Indian BIRDS

Vol. 7 No. 2

Shortwings & Sky Islands
Birds in Nainital District
Adjutant-Storks in Bihar

Niranjan Sant

Common Kestrel

Indian BIRDS

www.indianbirds.in Vol. 7 Nos. 2

Date of Publication: 15 October 2011

ISSN 0973-1407

Editor Emeritus: Zafar Futehally

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New Ornis Foundation

Registration No. 314/2004

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Photographer: Niranjan Sant

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Robin, V. V., Sinha, A., & Ramakrishnan, U., 2011. A view from the past: shortwings and sky islands of the Western Ghats. *Indian BIRDS* 7 (2): 30–33.
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What are sky islands and how do they affect species?

The Western Ghats in southern India, a 1,600 km mountain chain that runs along the western coast of the Indian peninsula, is a global biodiversity hotspot (Myers *et al.* 2000), and has a wide gradient of elevations. Most of the southern Western Ghats form highest elevation regions of this mountain range rising well above 1,500 m **(Fig. 1)**. There are taxa that are often restricted to, and found only in, these high-elevation regions. For such taxa that never come down to the lower-elevation regions, it is as if they are living on islands, except that these are continental islands. Such islands have been called sky islands that have been defined as a, 'continental or inland terrain made up of a sequence of valleys and mountains,' (Warshall 1994). The critical parameters in these sky islands are the conditions in the valleys and the ecological specificity of the sky island species. If the valleys are ecologically hospitable to some sky island species, they may serve as bridges, but if not, they become barriers. The Western Ghats in southern India is one of the twenty such sky island complexes in the world.

Western Ghats sky islands: what can we expect here?

The Western Ghats are a very old mountain system. The largest geographical gap in this almost-continuous mountain chain is the *c*. 40 km wide Palghat Gap, and the smaller Shencottah Gap, further south of it. Both these geographical gaps are actually shear zones that have existed for over 500 million years. Even the topography of the Western Ghats is relatively very old, having taken shape about 65 million years ago (Ma) (Gunnell *et al.* 2003). This clearly indicates that the geographic canvas for a bird species was already set even before any passerine bird came into this landscape. Passerines are thought to have evolved between 55–60 Ma. The Madrean sky island system in the USA and the Eastern Arc sky islands in Africa are perhaps some of the best-studied sky islands. It is evident from studies here that some species are particularly affected by their geographical isolation while some are not. Most of the high-elevation parts of these mountains, however, have been formed approximately over the last million years making the Western Ghats sky islands some of the oldest formations in the subcontinent. This makes the Western Ghats landscape an interesting region to examine the effect of geographical isolation on sky island species, many of which are endemic to these mountains.

There are clearly two major ways that species could colonise and occupy these sky islands, considering that the islands existed before the birds came.

1. The species or its ancestor arrived at one end of this linear sky island system and hopped from one sky island to the other, eventually colonising all the islands **(Fig. 2A)**.

2. The species or its ancestor could have arrived at the foothills of the Western Ghats and gradually moved up the elevational gradient **(Fig. 2B)**. There is evidence from other sky islands that both these models of colonisation are possible for different species. If the species had indeed used different sky islands as 'stepping stones' to colonise all the Western Ghats sky islands, the populations on the closest islands would be genetically most similar while the northernmost and southernmost populations would be most genetically differentiated. Moreover, in terms of the age of populations, the oldest population would be at one end of this linear sky island system while the youngest, at the other end. It would also be interesting to see how the deep and ancient geographical gaps that typically occur along the Western Ghats affect such species.

The study species: White-bellied Shortwing Brachypteryx major

We chose to investigate the evolutionary history of the White-bellied Shortwing *Brachypteryx major*. It is one among the several threatened, endemic avian species of the Western Ghats that has not been studied scientifically in any detail (Robin & Sukumar 2002). Of the six shortwing species in the world, this is the only one found in southern India and remains restricted to the Shola forests of the Western Ghats. It has also been recently added to the Red Data Book as a globally threatened species (BirdLife International 2001). The nominate race *B. m. major* is found north of the Palghat Gap while *B. m. albiventris,* which mainly differs from it in plumage colouration, is found south of it **(Figs. 3, 4)**. Whether these races interbreed remains an important question although a single museum specimen at the Museum of Natural History, Tring, UK, exhibits plumage characters of both races (BirdLife International 2001). This is yet another question that can be effectively addressed by a study on the population genetics of this interesting bird species.

