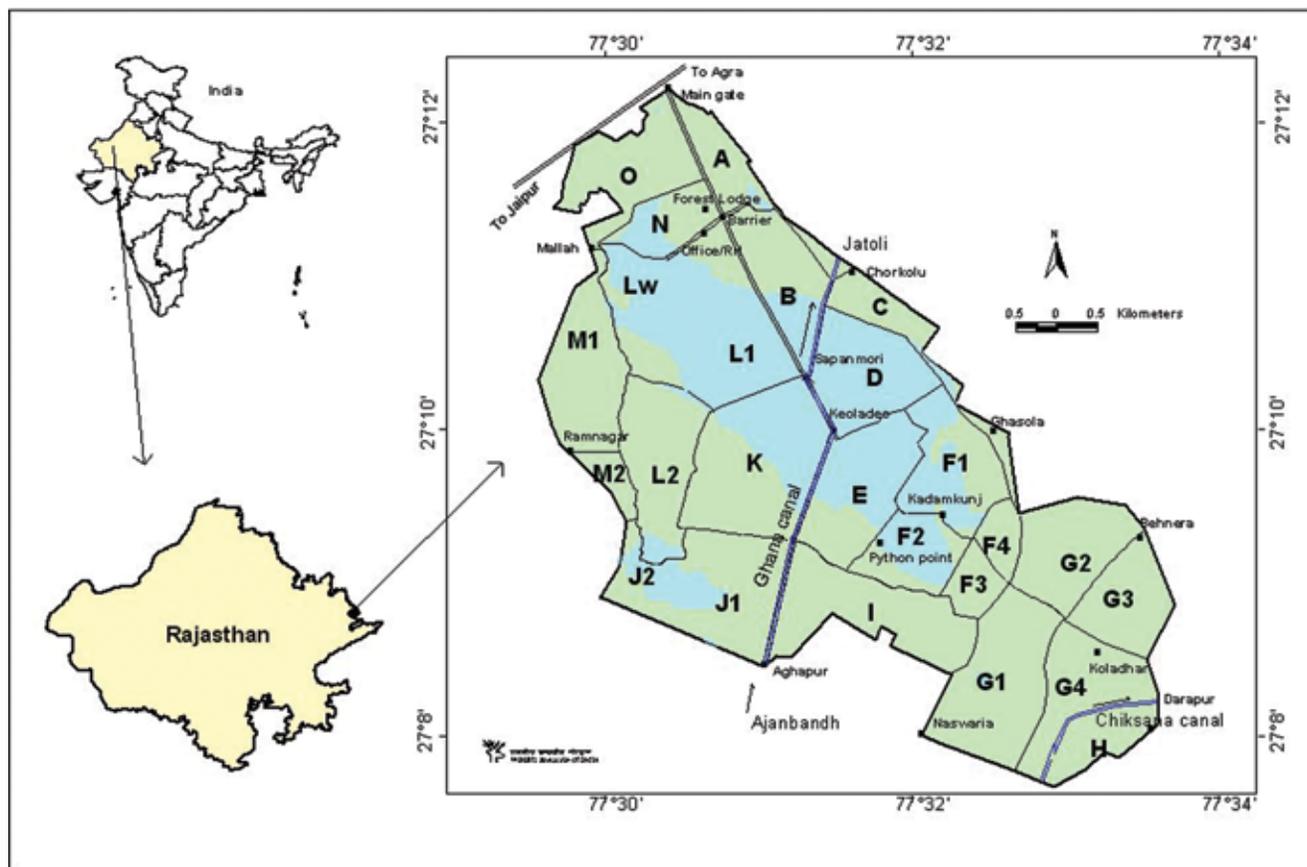


Fig. 1. Map of Keoladeo National Park. The communal roost of Pallid Harrier was located in grasslands of Koladhar (Block- G4).

Agriculture fields of 18 villages surround the Park. The two main crops are 'kharif' (Monsoon season) and 'rabi' (Winter/Spring). Kharif crops like rice *Oryza sativa*, bajra *Pennisetum* spp., and dencha *Sesbania bispinosa*, a fodder crop, are grown before the monsoon sets in, and are harvested by October. A temporary reservoir, Ajan Bund, is situated 500 m south of the park. When the reservoir is drained in August–September, the area is utilised for raising a rabi crop of wheat *Triticum aestivum*, mustard *Brassica campestris*, and pulses.

Methodology

During February–April 2008 observations on roost characteristics and roost behavior were made from two hours prior to roosting up to the time when all harriers had roosted in the evening, and from an hour before sunrise to the time that all birds had left the roost in the morning. We used binoculars (8x35) and telescope (20x) during roost counts and for observing behaviour. During 47 roost counts, we made 89 roost observations for two juveniles, 61 for three males, and 24 for one female.

One individual roost of a male Pallid Harrier was demarcated using a Teflon ribbon to obtain information on the use of individual roost site and pellet regurgitation strategy. The mark was helpful in deciding which individual roost belonged to which of the roosting harriers. Measurements on the roost habitat were carried out the following morning when all harriers had vacated the roost and dispersed for foraging. Pellets were collected fresh from the communal roost. Further, that all pellets collected belonged to Pallid Harriers was confirmed by monitoring roosts,

both, at evening, and the subsequent morning. The pellets were first sun dried and later dissected with forceps and needle, to study the remains of prey. Avian remains were identified by feathers, beak, and claws, rodents by hair and jaws, and reptiles by scales and claws. Reptilian prey could be identified to species level by comparing scales with live specimens caught in the field.

Results

Roost composition

A communal roost of six Pallid Harriers was recorded from the Koladhar grasslands on 24 February 2008. Most birds arrived from outside the park except one or two that foraged in the park and later joined others at the roost. All male, female, and juvenile harriers were present in February in the ratio of 3:1:2 respectively, which changed to 1:0:2 by late March; only juveniles remained in the park by mid-April. The females were found to be the first to leave the park (19 March 2008) followed by males (9 April), and Juveniles (24 April).

Roosting behaviour

Harriers started gathering at the roost 20.4 mins (± 11.9 , $n=15$) prior to sunset, arriving till 17.7 mins (± 5.2 , $n=31$) after sunset. However, by late March their arrival to the roost was observed after sunset. Early arrivals to the roost were found pre-roosting in trees (48%, $n=44$), stumps (27%), and on the ground (25%). They used *Acacia nilotica*, and *A. leucophloea* trees with average height of 8.9 m (± 1.6 , $n=21$) for pre-roosting. During pre-

roosting, they had aggressive interactions with harriers that had already arrived to the roost. They attacked and displaced them with a shrill call. Some pre-roosting harriers also vocalised at the new arrivals.

The Black-shouldered Kite *Elanus caeruleus*, Short-eared Owl *Asio flammeus*, and House Crow *Corvus splendens* occasionally had inter-specific interactions with the pre-roosting harriers. On two occasions, the harriers attempted to jointly mob and chase a jungle cat *Felis chaus* from the roost. About sunset, the harriers began leaving their pre-roost perches, and indulged in an inspection by soaring low and high over the roost for about half an hour or so. Till the time they finally roosted in the grass, there were a number of settlings and re-settlings, including displacing of those already roosted. In the morning, they started vacating the roost c. seven minutes (± 2.9 , $n=23$) before sunrise and by 8.8 mins (± 12 , $n=8$) after sunrise they were all gone. By mid-March, all were found leaving the roost before sunrise. Spotted deer *Axis axis* and nilgai *Boselaphus tragocamelus* were recorded as roost associates of harriers.

Roost site characteristics

The roost was confined to c. 0.4 x 0.3 km area of grassland in Koladhar. It was located about 122.2 m (SD ± 26.4 , $n=29$) from a road, 450 m (SD ± 61.2) from a wetland, 140 m (SD ± 10) from agricultural land, and one kilometre from a human settlement. *D. bipinnata* (c. 1.2 m tall) and *V. zizanioides* (c. 2.8 m tall) grasses formed the roost. *D. bipinnata* constituted 91.7% of the roost habitat. Harriers roosted alone, maintaining 50–200 m distances between each other. The individual roost site was about 1.4 (± 0.2) x 1.0 (± 0.3) m long and wide. Within the large roost, they shifted on several occasions. The continuous use of marked individual roost sites ranged between three and 34 days. Male Pallid Harrier used three individual roost sites, of which, one was used continuously for three days, another for five days and a third for 27 days. The only female Pallid Harrier roosted at two sites. One was used continuously for 12 days, and the other for four days, before it departed on 19 March 2008. One of the two juveniles that roosted in the park was observed at the same roost site for 34 days. Of 45 individual roost sites investigated, 40% contained fresh pellets, 44% had no pellets but only excreta, and 15% were devoid of both pellets and excreta. Both males and juveniles did not regurgitate pellets regularly and sometimes they even did not excrete (Table 1). From 13 March to 8 April, 2008, (27 days), the male Pallid Harrier that we marked roosted continuously at one site and we found that it regurgitated one pellet per day inconsistently with some days fresh excreta only.

Pellet analysis

We collected 101 pellets. Pellet sizes ranged between 2.5 cm (± 0.4) long and 1.5 cm (± 0.4) wide. In all, Pallid Harrier males regurgitated 46 pellets, juveniles 14, and 41 were mixed, including from females. 119 prey remains were separated out of all pellets: small birds comprising 60.5%, rodents 37%, and reptiles 2.5%. Six prey categories were identified in 101 pellets; 55 pellets comprised only small bird remains, 28 only rodents, one only reptile, 15 both small birds and rodents, one each of small bird and reptile, and small bird, mammal, and reptile. The pellet analysis showed that the winter diet of both adults and juveniles consisted largely of small birds followed by rodents

(Table 2). The common garden lizard was the only reptile identified in the pellet of a male Pallid Harrier.

Discussion

The principal wintering ground of the Pallid Harrier is open country throughout the Indian Subcontinent, the savanna belt in Africa south of the Sahara, and the East African steppes (BirdLife International 2003). Grasslands of the Blackbuck National Park, Velavadar (Gujarat, India) hosting up to 3,000 birds (Clarke *et al.* 1998), and Rollapadu Wildlife Sanctuary (Andhra Pradesh, southern India) up to 1,000 birds (Rahmani & Manakadan 1987; Clarke & Prakash 1997) are the largest recorded Pallid Harrier roosts in India. These are regular, traditional roosts, attracting mainly Montagu's Harriers *C. pygargus*, but at Velavadar up to 25% harriers are Pallid and at Rollapadu perhaps 10% (BirdLife International 2003). The KNP is a smaller Pallid Harrier roost. The KNP grassland is the last remnant patch of *Vetiveria* and *Desmostachya* grass spp., and is the largest and only protected grassland in the region. Historical literature suggests that the Pallid Harrier used to be more widespread and common than Montagu's Harrier in the Indian Subcontinent (Ali & Ripley 1983), however, recent experience shows that Montagu's Harriers outnumber the former by at least 3:1 (BirdLife International 2003; Verma 2005). Degradation of roosting and hunting habitats, use of pesticides, overgrazing, excess harvesting, conversion to croplands and development, and decrease of food availability are some of the factors adversely affecting Pallid Harriers in India (Ganesh & Kanniah 2000; BirdLife International 2003; Verma 2005). Grass cutting or burning can also be critical factors as, if excessive, can destroy available roosting and foraging habitats (Verma 2002). Degradation of traditional croplands is also a threat; the largest known winter roost in the world, at Velavadar, is located on an alluvial plain of salt flats and black cotton soil known as the 'Bhal', covering 3,000–4,000 km² along the western shore of the Gulf of Khambhat. This is traditionally a low-input, low-output arable farmland known for cotton and wheat. Irrigation canals from the major Sarovar Project have reached the Bhal, bringing the possibility of intensification of agriculture, increased use of pesticides, and unsustainable use of saline land.

Communal roost sites are an essential resource for the survival of wintering harriers. The radio-tracking of the Eurasian Marsh Harrier *C. aeruginosus* in KNP has shown that harriers travel long distances daily between foraging and roosting grounds, up to 3–12 km, with a maximum of 40 km occasionally (Verma & Prakash 2007). As harriers forage far from roosts, a landscape approach for their conservation should be employed (BirdLife International 2003).

This study finds evidence that Pallid Harriers maintain individual roost territories during winter and if such sites are undisturbed the use of the same site may continue into future seasons. The evidence of sexual differences in foraging preference related to land use in the sexually dimorphic Pallid Harrier, and evidence that juveniles used different habitats from adults have been found in wintering ground in Africa (Buij *et al.* 2011). It is however not known whether harriers have sexual differences for roosting preferences in their wintering grounds in India. Detailed systematic studies are required.

One reason for harriers shifting individual roosts that has emerged from the present study is the presence of villagers for grass cutting at roost till late evening. Earlier study in the same area has shown adverse effects of grass cutting on roosting

Table 1. Pellet regurgitation of Pallid Harrier *Circus macrourus* at individual roost sites in KNP, Bharatpur between 18 March and 24 April 2008

Harrier	% sites found with fresh pellets	% sites found with excreta only	% sites found devoid of pellets & excreta	Total sites investigated
Male	44.44	33.3	22.2	18
Juvenile	37.0	51.9	11.1	27
Total	18	20	7	45

Table 2. Percentage occurrence of prey items in Pallid Harrier *Circus macrourus* pellets (n=101) collected in KNP, Bharatpur from 29 February to 21 March 2008

Prey	Small bird	Rodent	Reptile	Prey remains/pellets
Male	54	38.6	5.3	57/46
Juvenile	50	50	0	14/14
All including female	69	31.3	0	48/41
Prey remains	72	44	3	119/101

harriers (Verma 2002). The late arrival of harriers at roost in March is indication that they spend more time foraging during the period. This was also evidenced from the individual roost sites found without pellets in the same month. The information on the winter diet of the species is limited (BirdLife International 2003). Land birds and rodents being a major component of its diet in Indian wintering grounds corresponds with its diet on the breeding grounds (Cramp & Simmons 1980). The foraging Pallid Harrier attempted attacks on wagtails and pipits (Motacillidae), and larks (Alaudidae) in the park (pers. obs.). Rodents such as Indian bush rat *Golunda ellioti*, lesser bandicoot rat *Bandicota bengalensis*, Indian gerbil *Tatera indica*, Baluchistan gerbil *Gerbillus nanus*, *Rattus* spp., and grey musk shrew *Suncus murinus*, which have been recorded in the diet of Eurasian Marsh Harrier from the same area (Verma 2010c), may constitute the rodent diet of Pallid Harriers too. Further studies are required to account for diet preferences of the species in its wintering grounds in India.

A countrywide roost survey, detail study on the winter ecology, and regular monitoring of communal roost sites are recommendations of this study for planning long term survival of Pallid Harrier in India. Countrywide roost survey for wintering Hen Harrier has been conducted in Britain (Clarke & Watson 1990). Monitoring across the country may provide valuable information about changing environmental conditions and thereby clues for their conservation. Monitoring numbers of raptors at Migration Watch sites, particularly when counts are conducted in conjunction with counts at other watch sites, and across large geographic scales, offers considerable potential for assessing which human activities influence local, regional, continental, and global ecosystem processes (Bildstein 2001).

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Recovery of breeding Mallards *Anas platyrhynchos* in Kashmir, India

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Ahanger, F. A., Shah, G. M., & Jan, U., 2013. Recovery of breeding Mallard *Anas platyrhynchos* in Kashmir. *Indian BIRDS* 8 (2): 37–38.

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Abstract

Breeding Mallards *Anas platyrhynchos* are recovering in Kashmir. During the present study an attempt was made to locate mallard nests in five wetlands of Kashmir; the duck was found breeding in all these wetlands, nesting in tall and dense macrophyte vegetation, willow bushes, and hollows of old willows. The revival of mallards' breeding here could be attributed to some improvements in the condition of the wetlands over the last few years.

Introduction

Almost a century ago, Mallards *Anas platyrhynchos* bred in large numbers in Kashmir. Maj. Cock is quoted in Hume (1890),

'This species "breeds in large numbers on the Anchar[,] Dall and other lakes in Cashmere during the months of May and June; boat-loads of their eggs are brought to the Sirinugger bazaars for sale, together with the eggs of the Coot and White-eyed Duck."'

Referring to the above quote, Bates & Lowther (1952) concluded that, 'these depredations must have had disastrous repercussions, for only six years later Unwin (1895) writes in Sir Walter Lawrence's *Valley of Kashmir*: "... arrives in late October and leaves in March." ' Unwin found no evidence of the bird breeding extensively in Kashmir.

Destruction of wetland habitat in general, and at mallard nesting sites in particular, combined with illegal egg collection, and indiscriminate poaching, caused mallards to discontinue breeding in Kashmir, although they do overwinter here in huge numbers. Bates & Lowther (1952), in their attempt to record breeding of Mallard in Kashmir in 1920's could find only a few nests in all of Kashmir Valley. They also did not support Hume's view about the bird breeding extensively in Kashmir. Subsequent workers on waterfowl (Pandit & Fotedar 1982; Shah 1984; Shah & Qadri 1988; Qadri 1989; Jamwal 1991; Pandit 1991; Zargar & Naqash 1993; and Bacha 1996) could not find any trace of Mallard breeding here and the bird seemed to have abandoned Kashmir as a breeding ground.

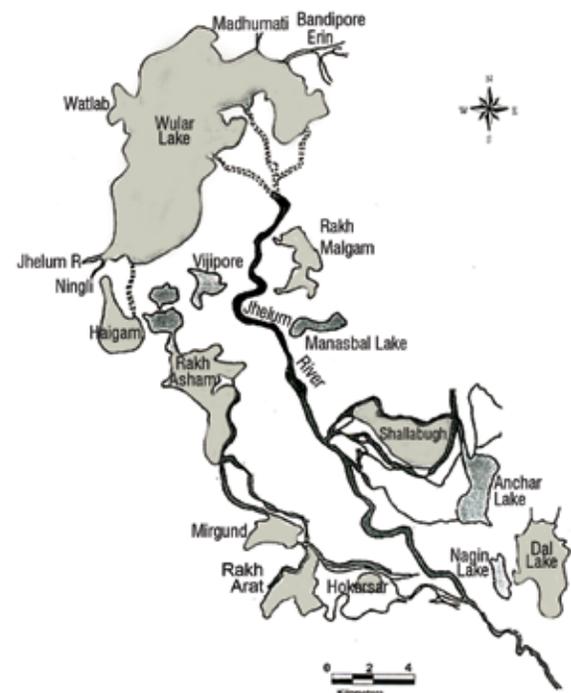
However, recently, breeding pairs have been observed again, albeit in small numbers. It is a good sign, but there is a need for research on various breeding parameters in order to facilitate an increase in the breeding population.

In the present study an attempt has been made to search for Mallard nests across five wetlands of Kashmir to assess its breeding status.

Study area

The present study was carried out across five important wetlands of Kashmir namely, Hokersar, Haigam, Shalabugh, Wular Lake,

and Anchar Lake. All these habitats support a rich biodiversity, and provide important habitats for migratory waterbirds within the Central Asian Flyway (Wetlands International 2007). Wular, and Hokersar, have already been declared Ramsar sites, owing to their biodiversity value. More recently, Wular, Hokersar, Haigam, and Shalabugh have been included in the network of Important Bird Areas (Islam & Rahmani 2004). Anchar Lake, though neither a Ramsar site nor an IBA, is, nevertheless, an extremely important bird habitat as several species of waterbirds breed in the lake in summer, besides forming a staging point for many avian winter visitors.



A map of wetland habitats of Kashmir valley

Methods

We searched these wetlands for Mallard nests in the breeding seasons of 2004 and 2005, to record the number of nests in each of these wetlands. In Anchar Lake, we searched for two more breeding seasons (2006 and 2007). Mallard nests were detected by flushing ducks by gently disturbing the patches of tall and dense macrophytic vegetation, and willow bushes (*Salix* spp.) (Klett *et al.* 1988). Hollows of old willows were also searched thoroughly to detect nests (Gec 1970). A nest was defined as any depression in which the bird laid one or more eggs (Miller & Johnson 1978).

Results & discussion

The number of nests found across these five wetlands of Kashmir, over the period of two/four years, is shown in Table. 1. Mallards were found to nest in three types of habitats, namely, tall and dense macrophytic vegetation, willow bushes, and hollows of old willows. No nest was recorded from Shallabugh in 2005. This is because of the collapse of a bund in July 2004 that resulted in the drainage of all the water from this wetland, consequently drying it completely. These dry conditions prevailed for almost 18 months i.e., until November 2005, when water supply to the wetland was restored. During this period, wetland birds were altogether absent from the wetland, while water dependent birds occurred in considerably reduced numbers. Consequently Mallards did not breed there during 2005.

Table 1 clearly shows that the numbers of breeding Mallards are increasing in the wetlands of Kashmir, with nests being recorded from all the study sites, unlike a decade ago, when none bred here.

Several possible reasons could be cited for this revival. There have been several improvements in the condition of wetlands over the past several years. Hokersar, Haigam, and Shallabugh wetlands are protected and managed by the Department of Wildlife Protection, J&K Government. Poaching in these reserves has been almost entirely eliminated. Anthropogenic interference in these reserves has been restricted, as people are not allowed to enter the wetlands without proper permission. Because of the restricted harvesting of macro-vegetation, patches of tall and dense macro-vegetation have become available to Mallards for nesting. Duebbert (1969), and Miller (1971) have also observed that for successful nesting waterfowl need a thick cover of vegetation. Besides, dense willow growth on the periphery of both, Haigam, and Shallabugh wetlands also offers nesting

sites to Mallard. Gec (1970) also reported Mallard nests in willows in large numbers. At Anchar Lake, large patches of tall and dense macro-vegetation are now present, where Mallards breed. In Wular Lake, waterbird poaching and other forms of anthropogenic interference (macrophyte harvesting, extraction of *Trapa natans*, fishing) are severe. Nevertheless, owing to its large area, the lake contains patches of macro-vegetation, and dense willow plantations at several sites, ideal for Mallards' nesting.

It is a good sign that the major wetlands of the Kashmir Valley have supported a small breeding population of Mallard in the last several years, although this is still only a fraction of the large wintering population.

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Table 1. Mallard nests recorded across five wetland habitats of Kashmir

Nesting site	Year	No. of nests found				
		Anchar*	Hokersar	Haigam	Wular	Shallabugh
Tall and dense macrophyte vegetation	2004	17	17	10	2	8
	2005	23	19	6	2	0
	2006	27	-	-	-	-
	2007	28	-	-	-	-
Willow bushes	2004	2	2	8	6	7
	2005	2	2	8	9	0
	2006	1	-	-	-	-
	2007	2	-	-	-	-
Hollows of old willows	2004	0	0	2	1	1
	2005	2	1	3	2	0
	2006	0	-	-	-	-
	2007	0	-	-	-	-
Total		104	41	37	22	16

* In the breeding season of 2006 and 2007 nest searching was done only in Anchar Lake.

Population status of Painted Stork *Mycteria leucocephala* and Black-headed Ibis *Threskiornis melanocephalus* in southern Rajasthan, India

Vijay Kumar Koli, Mohammed Yaseen & Chhaya Bhatnagar

Koli, V. K., Yaseen, M., & Bhatnagar, C., 2013. Population status of Painted Stork *Mycteria leucocephala* and Black-headed Ibis *Threskiornis melanocephalus* in southern Rajasthan, India. *Indian BIRDS* 8 (2): 39–41.

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Introduction

The Painted Stork *Mycteria leucocephala* and Black-headed Ibis *Threskiornis melanocephalus* are widely distributed in South and South-East Asia (Ali & Ripley 2007). They mainly prefer shallow and marshy wetlands. Both colonial species are listed as Near-threatened (IUCN 2012), because of a decrease in their population due to hunting, habitat destruction and deterioration, trade and agricultural pollution (Pattanaik *et al.* 2008; Choudhury 2012). Much work has been done on these species in India on various aspects, but in context to Rajasthan, few studies are available and found to be confined to Keoladeo National Park, Bharatpur (Naoroji 1990; Ishtiaq 1998).

Rajasthan is the largest state of India and its southern part is relatively more suitable for aquatic birds owing to high rainfall as well as the numerous wetlands. However, information about these two species is sparse. In the present paper, primary information on the abundance of two resident species i.e., Painted Stork and Black-headed Ibis have been documented from southern Rajasthan. This basic information is crucial to formulate any plan for their conservation.