The shortwing, being a high-elevation species, is particularly vulnerable to severe fragmentation and loss of habitat. Species that form small insular populations are particularly vulnerable to extinction and there has thus been concern that this species too could be lost forever. It is, therefore, important to unravel the genetic connectivity between such populations of the species in order to focus research and conservation efforts in a way that would allow us to implement better-informed adaptive management measures for the species in the foreseeable future.

[1] This note was prepared on invitation for *Indian BIRDS* to summarise for readers the author's findings published in the online journal, *PLoS ONE* (Robin, *et al*. 2010)

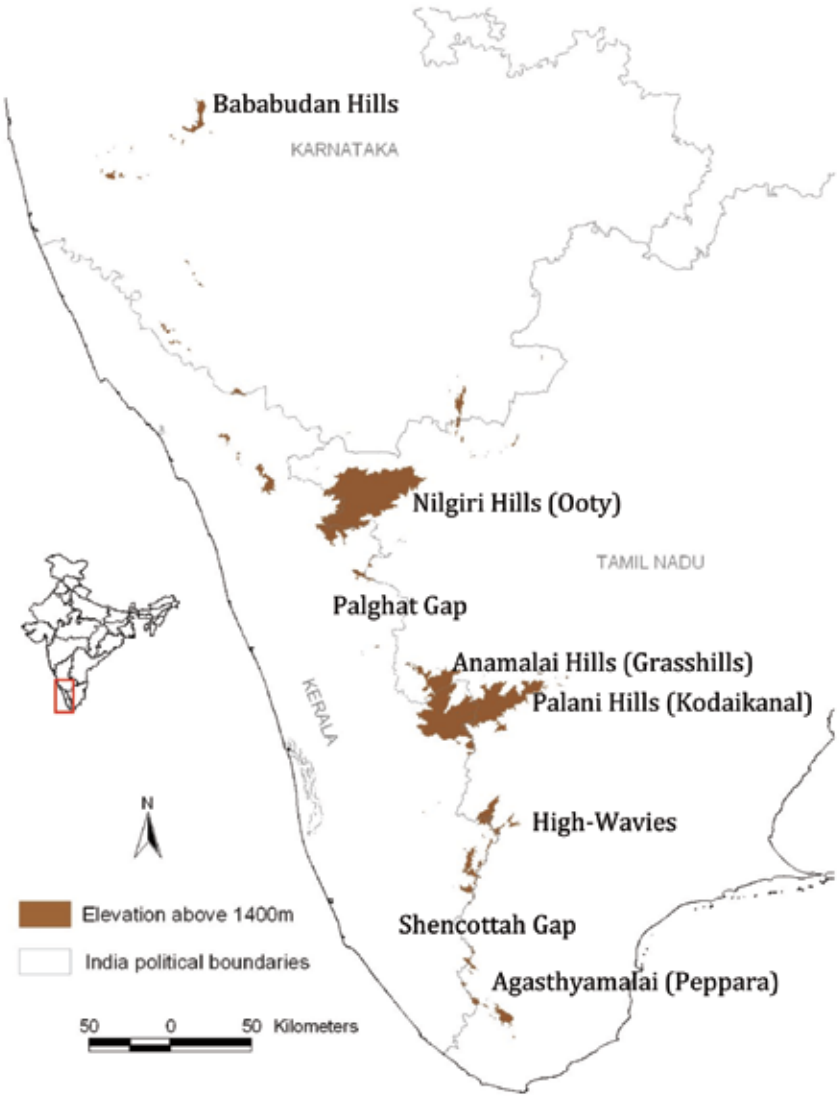

Fig. 1. The sky islands of the Western Ghats mountains, south-western India

A brief methodology

This aspect of our long-term study primarily involved obtaining genetic samples (a drop of blood) from 33 individual shortwings from different sky islands of the Western Ghats (detailed in Robin *et al.* 2010). In the lab we extracted DNA from these samples and generated sequences of different segments of mitochondrial and nuclear DNA. Mitochondrial DNA is maternally inherited and its mutation rate is very low. Broadly speaking, this implies that it may take thousands of years for changes to show up in the mitochondrial sequence. This marker is thus used to investigate genetic differences between taxa that could have risen over millions of years. Mitochondrial mutation rates have been examined for different bird species and it has been found that there is an almost constant rate of mutation over millions of years across several species. This clock-like definitive mutation rate is often referred to as a molecular clock and can be used to our advantage. One can examine the extent of mutations we find in different groups and arrive at an estimate of how long ago in time these groups diverged, giving us a molecular date for the splits between different groups. Since mitochondria are maternally inherited, it is likely that we could miss out signals that arise because of different dispersal patterns between males and females. Hence, we also sequenced a nuclear marker to counter this possible effect of differential sex. Certain sequences in the mitochondria like Cytochrome Oxidase 1 or COX1, often called the barcoding gene, have recently been developed as standards to identify and separate taxonomically different species. It has been estimated, for example, based on data from 260 North American birds, that species differ from one another by 7.9% in the DNA sequence of the barcoding gene (Hebert *et al.* 2004). This information has since been used as a cut-off to identify and classify different species and we proposed to use this to examine the differences in shortwings across the Palghat Gap.