Study area

The southern part of Rajasthan is commonly known as the “Mewar” region, and comprises six districts, namely, Udaipur, Rajsamand, Dungarpur, Banswara, Pratapgarh, and Chittorgarh (Fig. 1), covering about 12.35% of the geographical area of the state. This part is situated in the world’s oldest mountains, the Aravalli Ranges, and contains many seasonal and perennial water bodies. These wetlands provide an excellent habitat for, and harbor many aquatic species. Average rainfall of this region is about 602 mm. The area is characterised by a distinct winter (November–February), summer (March–June), and monsoon (July–October) seasons. Highest temperature (c. 42°C) was recorded in summer and lowest (c. 8°C) from winter season (Koli 2012).

Methodology

To count both species, a road transect of 694 km was conducted in 2008 and 2009 across the six districts (Fig. 1). The average length of a transect in each district was 115 km. Transects were conducted during summer, because wetlands shrink in this season, possibly forcing individuals to flock to the left over

wetlands (Sundar 2006). The route of the transect was decided so that maximum area of each district could be covered. Two or three days were used to complete the transect route in each district to counter effects of local migration of the birds and to prevent the possibility of a double count. A motorcycle was ridden at a speed of c. 20–30 km/hr and all individuals of the two focal species visible 50–800 m on either side of the road were enumerated. There were many wetlands along the road transect. At each, we counted birds from a vantage point using binoculars. If a reservoir was too big to be scanned from one point, the whole periphery was circumambulated by two people walking together (VKK & MY) to perform a count. Walking distance was

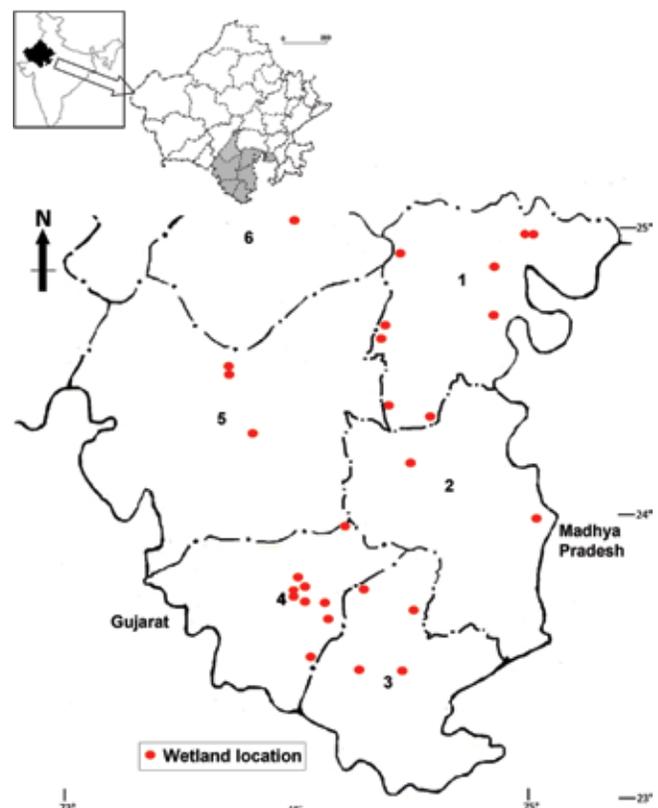


Fig. 1. Study area of Rajasthan state comprising six districts with location of wetlands. Numbers inside the figure indicate districts, for which greater detail is given in Table 1.

not included in the length of the transect. Secondary information was also confirmed during surveys. Adult and juvenile birds were identified with the help of Ali & Ripley (2007); enumeration was used to compute the percentage of juveniles of each species each year.

Encounter rates (ER) were calculated using following formula:

$$\text{Encounter rate} = \frac{\text{Number of birds counted on the transect (abundance)}}{\text{Total length of the transect (in km)}}$$

Conservation problems were also noted during the surveys. Chi square test (χ^2) was used to estimate difference in the population of both species during both surveys because uneven rainfall can affect the bird population. Pearson product moment correlation (r) was used to estimate whether any relationship

existed between the number of counted birds to number of wetlands and the transect length in districts (n=6).

Results

Forty wetlands were scanned during the surveys and birds were encountered in 28 reservoirs of six districts. Both species were present together in 22 wetlands, while six wetlands contained a single species.

A total of 495 adult and 53 juvenile of Painted Storks were recorded during 2008, while 605 adult and 45 juvenile were recorded in 2009 (Table 1). Juveniles represented 11% of the total population during 2008, and 7% in 2009. Maximum ER (1) was found in Dungarpur district during 2008, and in Chittorgarh district (2) during 2009 (Table 2). Significant difference ($\chi^2=5.87$,

Table 1. Counts of Painted Stork and Black-headed Ibis in selected wetlands of southern Rajasthan, during road transect conducted in 2008 and 2009

No	District	Reservoir	Location	Painted Stork		Black-headed Ibis	
				2008	2009	2008	2009
1	Chittorgarh	Bassi Dam	25°01'N, 74°49'E	-	-	6a	5a
		Orai Dam	25°01'N, 74°50'E	12a	10a	18 (17a+1j)	15a
		Mangalwar	24°36'N, 74°18'E	-	5a	13a	20a
		Dhamana	24°57'N, 74°16'E	28a	15a	9a	5a
		Gousunda Dam	24°44'N, 74°31'E	-	-	26 (22a+4j)	25 (22a+3j)
		Gambhiri	24°53'N, 74°38'E	13a	23a	-	2a
		Badwai	24°29'N, 74°14'E	48 (43a+5j)	55 (45a+5j)	12a	17a
		Bari Sadri	24°25'N, 70°28'E	10a	13a	7a	13a
		Ngawali pond	24°38'N, 74°17'E	27(25a+2j)	38 (31a+7j)	19a	12a
2	Pratapgarh	Datliya	24°07'N, 74°17'E	38 (30a+8j)	45 (41a+4j)	-	-
		Pratapgarh	24°01'N, 74°46'E	-	-	26 (24a+2j)	20a
3	Banswara	Talwada	23°33'N, 74°19'E	8a	10a	4a	-
		Partapur	23°35'N, 74°10'E	9a	2a	18 (17a+1j)	11a
		Harodam	23°46'N, 74°23'E	14a	22a	2a	5a
		Dasada	23°46'N, 74°10'E	35 (28a+7j)	40 (34a+6j)	-	5a
4	Dungarpur	Aaspur	23°56'N, 74°05'E	-	5a	-	2a
		Badaya	23°54'N, 74°03'E	40 (38a+2j)	21a	14a	13a
		Bodigama	23°50'N, 74°05'E	32 (29a+3j)	40 (33a+7j)	26 (22a+4j)	21(20a+1j)
		Pujpur	23°51'N, 74°01'E	18a	25a	8a	10a
		Nadapachore	23°56'N, 73°57'E	58 (49a+9j)	45 (40a+5j)	14a	15a
		Somkamla	23°58'N, 74°01'E	27a	40 (37a+3j)	26 (23a+3j)	19a
		Sabla	23°51'N, 74°10'E	60 (50a+10j)	35 (34a+1j)	-	4a
		Sagwada	23°40'N, 74°01'E	23a	55 (49a+6j)	8a	11a
		Galiyacot	23°30'N, 74°01'E	6a	16a	15a	3a
5	Udaipur	Pichola	24°34'N, 73°40'E	4a	-	5a	4a
		Fatehsagar	24°55'N, 73°42'E	-	-	2a	5a
		Jaisamand lake	24°16'N, 73°56'E	-	-	3a	7a
6	Rajsamand	Rajsamand lake	24°14'N, 73°55'E	38 (31a+7j)	24 (22a+2j)	22a	27 (21a+6j)
Total				548	650	303	296

Abbreviations: a= adult; j=juvenile

Table 2. Encounter rates (ER) of Painted Stork and Black-headed Ibis in six districts of southern Rajasthan

No	District	Km travelled	ER of Painted Stork		ER of Black-headed Ibis	
			2008	2009	2008	2009
1	Chittorgarh	105	1.31	1.51	1.04	1.08
2	Pratapgarh	80	0.47	0.56	0.32	0.25
3	Banswara	172	0.38	0.43	0.13	0.12
4	Dungarpur	198	1.33	1.42	0.56	0.49
5	Udaipur	75	0.05	0.00	0.13	0.21
6	Rajsamand	64	0.59	0.37	0.34	0.42
Total		694	0.68±0.52	0.71±0.61	0.42±0.34	0.42±0.34

df=5, $P < 0.05$) was found between both years in recorded number of birds in districts. The counted number of birds were found to be significantly related to the number of wetlands surveyed in districts during 2008 ($r = 0.86$, $n = 6$, $P < 0.05$), and 2009 ($r = 0.89$, $n = 6$, $P < 0.05$) but not to transect length ($P > 0.05$) in both years.

During 2008, a total of 288 adult and 15 juvenile of Black-headed Ibis were recorded, and 286 adult and 10 juvenile were recorded in 2009 (Table 1). Juveniles comprised 5.20% of the total population during 2008, and 3.49% in 2009. ER (1.04 and 1.08) was found high in Chittorgarh district during both surveys (Table 2). No significant difference ($\chi^2 = 7.26$, $df = 5$, $P > 0.05$) was found in the recorded number of birds between both surveys but the correlation was significant ($r = 0.94$, $n = 6$, $P < 0.05$ for 2008 and $r = 0.93$, $n = 6$, $P < 0.05$ for 2009) with number of wetlands. No influence ($P > 0.05$) of transect length was found on its population during both years.

Discussion

Habitat destruction, urbanisation and increasing tourist activities were identified as major problems faced by these species in southern Rajasthan. Many wetlands are facing high pressure of encroachment, e.g., in Rajasmand district, Rajasmand Lake is almost entirely encroached by human settlement and has only few undisturbed areas in northern side which support sound number to bird diversity. Lake complex of Udaipur city is also highly influenced by urbanisation. Fatehsagar Lake is completely surrounded but Pichola Lake is partially surrounded towards the northern side by human settlements. Massive use of these water bodies for ecotourism and use of water boats were also other reasons for reduction in population of aquatic birds. Thereby, water bodies which were far from human disturbance like Badwai, Nagawali pond, Bodigama, Nadapachore, Somkamla, Sabla, and Sagwada were found to be congenial to birds. Sundar (2006) observed that aquatic birds prefer those wetlands having low level of human disturbance. Human activities affect nesting, loafing, and foraging activities of water birds. Lowering feeding rates reduce energy uptake. Therefore, birds access disturbance free wetlands to secure food for themselves, and for their nestlings. It is also important to establish disturbance-free breeding sites (Rodger & Schwikert 2002).

Total numbers of Painted Stork varied during both surveys but the overall ER was found to be almost similar (Table 2). In the case of Black-headed Ibis, number and ER were similar in both surveys. Rainfall was low in the state as well as its southern region during 2008 than 2007 (http://waterresources.rajabharn.gov.in/Daily_Rainfall_Data/Rainfall_Index.htm). This condition dries up many seasonal canals, ponds, and other small water resources, which can play a key role in population dispersal of water birds. Thus, lack of widespread presence of water bodies forces birds to congregate in large water bodies and this may be a causal factor for the increasing population of Painted Stork during 2009 but, difference in ER among districts indicates local movement of birds.

Both wading species have their own particular niche in relation to their feeding habits. Painted Storks feed mainly on fish in fresh water. Occasionally frog and snake are also consumed (Urfi 1989). It was observed foraging in 12–25 cm of water (Kalam & Urfi 2007). Black-headed Ibis depends on invertebrates (Sundar 2006; Ali & Ripley 2007) but also consumes fish, frog, and vegetable matter (Ali & Ripley 2007). Sites of greater water depth are less preferred by Painted Storks

(Kalam & Urfi 2007). This may be a strong reason that at man-made reservoirs or dams such as Bassi Dam, Gosunda Dam, and some lakes such as Fatehsagar, and Pichola, Painted Stork was not found but a population of ibis was observed. The whole of Fatehsagar and most part of Pichola have been enclosed by a wall and construction of tourist hotels, so that instead of flowing out, water level increases in rains, making the depth unsuitable for the species. Co-occurrence of birds may also be influenced by numerous factors, including competition, predation, regional population changes, autecology and habitat response have been identified (Rodger & Schwikert 2002).

Tall trees, commonly present on the margins of lakes, are utilised by many bird species for perching, and as nesting sites. Such a habitat was hardly available in our study area during the surveys, except at some wetlands like Pichola Lake, Ngawli pond, and Jaisamand Lake, which also supported good populations of birds. Khan (1987), and Pattanaik *et al.* (2008) observed that lack of suitable nesting trees affects the breeding potential of the aquatic bird species.

Thus, from the present study it is inferred that Dungarpur district supports the highest number of Painted Stork population during both years while the Black-headed Ibis population was highest in Chittorgarh district.

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Status of Rufous-necked Laughingthrush *Dryonastes ruficollis* in Nepal

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Introduction

Rufous-necked Laughingthrush *Dryonastes ruficollis* is found in Nepal, India, Bhutan, Bangladesh, Myanmar, and China along the length of the Himalayas in tropical and sub-tropical belts (del Hoyo *et al.* 2007; Grimmett *et al.* 2011; Rasmussen & Anderton 2012). BirdLife International (2012) considers the species is of "Least Concern" on a global scale as its population is believed to be more than 10,000 mature individuals, and extent of occurrence more than 20,000 km². The species lies on its western edge of its world distribution in Nepal where it occurs in very small numbers in the southern belt, mainly in and around Chitwan National Park (Inskipp & Inskipp 1991; BCN & DNPWC 2011). The species has been listed on the national red list for birds since 1996 (Baral *et al.* 1996; Baral & Inskipp 2004; BCN & DNPWC 2011).

Although found within a protected area, given its small numbers and relatively small area of suitable habitat, the species is susceptible to every subtle change to its habitat. This paper looks at current

status, distribution, and numbers of this species in Nepal and outlines some conservation recommendations aimed at boosting its population.

Status and distribution

Rufous-necked Laughingthrush is recorded west from Tamaspur (Inskipp 1988), Nawalparasi the buffer zone of Chitwan National Park, east to Mul Khola, Chitwan National Park. It is more frequent in the western part of Chitwan, east from Budhi Rapti west to the buffer zone forests of Nawalparasi (Fig. 1).

Being an eastern species, it is likely that the species once had a much greater distributional range from Chitwan eastward to the district of Jhapa. The western part of Chitwan is perhaps the most inaccessible area in the entire park, and is now the only place in the park where the species thrives in small numbers. The reports from Tamaspur constitute the western-most record of the species' world distribution (Inskipp 1988; Inskipp & Inskipp 1991). It is also reported from community forests along the Narayani River indicating dispersal of the main population from the park.

Its main population in Chitwan National Park is found between

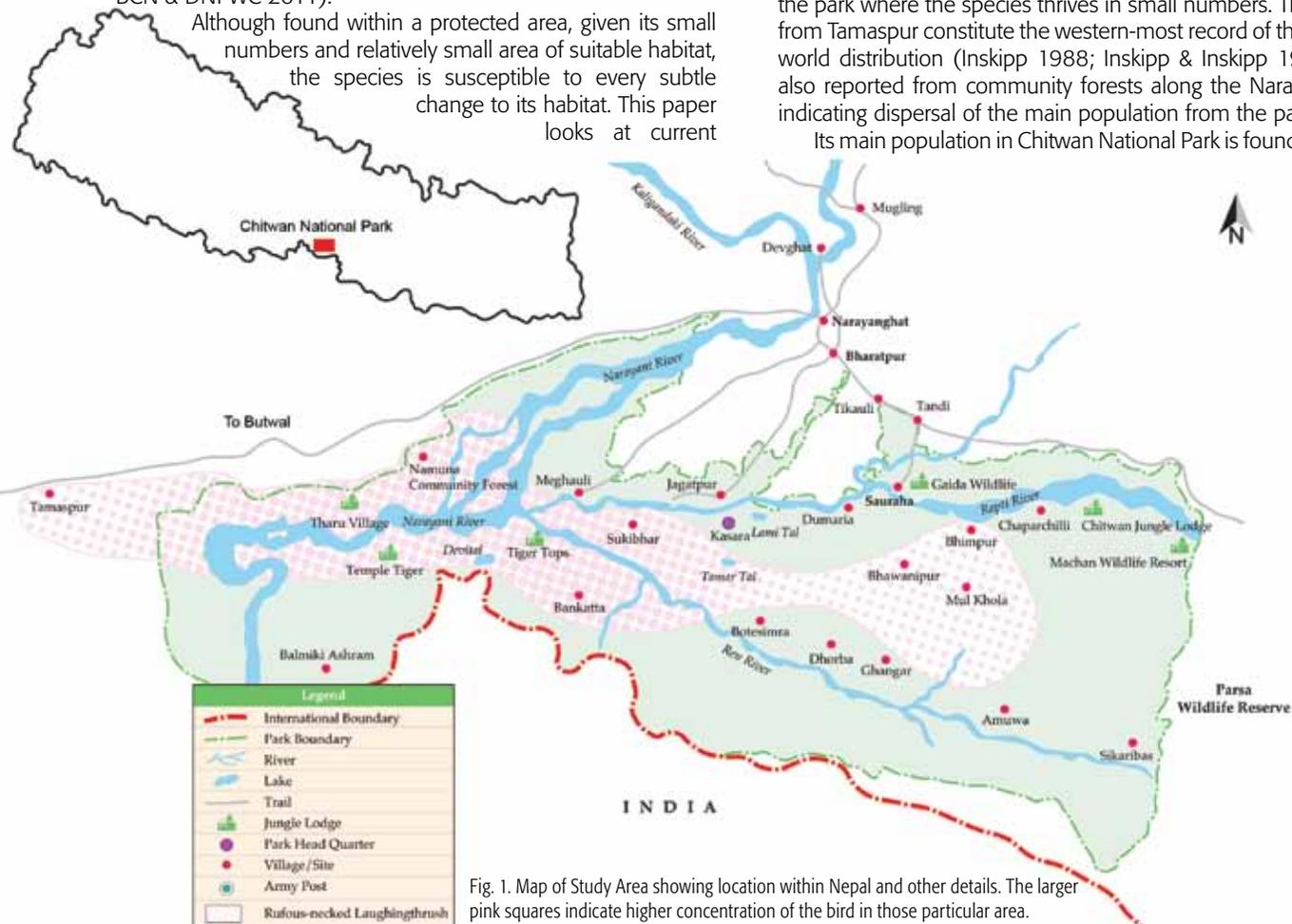


Fig. 1. Map of Study Area showing location within Nepal and other details. The larger pink squares indicate higher concentration of the bird in those particular area.

Bhimle Post and Budhi Rapti westwards, TigerTops Jungle Lodge and Tented Camp, and all the way west to Temple Tiger Jungle Lodge area, close to the western border of the park. There are at least three records of the species from Mul Khola, south of Sauraha (Table 1). Within Nepal, this is the most easterly record of the species.

Although previously more common in TigerTops Jungle Lodge and Tented Camp area, the species is now considered rare here mainly because of flooding, which severely damaged the wet, moist grasslands of the area (BCN & DNPWC 2011). There were some records from the Dhakre Khola area (two in April 2007), and as many as 16 from the Devi Tal area (Dhan Bahadur Chaudhary *pers. obs.*). Now even the Devi Tal area habitat has changed drastically, mainly because of flooding in the monsoon of 2011. Up to ten birds were regularly seen till early 2011 around Temple Tiger Lodge area (Bikram Dhungana *pers. comm.* 2011), which is further west of Devi Tal. Forests at Tamaspur were surveyed during Great Slaty Woodpecker *Mulleripicus pulverulentus* study in 2011 (Baral 2012), during which Rufous-necked Laughingthrush was not recorded. However, that survey alone cannot rule out the continuing presence of this species.

The bird has colonised community forests west of the Narayani River where habitat is in better condition than before, especially after the initiation of community managed forest programme. Within Namuna Community Forests a large number of 25 birds was recorded in 2010. Here, the dense shrubs, mostly comprising 'damaru kanda' *Maclura cochinchinensis* seem to play a significant role in its ecology as up to 16 birds have been found on them (BCN & DNPWC 2011; Table 1). Up to four flocks in Krishnasar Community Forest and three flocks of Rufous-

necked Laughingthrush in Gundrahi Dhakaha Community Forest have been observed between 2010 and 2012.

Habitat

The habitat preferred by this species has been described in various works: among bushes and low shrubbery in mixed forests (Fleming *et al.* 1984), thick undergrowth in dense broadleaved forest (Inskipp & Inskipp 1991; Grimmett *et al.* 2000), secondary growth, scrub and tall grass, bamboo, undergrowth and ravines in open broadleaved evergreen forest (Rasmussen & Anderton 2012).

In Nepal, this species prefers grassland/forest edge habitat. Grasslands, where the species is more frequently recorded, comprise mainly *Phragmites karka* / *Saccharum arundinacea* as well as *S. spontaneum* / *Narenga porphyrocoma*. Forest habitat is either sal *Shorea robusta* or mixed-evergreen forests with dense undergrowth within the park. However, outside the park in the buffer zone, the habitat is mainly riverine forests with young *Acacia catechu* trees densely mixed with varieties of grasses and shrubs. It has been noted to frequent the damaru kanda shrubs within these community forests. This shrub forms dense thickets and also has long spiny needles perhaps providing further security to birds. The dense undergrowth is canopied by tall simal trees *Bombax ceiba*. Rufous-necked Laughingthrush has almost always been observed in moist habitat areas, and seems to avoid drier grasslands or forest types.

Breeding

Rufous-necked Laughingthrush nests were located in grasslands and also in damaru kanda shrubs in March and April. No further details were taken because of inaccessibility to the nest. Ali & Ripley (1987) give April and May as the main breeding months for it in the Indian Subcontinent.

Threats

Loss of habitat and its alteration are the main threats to the species. Many of the tropical evergreen and moist broadleaved forests have now been restricted to a few patches outside protected areas in Nepal. This is mainly because of traditional human activities of clearing landscapes by slash-and-burn techniques for agriculture and livestock rearing (Cronin 1979; Inskipp 1989). The species likes mid-successional vegetation, which is rapidly being lost due to natural succession and in some cases by invasive alien species such as *Mikania micrantha*. Naturally occurring frequent flooding and intentionally lit fires in the lowland grasslands to encourage new shoots of grasses for livestock may be possible threats to the species, and late grassland burning is said to destroy its nests. However a thorough study on the effects of fire and flood to birdlife has not been carried out.

Conservation outlook

A small population, and small area of habitat occupancy make this species highly susceptible to threats. For this reason, the species is listed as Critically Endangered for Nepal (DNPWC & BCN 2011). Though listed under Least Concern globally, there is a need to review that status. This species is found in smaller populations throughout its range, found in few countries along the southern belt of the Himalayas, and uncommon in most of these countries (del Hoyo *et al.* 2007).

Table 1. Various dated records of Rufous-necked Laughingthrush at Chitwan National Park and its buffer zone, central Nepal

Date	Place	Number
11 February 2006	Tiger Tops Tented Camp	13
1 May 2006	Pairebas Mulkhola, Churia Hills	5
29 November 2006	Pairebas Mulkhola, Churia Hills	9
17 April 2007	Budhi Rapti Grassland Area	10
29 April 2007	Baghmara Post, Churia Hills	9
8 November 2007	Namuna CF	11
10 January 2008	Namuna CF	2
18 March 2008	Devital area	15
2 October 2008	Krishnashar CF	13
7 November 2008	Panesa Khola, Churia Hills	3
21 March 2009	Namuna CF	16
23 April 2009	Temple Tiger Jungle Lodge Area	17
28 April 2009	Tiger Tops Jugle Lodge Area	5
12 October 2009	Gundrahi Dhakaha CF	12
29 October 2009	Pandav Nagar, Churia Hills	10
19 December 2009	Pandav Nagar, Churia Hills	6
3 March 2010	TigerTops Tented Camp	8
1 April 2010	TigerTops Tented Camp	5
2 March 2010	Krishanashar CF	21
20 October 2010	Gundrahi Dhakaha CF	17
21 October 2010	Surung Khola, near TigerTops Tented Camp	12
11 November 2010	Namuna CF	12
31 December 2010	Khoria Mohan, Churia Hills	4
2010	Damaru Ghari, Namuna CF	16
2010	Namuna CF	9
23 February 2011	Baghmara Post, Churia Hills	50
13 March 2011	Tiger Tops Tharu Lodge Compound	1
14 November 2011	Namuna CF	8
26 December 2011	Devi Tal, Churia Hills	9
12 February 2012	Budhi Rapti Grassland Area	7
3 March 2012	TigerTops Tented Camp	35
5 October 2012	Namuna CF	3
24 October 2012	Gundrahi Dhakaha CF	13

A habitat utilisation and preference study needs to be conducted for the species. Where it has colonised new areas, the habitat should be thoroughly studied. A study that looks into the limiting factors that affect its distribution and population would be especially valuable. The results of such a study could be important to improve the habitat quality or in some areas create such habitats.