Results & discussion

Effects of geographical gaps

We found that populations of shortwing that were geographically closest to each other were not genetically the closest. In fact, we found that the populations across the Palghat Gap showed the maximum genetic difference though they were geographically adjoining populations. Such a difference was also seen across the Shencottah Gap, once again indicating that geographical closeness need not imply genetic similarity. Only the High Wavies population was found to be very close to the Anamalais–Kodaikanal complex population, reflecting a similarity within regions not separated by ancient gaps. The genetic differences in the barcoding region across the populations on either side of the Palghat Gap were larger than the threshold set from North American bird studies and hence the populations could be considered different species. Our analysis, controlling for the effect of geographical gaps and geographical distances, shows that

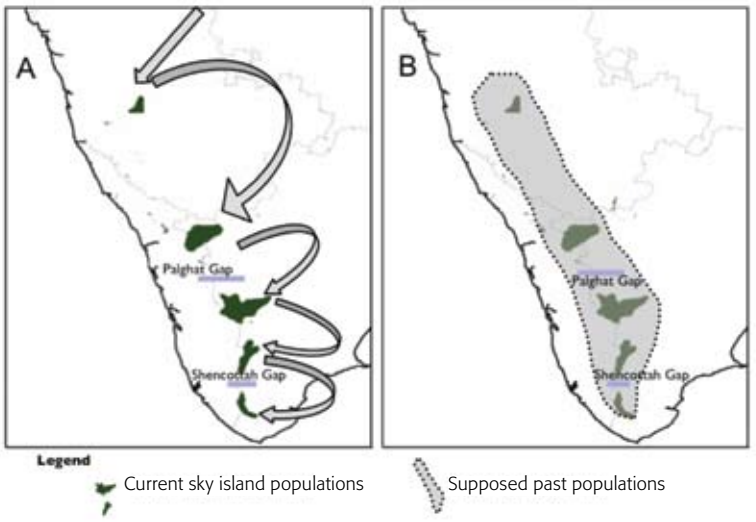

Fig. 2. Possible ways that populations could colonise sky islands of the Western Ghats.

geographical gaps have had a major role in shaping the structure of populations of shortwings.

Population structure

On the whole, the genetic structure of the shortwing groups does not reflect their population structure. Populations like those of the High Wavies and the Anamalais–Kodaikanal complex appear to have been genetically connected in the recent past, although they are on different sky islands. This formed a single genetic population of the 'central sky island complex.' All the other sky island populations appear to be genetically isolated from one another. The connectivity between the High-Wavies and the Anamalai-Kodaikanal population is interesting as there does not seem to be any connectivity between these regions at the 1,500 m elevation. There is, however, connectivity between these regions at an elevation between 1,000 m and 1,500 m. Our previous studies, including widespread surveys, have shown that shortwings prefer, and are found in high densities in regions above 1500 m but they also seem to marginally utilise the regions between 1000 m and 1500 m where they are found in low densities (Robin & Sukumar 2002; Robin *et al.* 2006). This may be the reason why the High Wavies population is genetically connected to the Anamalai–Kodaikanal population.

Our study did not have a large sample size from the north of the Palghat Gap, which implies that we do not have the fine resolution for a similar story on that side of the Gap. Our future work would thus be targeted in that direction.