Until then, we could target the following activities to increase populations of Rufous-necked Laughingthrush:

1. Promotion of dense shrubs/grasslands in the buffer zone.
2. Experimental management of grasslands/forests in Chitwan National Park.
3. A thorough survey of Tamaspur and adjoining areas, including any other areas that might hold populations of these birds.
4. Help the species colonise and spread its range outside Chitwan National Park in other additional safe areas.

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Streaked Shearwater *Calonectris leucomelas* from Kannur coast, Kerala

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As part of the ongoing pelagic bird studies on the west coast of Kerala, we conducted a short monitoring trip on 9 July 2012 during one of the dry breaks of the monsoon. Weather was mostly overcast, windy, and the sea was slightly rough. Large swarms of mackerel *Rastrelliger kanagurta* and sardines *Sardinella* spp., were noted during the three-hour boat trip. Bird sightings included 300+ Flesh-footed Shearwaters *Puffinus carneipes* and nearly 1,000 Wilson's Storm-petrels *Oceanites oceanicus*. Around 9 kms north-west of Azhekkal estuary on the Kannur coast (11°55'N, 75°12'E), while approaching a small flock of floating Flesh-footed Shearwaters, we saw a slightly larger, pale bird amongst them. From far, it seemed like a gull or a tern floating along with the shearwaters—

but as we approached closer, we realised that it was a different shearwater. The first possibility that raced through our minds was a pale morph of Wedge-tailed Shearwater *P. pacificus* as described in most regional guides, but considered improbable in the Indian Ocean (Rasmussen & Anderton 2005).

However, on closer approach, it became clear that the bird in question was a Streaked Shearwater *Calonectris leucomelas*. The bird allowed us fairly close access of around 20-30 m and we were able to note all the field characteristics and take several clear photographs of the bird until it flew away after a few minutes to the north-west [35, 36]. The bird appeared larger than the Flesh-footed Shearwaters, which were around it for ready comparison. In the field, the bird looked pale overall and appeared to have a



35: Streaked Shearwater *C. leucomelas* among Flesh-footed Shearwaters *P. carneipes*

long, dark-tipped pale bill. In the photographs a very small pale spot was also seen at the very tip of the beak. The forehead and face were whitish, with a broad pale eye-ring visible in the photographs. The crown and nape were streaked brown, and the hind neck was light brown. The rest of the upper parts were brown and the under parts, pure white. When the bird took wing, the white panel on the under wing, with a dark trailing margin of the flight feathers were clearly visible. The only other similar species which occurs in the Arabian Sea is the Cory's Shearwater *C. diomedea*; considered extralimital to South Asia but recorded close to the Red Sea (van den Berg *et al.* 1991) and around the Persian Gulf (Huw Roberts *pers. comm.* September 2011). This species however does not show white on the forehead or face and is easily dismissed based on details from images and views we obtained.

This is perhaps the first record of Streaked Shearwater from Kerala (Sashikumar *et al.* 2011), and fourth from India—it has earlier been recorded twice off Kanyakumari (Philips 1967; van den Berg *et al.* 1982), and between Rameshwaram and Talaimannar (van den Berg *et al.* 1991), all along the Tamil Nadu coast. There have been a handful of records from Sri Lankan coasts and one from the Maldives, accounting for ten South Asian records in all (Table 1; Fig. 1). The species is regularly known to visit the Indian Ocean through the Straits of Malacca, after breeding on north Pacific islands (Robertson 1995). It is also interesting to note that most of the previous records are

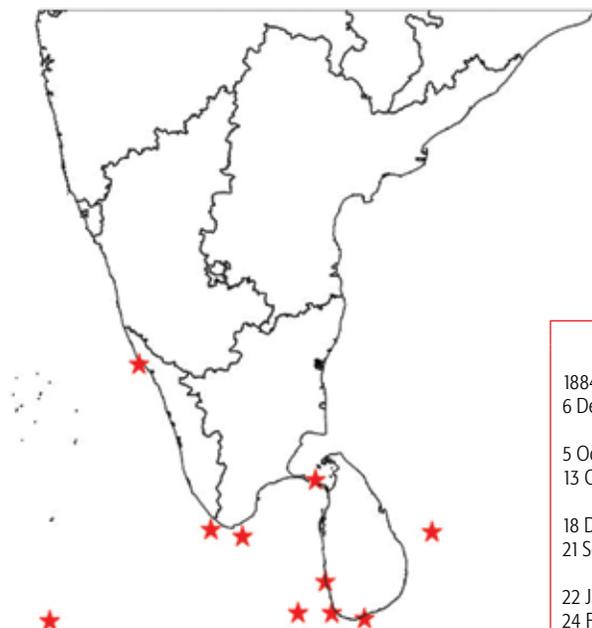


Fig. 1: Map of records of Streaked Shearwater *C. leucomelas* from South Asia



36: Streaked Shearwater *C. leucomelas*

from September–February during its north Pacific non-breeding season (Oka 2004), whereas the current record is just the second one from June–July; falling within the peak breeding season. Potentially this suggests that the Kerala bird was a non-breeding immature.

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Table 1: List of earlier records of Streaked Shearwater from South Asia

Date	Location	Coordinates	Reference
1884 (or 1894?)	Mt. Lavinia, Sri Lanka	6°50'N, 79°51'E	Ali & Ripley 2001
6 December 1956	35.5 km W–SW of Muttum Light House, Nagercoil	8°44'N, 79°26'E	Philips 1967
5 October 1962	East of Sri Lanka	8°00'N, 82°30'E	Bourne 1965
13 October 1962	Between Greater Basses Reef and Dondra Head	6°00'N, 82°45'E	Bourne 1965
18 December 1979	South-west of Sri Lanka	6°06'N, 79°09'E	Chapman 1983
21 September 1978	Palk Bay between Talaimannar and Rameshwaram	9°13'N, 79°35'E	van den Berg <i>et al.</i> 1982
22 June 1984	South-east of Kanyakumari	7°53'N, 77°47'E	van den Berg <i>et al.</i> 1991
24 February 1999	North-east of Raa Atoll, Maldives	5°54'N, 72°59'E	Anderson & Baddock 2001
6 October 2007	Off south-west coast of Sri Lanka	6°06'N, 80°00'E	Pepper & Hettige 2008

First record of Bean Goose *Anser fabalis* from Uttarakhand, India

Anushree Bhattacharjee

Bhattacharjee, A., 2013. First record of Bean Goose *Anser fabalis* from Uttarakhand, India. *Indian BIRDS* 8 (2): 46–47.

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The Bean Goose *Anser fabalis* is a migratory anatid, breeding in the high Arctic and wintering in temperate and sub-tropical regions (BirdLife International 2000, 2012). It occurs as a winter vagrant in India, Nepal, and Bangladesh (Grimmett *et al.* 1998, 1999; BirdLife International 2012).

The Bean Goose is a mid-sized to large dark-brown goose (Rasmussen & Anderton 2005). Its head, neck, and upper parts are dark brown (Kazmierczak 2000). The upper wing coverts are dark brown in colour with narrow white fringes to the feathers (Grimmett *et al.* 1999). It has slimmer neck, and smaller and more angular head than Greylag Goose *A. anser* (Grimmett *et al.* 2011) and a black bill with orange band and orange legs (Grimmett *et al.* 1998, 1999, 2011; Kazmierczak 2000). It has been recorded from Nepal on a few occasions (Inskipp & Inskipp 1991; Lama 1993; Robson 1993, 2004; Rasmussen & Anderton 2005). It has also been reported as a winter vagrant with undated record from Bangladesh (Harvey 1990).

Several sightings of the Bean Goose have been reported from India in the past (Baker 1898; Baker 1906; Oates 1906; Bikaner 1946). However, Ticehurst (1930) disputed the authenticity of these sightings, and Abdulali (1966) recommended the species be removed from the Indian list. In February 2003, however, a single Bean Goose was convincingly recorded with photographs by Bill Harvey, Mike Prince, Sujan Chatterjee, and Bikram Grewal in Harike, Punjab, among a gaggle of Greylag Geese (Rasmussen & Anderton 2005). A single Bean Goose was observed again in April 2007 in Dibru Saikhowa National Park, Assam, among a flock of Ruddy Shelduck *Tadorna ferruginea* and a single Common Shelduck *T. tadorna* (Robson 2007). Interestingly, the Bean Goose has never been recorded from India during the Asian Waterbird Census (AWC) coordinated annually from 1987 to 2007 by Wetlands International (Li *et al.* 2009).

Tumariya Reservoir (29°18'N, 78°57'E), near Corbett Tiger Reserve, Nainital district, Uttarakhand, India, attracts a large number of migratory birds during winter, with 67 species of waterbirds and five species of wetland-dependent birds being recorded at the wetland during a recent waterbird census (Bhattacharjee & Bargali 2012). On 1 December 2011 at 0800 hrs, while conducting a waterbird census, I recorded a solitary Bean Goose at Tumariya Reservoir [37, 38]. The bird was observed in a mixed flock of Bar-headed Geese *A. indicus* and Ruddy Shelduck. I consulted field guides (Grimmett *et al.* 1999; Kazmierczak 2000) to differentiate it from the closely related Greater White-fronted- *A. albifrons* and Lesser White-fronted *A. erythropus* geese, before conclusively identifying it as a Bean Goose.

This sighting is not only the first record of Bean Goose from Corbett Tiger Reserve and surrounding areas (Sharma *et al.* 2003; Khati 2008; Z.S.I. 2008), but also from Uttarakhand (Z.S.I. 1995; Z.S.I. 2008). The bird was not observed on any subsequent visit to the wetland.

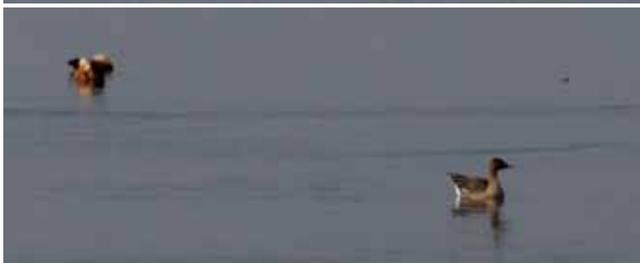
Acknowledgements

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Photos: Anushree Bhattacharjee



37. Bean Goose *Anser fabalis* in Tumariya Reservoir.

38. Bean Goose *Anser fabalis* in a flock of Bar-headed Geese and Ruddy Shelducks.

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Photographic record of Jerdon's Baza *Aviceda jerdoni* in Tripura, India

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Deuti, K., 2013. Photographic record of Jerdon's Baza *Aviceda jerdoni* in Tripura, India. *Indian BIRDS* 8 (2): 47.

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Jerdon's Baza *Aviceda jerdoni* is a rare crested raptor protected under Schedule I of the Indian Wild Life (Protection) Act, 1972. The nominate sub-species *A. j. jerdoni* is found in evergreen forests and hills of Sikkim, northern West Bengal, Assam, Meghalaya, and Arunachal Pradesh, and in north-eastern Bangladesh, while the southern sub-species *A. j. ceylonensis* is found in shola grasslands and hills of Karnataka, Andhra Pradesh, Kerala, southern Tamil Nadu besides in Sri Lanka. This slightly larger than a crow in size bird can be distinguished by its upright posture when perched, with white-tipped black crests, long and broad wings with wing tips reaching more than halfway to the

tail tip, rufous and white streaks on chin and throat, under parts barred rufous brown and white, three dark bands on tail with the terminal one being the broadest and darkest (Rasmussen & Anderton 2005).

Shy and elusive it keeps mostly within forest cover, sometimes emerging singly or in pairs in forest clearings or on tree-tops to look out for lizards, frogs or large insects which are captured by pouncing on the ground.

Although known to be crepuscular, most of the recent sightings in north-eastern India have been during daytime in evergreen and deciduous forests at altitudes that are less than 200 m up to 1800 m above msl (Choudhury 2000). At the onset of the breeding season between November and April, they are seen to soar slowly at a height uttering a shrill whistle-like or plaintive mewing call (Grimmett *et al.* 1998).

During a recent visit to my home state of Tripura, a single Jerdon's Baza was seen and photographed [39] on the afternoon of 4 December 2011 at 1500 hrs at Harbang forest village, Mandwai range, Jirania forest division, West district, Tripura (23°53'N, 91°33'E; 161 m amsl) situated about 70 km from Agartala. The bird was seen perched on a treetop for one hour (1500–1600 hrs) in tropical broadleaved evergreen forest. Though there are earlier reports of Jerdon's Baza from Tripura (Ramakanth *et al.* 2003; Choudhury 2010), this is perhaps a first photographic documentation from the state.

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39. Jerdon's Baza *A. jerdoni* in Tripura. Photo: K. Deuti.

The status and distribution of Lesser Kestrel *Falco naumanni* in Gujarat, India

Nirav Bhatt & Prasad Ganpule

Bhatt, N., & Ganpule, P., 2013. The status and distribution of Lesser Kestrel *Falco naumanni* in Gujarat, India. *Indian BIRDS* 8 (2): 48.
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40. Lesser Kestrel *F. naumanni* juvenile female.
Photos: Nirav Bhatt.

Introduction

Lesser Kestrel *Falco naumanni* is a long-distance migrant occurring as a rare passage migrant in Gujarat, India. It breeds in Europe, Central Asia, China, and Mongolia, and spends the non-breeding period in central and southern Africa, particularly South Africa (BirdLife International 2012).

There is very little published data regarding the Lesser Kestrel from Gujarat. Naoroji (2006) lists only one sight record for Gujarat and states that it is generally overlooked or mistaken for Common Kestrel *F. tinnunculus*. Khacher (1996) also lists a single sighting, which is probably the same given in Naoroji (2006), Grimmett *et al.* (2011), and Kazmierczak (2000). Rasmussen & Anderton (2005) show it as a passage migrant in the Western Ghats and do not show any record from Gujarat.



41. Lesser Kestrel *F. naumanni* sub-adult male.

and follow a similar migration pattern; hence it is possible that Lesser Kestrel could occur in Gujarat during spring migration.

Sightings

One of us (NB) has observed the Lesser Kestrel in the Little Rann of Kachchh on several occasions [40, 41; back cover] while PG has observed it once in the western part of Little Rann of Kachchh. It has also been recently observed and photographed from a few more areas in Gujarat. We have tried to collate the published sight records (Table 1) and photographs, from different websites, to consolidate information about its distribution in Gujarat.

Conclusion

Looking at various sight records, especially in the last two years, it seems that Lesser Kestrel is a rare but regular winter (autumn) passage migrant in Gujarat. Some stragglers over-winter in India (Naoroji 2006), but the wintering status is still uncertain for Gujarat.

Most of the sightings are from desert and arid areas. While the similarly migrating Amur Falcon *F. amurensis* is an autumn as well as spring passage migrant in Gujarat (Ganpule 2011), there are no records of Lesser Kestrel crossing Gujarat during spring migration. Spring migration of Lesser Kestrel has been recorded from the Delhi area (Harvey *et al.* 2006). Naoroji (2006) states that Lesser Kestrels associate with Amur Falcons during passage

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Table 1. Records of Lesser Kestrel *F. naumanni* from Gujarat, India

S. No.	Place	Date	Observer	Observations
1	Little Rann of Kachchh (23°12'N, 71°34'E)	15 January 2006	Nirav Bhatt	Female
2	Little Rann of Kachchh (23°12'N, 71°34'E)	19 December 2010	Nirav Bhatt	Adult Male
3	Naliya, Kachchh (23°15'N, 68°56'E)	24 December 2010	Shivkar: OBPIX	Flock of more than 15 individuals
4	Little Rann of Kachchh (23°20'N, 71°15'E)	25 December 2010	Prasad Ganpule	Sub-adult male and female
5	Little Rann of Kachchh (23°12'N, 71°34'E)	16 January 2011	Nirav Bhatt	Sub-adult male
6	Velavadar National Park, Bhavanagar (21°50'N 72°06'E)	30 December 2011	Shah: OBI	Female
7	Little Rann of Kachchh (23°12'N 71°34'E)	29 February 2012	Nirav Bhatt	Juvenile Female

Abbreviations: OBI: <http://orientalbirdimages.org>; OBPIX: <http://groups.google.com/group/orientalbirdingpix/>

First record of Collared Pratincole *Glareola pratincola* from Kerala

P. C. Rajeevan & Jayan Thomas

Rajeevan, P. C. & Thomas, J., 2013. First record of Collared Pratincole *Glareola pratincola* from Kerala. *Indian BIRDS* 8 (2): 49–50.
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This note describes the sighting of Collared Pratincoles *Glareola pratincola* from Madayipara, Kannur district, Kerala. Madayipara (12°01'N, 75°15'E) is a laterite hillock, situated at Madayi village near Payangadi town in Kannur district of Kerala. Situated about 23 km from Kannur, it is a small plateau, almost dry, with a few trees and shrubs and lots of weeds and few monsoon rocky pools and two large ponds.

Madayipara is known for its rich diversity of endemic and endangered flora and migratory birds (Palot & Radhakrishnan 2005). The overwintering of some migrants here, like Pacific Golden Plover *Pluvialis fulva*, Greater Sand Plover *Charadrius leschenaultii*, Lesser Sand Plover *C. mongolus*, Curlew Sandpiper *Calidris ferruginea*, Terek Sandpiper *Xenus cinereus*, etc., is noteworthy. Both, Oriental- *G. maldivarum*, and Small Pratincole *G. lactea* are occasionally seen here.

While searching for the Buff-breasted Sandpiper *Tryngites subruficollis* on 3 November 2011 at 0615 hrs (Rajeevan & Thomas 2012), PCR and JT saw two pratincoles along with 200 Lesser Sand Plovers. Dawn was breaking and the pratincoles were seen occasionally resting and feeding on the ground, plover-like in behaviour. The birds were not too shy and hence a couple of good photographs, and a video, were also taken of the resting bird by JT. We could approach up to 12 m from the birds. The birds were there for 30 min, and when they flew away PCR noticed a deeply forked tail; he could not appreciate any white trailing edge on the wings. PCR doubted whether these could be Collared Pratincoles. Then suddenly the Buff-breasted Sandpiper turned up and we were glued to it.

The photographs [42-44] were put on the back burner. Later, when they were scrutinised, it appeared that the tail streamers touched the tip of the wings. It was then that we decided to contact Praveen J. There was much discussion regarding the pratincoles on the “Kerala Birder” Yahoo e-group but the identity of the bird remained inconclusive.

The bird was the size of a Common Myna *Acridotheres tristis*. Its bill was black, short, on a red base, with a down-curved tip. The legs were dark olive. The bird has pale brown upper parts, buffy sides, and white belly. It had a conspicuous buff throat patch bordered by a narrow black line. The tail tip reached the tip of closed wings when the bird was resting on the ground. In flight it had a pronounced forked tail.

Subsequently, we contacted Gerald Driessens, the Belgian authority on pratincoles (Driessens & Svensson 2005). He replied, “The pratincole is definitely a (female) Collared. Indeed it looks somewhat compact and the nostril shape looks oval, which fits Oriental. But nostril shape is difficult to use in field. The pale plumage fits Collared much more, and the length of the outer tail feathers reaching more or less to the tip of the folded wings rules out Oriental. I also see that the bleaching of the outer and inner webs of the innermost visible primaries is large on the inner than on the outer webs, what we see on Collared but (probably) never on Oriental.” (Gerald Driessens *pers. comm.* June 2012).

Unlike what is mentioned in field guides, apparently there is considerable overlap of features between Collared-, and Oriental pratincoles (Driessens & Svensson 2005) hence, in the absence of in-flight photographs, identification is certainly difficult. The



42. Collared Pratincole *G. pratincola* in Kerala.



43.

Table 1. Records of Collared Pratincole from India outside Gujarat

Location	Date	Reference
Unknown locality in Punjab	Undated	Rasmussen & Anderton 2012
Ratnagiri, Maharashtra	22 August 1879	Prasad 2004
Coimbatore, Tamil Nadu	28 December 1955	Abdulali 1956
Coimbatore, Tamil Nadu	9 January 1956	Abdulali 1956
Shey iron bridge, Ladakh	25 August 1997	Pfister 2001
Carambolim, Goa	22 November 1998	Lainer 2004
Divar-Navelim, Goa	9 September 1999	Lainer 2004
Madayipara, Kerala	3 November 2011	Current record

tail-to-wing length ratio is clearly visible in the photographs [42] and is considered one of the best features to tell the species in the field. Apart from that, the bleach pattern on the primaries, visible in one of the pictures [44] is another good identification pointer for Collared. Nostril shape (slit vs. egg-shaped), though a good feature to separate the two, is seemingly not considered reliable in the field (Gerald Driessens *pers. comm.* June 2012) and as seen from the photographs, the nostrils tend to appear more egg-shaped than slit. Other features, mentioned in bird-guides, like extent of red on the base of the bill, are probably not absolute differences reliable in field for perching birds (Driessens & Svensson 2005).

In South Asia, the species is a breeding visitor to the Indus Valley in Pakistan (Rasmussen & Anderton 2012) and winters mainly in Africa. There have been a number of recent records from Gujarat (Himmatsinhji 1999; Himmatsinhji & Varu 2002) including several recent photographs in www.orientalbirdimages.org. However, outside Gujarat there are only few records from India (Table 1) including specimens from Coimbatore, Tamil Nadu (Abdulali 1956), and Ratnagiri, Maharashtra (Prasad 2004). The only two specimens of this species from India in the collection of the Bombay Natural History Society, Mumbai (Abdulali 1970), both from Coimbatore, were examined and photographed recently by Rajah Jayapal and their identity as *G. pratincola* confirmed beyond doubt (Praveen J., *pers. comm.* Sept. 2012). There are two sight records from Goa (Lainer 2004). Pfister (2004) indicates it as a rare passage migrant in spring and autumn over Ladakh with 'single sightings' but provides no further specific details. However, he indicates



44.

sighting two birds from Shey near Leh (Pfister 2001) – perhaps there are more unpublished sightings from Ladakh from the banks of the Indus. The record from 'Indian Punjab' mentioned in Rasmussen & Anderton, 2012 could not be traced, but probably is from Harike (Mike Prince *pers. comm.* Aug. 2012). A pratincole, photographed by Sanjay Adak at Mangaljodi, Chilika, Odisha in February 2011 appears to sport a well-forked tail reaching the folded wing tips (<http://www.indianaturewatch.net/displayimage.php?id=218646>). Manoj V. Nair, commenting on this picture, indicated he also has sightings of this species from Nalaban Is., Chilika – however, the same is awaiting photo-documentation (Praveen J. *pers. comm.* Sept. 2012).

As this would be the first record of the bird from the eastern coast of India, we await better documentation of these observations and hence do not include them in our table of sightings. It is noteworthy that some of the old records which refer to this species are compounded with the commoner Oriental Pratincole, both being sub-species then, only being elevated to full species status recently. Since most of the records are from August–November (Table 1), it is safe to assume that this species is probably a rare autumn passage migrant across most of India except perhaps Gujarat where it is more regular. This also happens to be the first record from Kerala as it is not included in the current checklist (Sashikumar *et al.* 2011).

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We wish to thank C. Sashikumar, Praveen J., Dipu K., Sreekumar H., Mike Prince, Khaleel Chowha, and Gerald Driessens who helped us to solve the pratincole puzzle.

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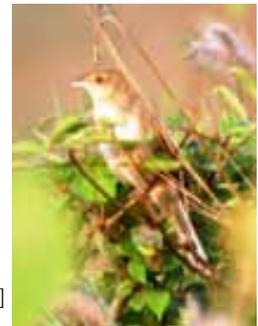
First sighting of Bristled Grassbird *Chaetornis striata* from Kerala

P. C. Rajeevan & K. M. Khaleel

Rajeevan, P. C., & Khaleel, K. M., 2012. First sighting of Bristled Grassbird *Chaetornis striata* from Kerala. *Indian BIRDS* 8 (2): 51–52.

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45. Bristled Grassbird *Chaetornis striata* on *Corchorus aestuans* plant.