Evolutionary history of the shortwing

Based on the estimated timing of the splits of different populations, it appears that all shortwing populations were a single population that split into two, on either side of the Palghat Gap, about 5 Ma. Since that period there has been no mixing of individuals across the Palghat Gap. The next split was across the Shencottah Gap where the populations split about 1.5 Ma. Interestingly, we found that the timing of these splits correlated with ancient global climatic events. We have always known that ice ages affect different species in the northern latitudes, but there has been little information on how tropical species from regions like the Western Ghats are affected. The Last Glacial Maxima, or the last Ice Age, about 20,000 years ago has been even popularly depicted in movies (such as Ice Age) to affect several species. During the Ice Age, while much of the northern hemisphere was turning into ice, and sea levels were falling, the tropics faced a severe dry spell, causing the wet forests to retreat to the higher reaches of the mountains. Our data indicate that during that time, all the shortwing populations on different sky islands had perhaps shrunk. It must be noted that when such glacial refugia[2] are formed, the entire population of shortwings across different sky islands could have formed a single refugia, but this did not happen in this case. Instead, several independent refugia formed on each mountain-top. Ever since the Ice Age receded, the forests may have expanded and shortwing populations have been increasing since then. Conlusive and detaied studies will reveal its larger impact in this habitat. It must be noted that this increase in population is at an evolutionary scale, in thousands of years, while it is still possible that recent anthropogenic fragmentation and deforestation could be causing a decline in the population of this species.

[2] Glacial refugia are small patches of suitable habitat left behind by the action of ice ages.

Clement Francis

Fig. 4. Rufous-bellied Shortwing *B. major*, Avalanche, Ooty, Tamil Nadu.

The other conclusion that can be highlighted from this study is that evidently the species did not have a linear mode of colonisation **(Fig. 2A)** but, a mode that was more consistent with option B **(Fig. 2B)**, where the species occupied lower lying areas and then moved up into the sky islands. The reason for this appears to have been global climatic events. These movements are not independent of geography, as the splits in the populations evolved merely because the topographic canvas that existed had deep valleys, like the Palghat Gap, and Shencottah Gap between these populations.

Taxonomy

This study was not directed at understanding the taxonomic status of the species, but was aimed towards an understanding of its phylogeography, and evolutionary history. In the process we found that the populations of shortwings had clearly separated into two different species over the last five million years. Unfortunately, we cannot ascertain the genus-level status of the species. There is only a single sequence of a *Brachypteryx (B. montana*) individual from north-eastern India that is available publicly. Our genetic studies indicate that *B. major* is not close to *B. montana*; other *Brachypteryx* spp., have, however, not been examined. This means that *Brachypteryx* could be close to *Myiomela, Cinclidium* or some other chats. As there is currently no genetic information available for all these congeneric spp., we currently cannot conclude to what genus this species belongs. We are collaborating with other groups of researchers who are working on similar taxa, to be able to examine this very soon. Meanwhile, we have proposed that a *status quo* be maintained

Ramki Sreenivasan

Fig. 3. White-bellied Shortwing *B. albiventris*, Munnar, Kerala.

on the genus-level status of the bird while its species-level split should be recognised. We have proposed, following Ali & Ripley (1987), that the northern species, i.e., found north of the Palghat Gap, be called the Rufous-bellied Shortwing *B. major*, and the southern species, i.e., found south of the Palghat Gap, the White-bellied Shortwing *B. albiventris*.

Conservation implications

The newly-split northern species of the shortwing now has a much smaller range, and its conservation status will need to be re-examined. One of the larger implications of the study has been the possible impact of climate change on the evolution of this taxon. While one cannot conclusively state what might happen to this species in future climate change scenarios, one can draw broad conclusions, based on the evidence that at the Last Glacial Maxima, with a drying up of the forested habitats, the shortwing populations had crashed. It appears that some populations like the one in the Bababudan Hills (Karnataka), with inherently low population densities, might be the first ones to disappear, should we see any major impact of climate change. It is essential then, that a programme be initiated urgently, and efforts dedicated to monitoring the species in this area in the years to come.

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Birds of three different forest habitats in Nainital district (Western Himalaya), Uttarakhand, India

Kamal Joshi & Dinesh Bhatt

Joshi, K., & Bhatt, D., 2011. Birds of three different forest habitats in Nainital district (western Himalaya), Uttarakhand, India. *Indian BIRDS* 7 (X): 33–37.

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Manuscript received on 22 January 2010.