Bristled Grassbird *Chaetornis striata* is endemic to the Indian subcontinent, where it is patchily and locally distributed in India, Pakistan, and Nepal (Jerdon 1841; Baral 1997). Ali & Ripley 1987 described this species as common in at least Gujarat, Andhra Pradesh and West Bengal and parts of Bangladesh. BirdLife International (2001) has published the records of Bristled Grassbird from southern India (Table 1). Grewal (1996) reported its presence in Okhla, Delhi in 1996 after a gap of ten years. BirdLife International (2012) has classified it as Vulnerable. Inskipp (1997) has mentioned that although it has a wide distribution in the Indian subcontinent, there are not many records; he could trace only 32 references with original information and only a few in the last 25 years. There are recent breeding records from Noida area in Uttar Pradesh (Arya 2010), but there is no previous record from Kerala (Sashikumar *et al.* 2011).

This note describes the first sighting of a Bristled Grassbird from Kerala—at Varamkadavu (11°54'86"N, 75°24'68"E), a part of the Kattampally wetland, an Important Bird Area (Islam & Rahmani 2004), in Kannur district. A new concrete bridge was constructed here in 2007 and a 10 m wide approach road was laid by dumping earth across the wetland. The dominant species of plant growing in this wetland area was a reed namely *Eleocharis dulcis*, but along the edge of the new road, several species of shrub, grass, and saplings of trees like *Trema orientalis*, and *Macaranga peltata* have sprung up.

Details of the sighting

During a field trip to Varamkadavu on 24 February 2008 at 0800 hrs, we noticed a bird in a patch of shrub and grass. It perched on *Pennisetum polystachyon* (a grass sp.) and then on a twig of *Corchorus aestuans* for a while. KMK photographed it using a Canon 400D, and Sigma 175–500 mm lens (Fig. 1). The bird suddenly disappeared into lower bushes. A long wait for the bird to reappear was futile and we returned from the field. From the photographs, the bird was identified as a Bristled Grassbird after consulting experts. We saw the bird again on 20 March 2008 at 0800 hrs in a bush near the same location, but could not photograph it. PCR again sighted the bird there, on 23 March 2008 at 1500 hrs for a few seconds. We visited the area several times that season but the bird was not sighted again.

Table.1. Records from southern India (BirdLife International 2001)

Year	Location	Reference
Undated	Unspecified localities in A.P.	Ali 1938; Taher & Pittie 1989
1841	Nilgiri Hills, Tamilnadu	Jerdon 1841
1844	Nellore, A.P.	Jerdon 1862–1864.

The following year, PCR saw the bird on 16 December 2009 at 0900 hrs. Both of us observed it on an electric line stretching parallel to the road on 19 December 2009 at 0930 hrs. It moved to a branch of a *Trema orientalis* tree located nearby where it remained for a few seconds and soon flew away. On 24 December at 0845 hrs the bird was sighted again on the *T. orientalis* tree. KMK got good photographs of the bird spreading its tail feathers [45, 46]. PCR observed the bird again on 1 January 2010 and 9 January at 0800 hrs and with KMK on 10 January at 0815 hrs. PCR saw probably the same bird on 18 January and 20 January along with K. V. Uthaman and Jafer Palot on 23 January at 0845 hrs. The bird was found about 500 m away from the usual site near the bridge. It was inside the bushes for 30 min and appeared thrice at the tip of an *Eupatorium* plant for a few seconds each time.

Behaviour

Only one bird was seen on all occasions. It skulked among the tangle of shrubs and grass less than 2 m in height, emerging on top very briefly, diving down again. Occasionally, it uttered a *tre-trew* call.

Field characters

The bird is stouter and longer than a Paddyfield Pipit *Anthus rufulus*. A pale supercilium, and whitish throat and upper abdomen are visible. The beak is short and broad with a black tip. The bird is fulvous-brown with bold streaking on its back. The under parts are rather plain without visible streaking. The head is not well marked. Tail is grey-brown with white and black crossbars.



46. Bristled Grassbird *Chaetornis striata* spreading its tail feathers.

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— Gleanings —

Viseshakul, N., W. Charoennitikul, S. Kitamura, A. Kemp, S. Thong-Aree, Y. Surapunpitak, P. Poonswad & M. Ponglikitmongkol. 2011. A phylogeny of frugivorous hornbills linked to the evolution of Indian plants within Asian forests. *J. Evol. Biol.* 24: 1533–1545.

With their large size, spectacular beaks, and unique nesting habits, hornbills are charismatic members of the bird world. They also attract our interest because of their important role in consuming fruits and thus dispersing seeds produced by trees in the forests of Asia.

The paper under review considers not only Asian hornbills, which are relatively large and consume mainly fruits, but also African hornbills that are generally smaller than the Asian ones and have a more carnivorous/insectivorous diet. The study is the most comprehensive ever attempted concerning the phylogenetic relationships between hornbills. For the first time all 15 genera of hornbills were included and of the total number of 54 species, 31 were covered in this study. The investigation employed two different approaches analyzing mitochondrial DNA cytochrome b sequences of 1143 base pairs. There have been many other studies concerning the phylogenetic relationships among hornbill species using, in total, many different types of characteristics including DNA, but no previous study has included all the genera and so many species.

The diagrams presented showing relationships between hornbills nicely separate the present African and Asian species with minimal overlap. By dating the phylogeny it was determined that the initial radiation of hornbills began 53 million years ago (mya) in the early Eocene, and that this led to the origin of frugivorous hornbills around 48 mya in mid-Eocene, which was

followed quickly by an explosive radiation of the suite of hornbill genera and species that presently exist in Africa and in Asia. It is unusual among vertebrate animals for taxonomic forms that arise early (~48 mya) in geological time to persist to the present, as in the case of the hornbills.

An especially fascinating aspect of this study is the timing of the explosion in hornbill diversity with the arrival in Asia of the Indian flora ~48 mya (mid-Eocene). The authors find this more than a coincidence and invoke a convincing scenario. This incorporates the fact that the plate transporting more tropical India had by then drifted close to what constituted less tropical Asia, but the two subcontinents had not made actual contact. It is noted that an abundance of frugivorous hornbill species inhabited the regions then and that hornbills are relatively large birds that are capable of flying great distances. The authors suggest that hornbills, employing a combination of long distance flights and island hopping strategies between the two landmasses, were the dispersers of forest tree seeds between the Indian and Asian landmasses. A second invasion of Asia by floristic elements from India occurred ~39 mya (late Eocene) when India had drifted even closer to Asia, thus requiring shorter seed dispersal flights by frugivorous hornbills.

—Douglas A. James & Ragupathy Kannan

Infanticide (egg destruction) by male House Sparrow *Passer domesticus* and Great Tit *Parus major* feeding on the same egg

Sachin Anpat & Girish Jathar

Anpat, S., Jathar, G., 2013. Infanticide (egg destruction) by House Sparrow *Passer domesticus* and Great Tit *Parus major* feeding on the same egg. *Indian BIRDS* 8 (2): 53–54.

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On 13 October 2011 we visited Borban village to initiate a 'Peoples Biodiversity Register' programme. Borban is situated on the banks of River Mula (19°20'28"N, 74°09'19"E; 635 m asl), in Ahmednagar district, Maharashtra. In the village we recorded 20 species of birds, and ten of butterflies. House Sparrows *Passer domesticus* appeared abundant. Being a typical rural village most of the houses in it have tiled rooftops, with ample space for the sparrows to nest. House Sparrows were also found nesting in open wells, and dilapidated and abandoned houses.

Our attention was drawn to a community well in which we observed a large number of sparrows. This well had four active nests on its inner wall. At 1130 hrs we observed a male House Sparrow perched near a nest, calling continuously [47]. After ten minutes he went inside the nest and came out with an intact egg in his beak. He flew with it to the parapet of well and placed the egg on it. It seemed that he got distracted by our presence and kept silent for some time. Later he returned to the egg and pecked it till its contents came out [48]. Interestingly, at the same moment a Great Tit *Parus major* rushed to the spot. The sparrow hopped away to the other side of the well. The Great Tit pecked the egg, and consumed some of its contents. However, due to our presence it flew away with some egg in its beak. The sparrow did not react to the Great Tit. It flew to the nest and was in it for almost ten minutes, after which it came out and flew away.

We watched the nest for two hours but could not see any activity. The next day we observed a House Sparrow pair at the nest but could not follow this up due to lack of time. Behaviour

of both the species was photographed and videotaped. During a literature survey about this behavior we came across some interesting information.

This incident indicates two possible scenarios with regard to the male sparrow's behaviour. First: an intruder male could have destroyed the egg of a widowed female or after he had chased off the original male. Second: an intruder pair of sparrows might have chased off the owners of the nest and destroyed their eggs.

However, we could rule out the second scenario since the hen was not present or involved in the act, which was a purely male sparrow behavior. Patil & Jathar (2008) report infanticide by a female House Sparrow, where the male was inactive. On this premise we assume that the first scenario was appropriate to the situation. Several studies (Hrdy 1979; Sherman 1981; Packer & Pusey 1983; Hausfater & Hrdy 1984; van Schaik 2000) suggest, and Veiga (2004) proclaims, "The killing of unrelated young has been typically considered a male behavior because it represents a sexual strategy." In addition to this, most of the reported cases of infanticide (Crook & Shields 1985; Møller 1988) support the first scenario where an intruder male is involved in the infanticide.

The second incident of egg being eaten by Great Tit appears a purely opportunistic behaviour on part of the tit. House Wrens *Troglodytes aedon* were observed feeding on clutches of the other birds to consume contents of broken eggs (Pribal & Picman 1991).

Interspecific and intraspecific interaction among birds is a very interesting subject. However, it needs a long-term study to understand behavioural patterns and their ecological significance to a species.



47. Male House Sparrow *Passer domesticus* at nest hole inside well.



48. Male House Sparrow *Passer domesticus* distracted by authors' presence.

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In memoriam: S. M. Osman (1925–2013)



Undated photo of S. M. Osman. Photo courtesy: Raghvendra Singh.

Sirdar Mohamed Osman passed away in Dehra Dun at the age of 87 on 12 January 2013. A keen naturalist, his life was spent studying the Himalayan foothills of the Doon Valley, and in pursuing his passion for falconry, a legacy that was passed down to him through generations of his family, for whom it was a royal sport. Osman was a descendant of the erstwhile emperor of Afghanistan, Amir Dost Mohamed Khan. Exiled by the British, his family came to live in Dehra Dun where Osman grew up, studying at St. Joseph's Academy. Though he went to Afghanistan for a few years in the interim, he came back in 1953 to Dehra Dun, where he later worked as a geophysicist at the Oil and Natural Gas Corporation Limited.

In Dehra Dun, Osman and his father kept up with falconry. With their birds on their fists and their dogs beside them, they were a recognised part of the life and landscape of Dehra Dun, and a source of great curiosity to generations of children of the many schools that dotted the then green and quiet neighbourhood of their home at Dalanwala.

In many ways, his life was marked by overwhelming changes. He saw the changing and passing away of many things, both in his personal life as well as in the social and natural environment around him. But the one constant that accompanied him all along was his love for the “monarchs of the air,” as he referred to raptors, and the art of falconry. He had a great love for nature and his deep study of raptors and knowledge of falconry was tremendous.

His love for falconry was underlined by his first and abiding love, that of the birds themselves, and his awe of them and the splendours of nature. He would remember with great affection

the different species he observed closely in the wild and birds he trained with over the years—from Eurasian Sparrowhawks *Accipiter nisus*, Northern Goshawks *A. gentilis*, to Merlins *Falco columbarius*, and Peregrine Falcons *F. peregrinus*; Changeable Hawk-Eagles *Nisaetus/Spizaetus cirrhatus*, vociferous birds yet which would flit past noiselessly as “shadowy ghosts” of the forest, Bonelli's Eagles *Hieraetus fasciatus*, a majestic Golden Eagle *Aquila chrysaetos* named “Monarch,” “Kohistani,” a beautiful Mountain Hawk-Eagle *Nisaetus nipalensis* he encountered in the hills near Mussoorie, and “Kali Rani,” a ‘shaheen’ Peregrine Falcon he had for several years.

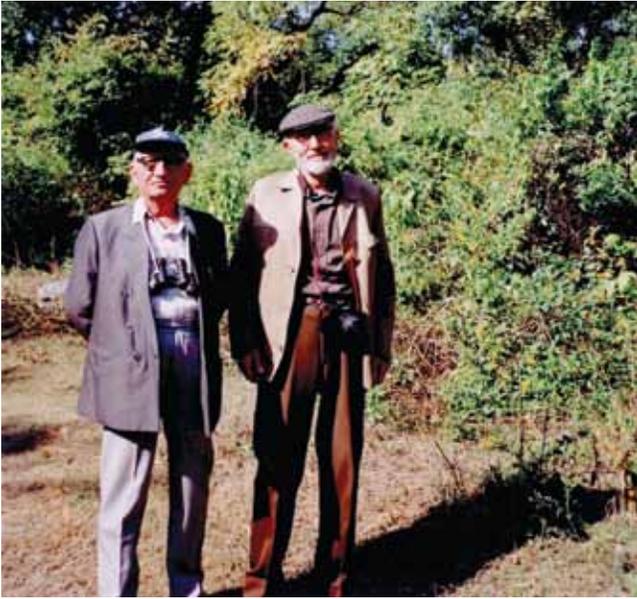
He had an intimate knowledge not only of the birds he kept but also of birds as they were in their natural environment. He often described with deep feeling, the Doon Valley, its rich wildlife and its many rivers, forests, and grasslands where he spent thousands of hours quietly observing and marvelling at birds of prey on the wing and at rest, hunting, feeding, courting, and nesting. He recorded in detail, aspects of their behaviour, moulting, plumage, hunting habits, and the styles and speeds of different species in the wild and in captivity.

He would explain in minute detail how to differentiate one species from another, point out what was special in its behaviour in the wild and elucidate its form and function. For those who had a chance to observe the birds he trained with, it was a great opportunity - especially in those days, before the advent of the digital and super-magnification age, to see at close quarters what the ‘tomial tooth’ or notched beak of a falcon was, compare ‘moustachial’ stripes of a falcon to the heavy ‘eyebrow’/supraorbital ridge of an eagle, witness the astounding accuracy and velocity of the stoop of a Peregrine or just observe the varied plumages and patterns of different birds.

In the minds of the people of Dehra Dun, he was firmly associated with birds and would often be sent an SOS by friends and local residents to help rescue a buzzard, a Black Kite or an owl, and at times even a Peregrine Falcon that had been shot at or had fallen injured.

After the death of his father and the decree of wildlife laws and regulations, he gave up falconry while he recognised both, the role that knowledge of falconry played in the understanding of raptor biology and conservation, and its possible perils. Falconry was last year recognised by UNESCO as an ‘intangible cultural heritage.’

He may have given up keeping falcons, but Osman continued to write about them. He was inspired to write down his experiences after meeting Sálím Ali in 1965; Ali himself had lived in Dehra Dun for several years in the 1930s. He wrote many articles for the *Journal of the Bombay Natural History*



S. M. Osman c. 2001 with his friend P. N. Onial in the western Doon. Photo: Malvika Onial.

Society, and *Cheetal*, the journal of the Wildlife Preservation Society of India in Dehra Dun. Amongst the books he wrote are his autobiographical account *Falconry in the land of the sun: memoirs of an afghan falconer* (2001); *Musings of an Afghan Falconer* (2005); *Hunters of the air: a falconer's notes* (1991). He also liked to sketch and illustrate some of his books himself.

There is much in his writings that would be of interest to anyone curious not only about raptors, falconry, and natural history but also for a peek into some aspects of life in the Himalayan foothills and in Afghanistan as it was in those days.

Osman was a man with wide-ranging interests. He was equally adept at wielding the pen as he was at wielding tools to fashion the hoods and gloves he used in falconry. He also had a keen interest in optics and he would make cameras and telescopes by hand with remarkable ease.

He had a sharp wit and a keen sense of humour, which he conveyed fluidly through each of at least six languages he was fluent in: Hindustani, Pashto, Dari, Urdu, Farsi, and English. He had a great interest in literature, particularly in Farsi, and English. His conversations were rich in imagery and were laced, not just with quotes from and references to literary works, but with delightful proverbs and idioms in Pashto, Hindustani, and Farsi.

The passing of Sirdar Mohamed Osman has not only left a void in the lives of his friends, in some ways it also marks the end of an era. As Prof. Tom Cade of the Peregrine Fund said of him, he was "James Cooper's Mohican—the last of his tribe."

Fortunately, Sirdar Mohamed Osman's sharing of his knowledge and experience with those with a persevering interest in raptors and his writings will ensure that some of his vast repository of knowledge of the "monarchs of the air" survives for future generations.

Osman, S. M., 1991. *Hunters of the air. A falconer's notes*. New Delhi: World Wide Fund for Nature-India. Pp. i–ii, 1–41.

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Osman, S. M., 2005. *Musings of an afghan falconer*. London: The Eryr Press. Pp. i–xxii, 1–237.

—Malvika Onial

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Farewell

May I be permitted to say a few words in memory of Sirdar Mohamed Osman. As a falconer myself, I am deeply grieved that perhaps the last of the true falconers of this part of the world is no more. I was introduced to him first by reference to some of the articles he wrote in the Journal of the Bombay Natural History Society. In those days I was a keen student of raptors and some of the notes written by Osman sahab (as I soon started to call him), enthralled me with their devotion to detail and minute observations of the behaviour and habits of the birds described. Somewhat timorously, I wrote to him and introduced myself. With his characteristic generosity, he immediately replied and we kept up our correspondence even when I was pursuing higher studies abroad.

In one of his articles on the Peregrine in the Journal of the Wildlife Preservation Society of India, *Cheetal*; (incidentally, this article is perhaps the last word on the status of the *calidus* subspecies of Peregrine in Northern India), he describes how, while engaged in land-reclamation and surveying in the Doon Valley, he was able to observe the goings-on of a wild female Peregrine that had taken over the area where he flew his own trained bird. That note is a bible of information on the behaviour and habits of the wild Peregrines.

When his first book "*Hunters of the Air; A falconer's notes*" was brought out by WWF-India, he sent me a personally autographed copy for my collection. His attention to detail, his love for the birds he wrote about and his minute observations on their habits and behaviours were evident on every page of this book that I devoured, and still continue to refer to from time to time.

Falconry is an art that is very demanding of its devotees. Osman sahab himself used to say how much he owed to his father (Prince Azim) while training his birds. This filial affection is evident throughout his writings, and I do not doubt that part of the reason he gave up falconry was because there was very little congenial company for him when he took the field. In his classic article on the Mountain Hawk-Eagle (*Kohistani*) in the Journal of the BNHS, he freely admits that without the help and perseverance of his father, the bird would never have been trained. I was myself never a patient person but Osman sahab encouraged me and gave me many valuable tips on the subject. We often discussed the possibility of meeting up but unfortunately this could never materialize and now it is only his letters and postcards that I have to remember him by.

With his passing, the era of falconry in India is at an end. The other great Indian falconers of the age, K. S. Dharmakumarsinhji of Bhavnagar and C. H. Donald are perhaps waiting for him at the Happy Hunting Grounds. There too would perhaps be waiting his favourite hawks "Kali Rani" and his beloved "Kohistani". Long may they all hunt together in the Valhalla of the Falconer!

—Humayun Taher

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Reviews



Of birds and birdsong

by M. Krishnan

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It was my friend, Shiva, who introduced me to the writing of M. Krishnan, pointing me to his iconic fortnightly column, 'Nature Notebook,' in *The Statesman*. We were starved for nature writing in the early 1980s, and though, frankly, a wait of fifteen days between each hungrily-devoured column was surviving on starvation rations, it brought inexplicable succor to those who yearned for a glimpse into the familiar-unfamiliar world of urban and suburban wildlife; into the entirely unknown universe of forest life; into the mysterious realms of animal behaviour; into the elemental earthiness of natural history—all of which existed

at a pace that defied the clock, but communicated by Krishnan in a style of writing that has endured tick-tock's inexorable march through the decades of our lives.

There was no other naturalist of his day, as 'complete' in his métier as Krishnan—writer, photographer, artist, conservationist, visionary, critic, and litterateur.

I was left dumbstruck one Wildlife week, when I entered the celebratory hall and was confronted by a life-sized monochrome enlargement of a gaur, gazing at all those who entered with the still deep eyes of a creature not chained to the concept of time. Only Krishnan's consummate skill in jungle craft could have allowed him to take that picture.

Krishnan's pen-and-ink sketches had the character of rustic woodcuts that encapsulated the essence of the creature he depicted. He had the knack of using surroundings to enhance the grain of that essence to great effect.

Krishnan's dry humour was legendary. When the candid Krishnan met the redoubtable Sidney Dillon Ripley Jr., he purportedly confessed, "Mr Ripley, frankly I do not know whether to believe you or not," punning with telling effect on the syndicated column.

What is it about his writing that it has endured the fickle vagaries of time, endearing itself over the years, to a larger, hungrier readership? Krishnan's quill was steeped in an inkpot of "quiddity"; it spoke from the leaf-littered jungle floor, it wafted from the mango-blossom scented recesses of deep shaded groves, it thrummed from the toad's croak-rippled reedy swamp margin, it swayed from the wind-swept grasslands of the Deccan Plateau, with the conviction of first-hand knowledge gained from hours spent with his wild subjects, wherever they chose to reveal themselves, be they animal, plant, bird, insect, amphibian, reptile; or be they commensals—endemic canine breeds, or cattle, or poultry.

He absorbed the living non-human world, through senses sharpened during jungle forays, when he entered realms where the only skill that mattered was alert stillness. He honed that essentiality and used it with telling effect in his art.

The editors of this delightful anthology, Shanthi & Ashish Chandola, no newcomers to Krishnan's work, have here compiled 87 of his essays on birds, and summed up the collection with two biographical reminiscences on Krishnan. They deserve the birding brigade's gratitude for resurrecting this fascinating array of Krishnan's avian wrenditions.

To quote him, to paraphrase him, to try and improve him, are all foolish pursuits deserving MK's caustic reprimands. All one has to do is to sit down, and read this wonderful collection of his essays on birds, where every page shines with joyous insight! To me, this beautiful volume, caped in scarlet endpapers, is essential on my birding bookshelf, for it occupies a special niche, that of the endearing essay, and soars above the cauldron of dry technicalities that most contemporary ornithological literature has become, transporting me into the natural realm of birds.

—Aasheesh Pittie

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Supplying water to the saucer pits and tanks in Nagarjunasagar Srisailem Tiger Reserve (NSTR) remains a challenge for the Forest Department during the dry summer months and tackling forest fires remains another major challenge. To address the challenges of water scarcity in the reserve, WWF-India did an in-depth assessment of the region and identified few permanent water sources such as perennial streams and wells in the reserve which can supply water to wildlife throughout the year. WWF in association with likeminded corporate groups had installed the first of its kind of solar based installation at the Farahabad, NSTR in Andhra Pradesh last year. This pump has been successfully running since the last one year and in the last summer this was the only source of water in

that area. This prompted the Forest Department to install five more such pumps in critical wildlife habitats of the NSTR in association with the WWF. Two such installations have been installed in Pecheruvu and Naramamidi Cheruvu in the Atmakur Wildlife Management Division. These installations are a unique example of not only being an innovative, clean and renewable energy system but an excellent example of NGO-GO-Corporate collaboration for good practices in habitat management following sound scientific technologies. The installations have received support from Dr Reddy's Laboratory and Rachamalla Forgings Pvt. Ltd; both established corporate groups in their own field with a commitment to ensuring environment sustainability in their day to day activities. The pumps were inaugurated on the 29th of August, 2012. Speaking on the occasion Mr. Anil Kumar V. Epur, Chairman, WWF-India A.P State Advisory Board talked about the development in technology over the years and how these new technologies can be used for better wildlife conservation in Andhra Pradesh. He said that AP is a drought prone area and this affects wildlife as well as local tribes. He credited Mr. Mahesh Desai, Managing Director of Meera & Ceiko Pumps Pvt Ltd., a Water Specialists, for coming up with this brilliant model that can be very useful where there was no grid supply or erratic power supply to address the challenges of water scarcity. The Chief Guest, Shri. S.V. Kumar, IFS, PCCF (WL) & Chief Wildlife Warden inaugurated the solar deep water pumping system. Speaking on the occasion he said that water is very scarce in the region and most of the waterholes and grass dry up. He sought WWF's assistance to explore the possibilities of installing the solar pump in other parts of the reserve that face water scarcity. He also highlighted the role and functions of WWF-India in Wildlife Conservation. Mr. Rahul Pandey, IFS, Field Director, NSTR welcomed the initiative that would help overcome the water stress during peak summer season.



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