Abstract

The present study was made to estimate the avifauna in terms of species richness and diversity and guild structure in forest habitats of Nainital district of Uttarakhand (350–2450m asl; 29°N). Field studies were conducted during January 2006 to December 2007. A total of 88, 106 and 95 species, respectively were recorded from Nainital, Bhowali and Haldwani forest habitats. A checklist of 160 avian species was recorded in the Nainital district forest habitats. This study could provide a base line structure for further studies on species distribution in different forest habitats in Nainital district.

Introduction

On a global scale, the Himalayan regions are rich in biodiversity because of various factors including the diverse forest types such as broad leaf mixed, dry deciduous, moist deciduous and conifer that are found here. Therefore, conservation of forest areas of Himalayan region is imperative. These forests also have a large number of endemic and globally threatened species. The avifauna of this region has been extensively documented from Jerdon's (1862–1864) pioneering investigation to Ali & Ripley's (1983) authoritative *Handbook*. Thereafter, some other studies have also been conducted in recent years to prepare the checklist of the avi fauna in some parts of Uttarakhand state (Sankaran 1995; Sharma *et al*. 2001; Sathyakumar 2003; Singh *et al*. 2004; Sultana *et al*. 2007; Joshi & Bhatt 2009; Naithani & Bhatt 2010; Bhatt & Joshi 2011).

In the context of avian diversity many studies have identified the factors such as vegetation structure profile, tree diversity, weather conditions, *etc*., responsible for variation in avifauna from habitat to habitat in India (Beehler *et al*. 1987; Daniels 1989; Johnsingh *et al*. 1986). These studies also emphasised the value of avifaunal studies in quantifying and monitoring forest degradation.

The history of ornithology from this hilly region is brief. The last comprehensive field work in the area was by Hudson (1930) who compiled a checklist. After Hudson, detailed work was carried out by the famous Indian ornithologist Salim Ali, who published his work in a book entitled "Indian Hill Birds" (1984). However, few studies concentrated on the avian species abundance and community structure in forest habitats of the Himalayan region.

In the light of this background, we decided to prepare an avian species checklist for three different forest habitats in Nainital district of Western Himalaya.

Study sites

The survey was carried out in three different forest habitats in Nainital district of Uttarakhand for a period of two years during January 2006 to December 2007 **(Fig. 1. Table 1)**. The Nainital district occupies the southern portion of the Kumaun division (28°44'N – 30°49'N, 78°45'E – 81°01'E). Geographically Nainital district is heterogeneous; its northern portion consists of hills and the southern portion of the alluvial plain called Bhabar (Valdia & Bartarya 1980).

The study site is dominated by four species of oak: rainj *Quarcus lannginosa*, banj *Q. inacana*, karkshul *Q. semicarpifolia*, and tilonj *Q. dilatala*, Himalayan cypress *Cupresus torulosa* and deodar *Cedrus deodarus*. Among oaks, banj is most common. The forest habitat of Bhowali is rich in chir pine *Pinus roxburghii* and banj oak and the shrub, lantana *Lantana camarana* is wide spread in this area.

Immediately at the foot of the Nainital hills is the Bhabar belt (Haldwani). This belt contains deciduous forest. The Haldwani forest area is dominant with valuable trees such as sal *Shorea robusta*, sain *Terminalia tomrntosa* and haldu *Adive cordifolia*, dhauri *Lagerstroemia parviflora*, shisham *Dalbergia sissoo* and khair *Acacia catechu*. Lantana is widely spread here too.

Methods

The present study was carried out in three forest habitats of Nainital district namely (A) Nainital, (B) Bhowali, and (C) Haldwani along different sections of the elevational gradient. Forest habitat of the study areas consisted of oak and deodar (Nainital), pine–oak mix (Bhowali) and sal–khair mix (Haldwani).

Field studies were conducted for two years during January 2006 to December 2007 using field binoculars (7x50) and GPS (e-trex Vista). Fixed width line-transect count method (Verner 1985) was used for measuring bird abundance. The method of bird census used in the various habitats was the same. We recorded all birds seen within 50 m on each side of the transect line. Observations on birds in each line transect was made by walking on foot. Transect lines were not necessarily straight; at Bhowali and Nainital forest there were a lot of uphill and downhill tracts. However, transects did not criss-cross one another.

At each study area three transects of one km. each were laid in each habitat and each transect was visited monthly. The total transects laid were 108 [12 months x 3 transects per forest types x 3 study areas = 108]. The same transects were revisited the following year too.

The time of sampling was between 0730–1030 hrs and 0500–0800 hrs in the mornings and 1600–1800 hrs during winter and summer, respectively. Sampling was avoided during rainy days. The identification of birds in the field was based on Grimmett *et al.* (1998).

Data analysis

Bird species diversity was measured using Shannon's index (H`) (MacArthur & MacArthur 1961). The average of monthly mean abundance of both the years was accounted for calculating total abundance of the species. This value was then used to measure BSD and BSR during the study.

To understand the similarity among the species composition in different forest types Sorensen's quantitative index (Magurran 1988) was used. Species can be categorised as rare depending on the criteria used to define rarity. Species that had less than five observations per sighting were categorised as rare (Gaston 1994; Maguran 1988).

To determine the guild structure foraging birds were observed in the field. The frequency of foraging on a given foraging substrate, and whenever possible, types of food obtained were ascertained for each species on the basis of at least ten observations per species. Species were accordingly classified into guilds of insectivores, frugivores, granivores, carnivores, or nectarivores.

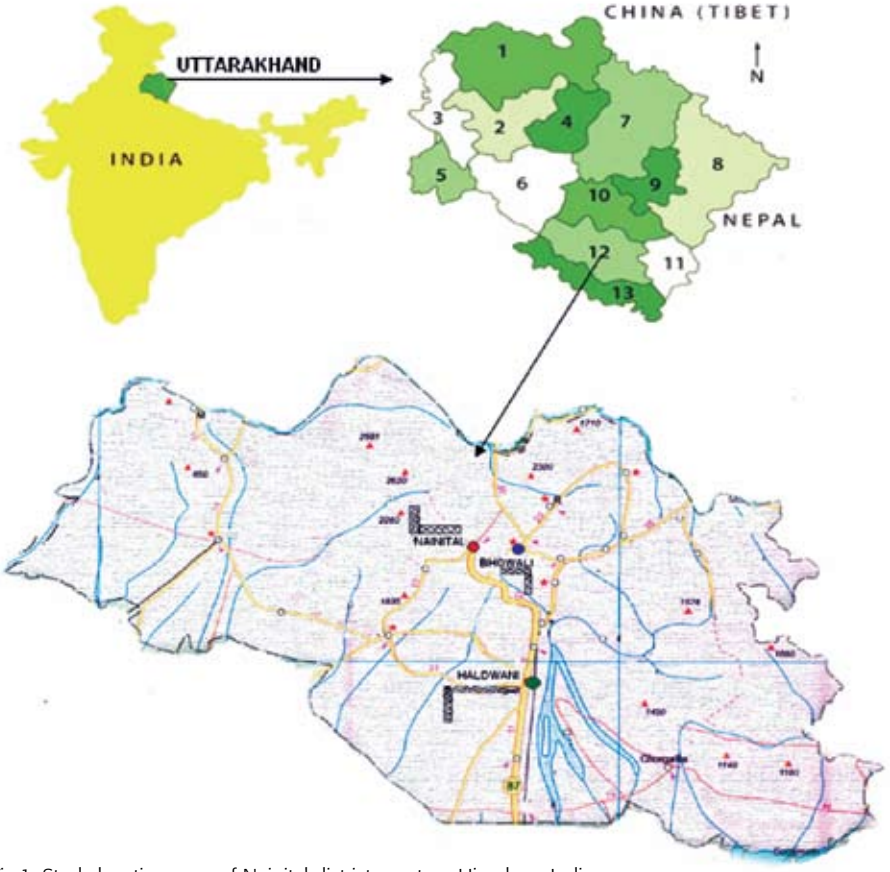

Fig.1. Study location map of Nainital district, western Himalaya, India.

Results

160 bird species belonging to 24 families were recorded in forest habitats (see Appendix). Among these, maximum numbers of species 63 (39.24%) were found in site B (Bhowali forest) and minimum 42 (26.26%) at site A (Nainital forest). Site C (Haldwani forest) supported 55 (34.17%) species. Among the 24 families, Muscicapidae (32.09%) was the most represented followed by Picidae (18.20%), Phasianidae (7.31%), and Accipitridae (4.82%). **Table 2** indicates the species diversity indices (BSR and BSD).

The largest number of rare species (19.31%) were found in site A, while the least number of rare species (12.26%) in site B and (13.68%) site C respectively. Maximum similarities of avian species were observed between oak and pine forests (Site A and Site B); followed by pine and sal forests (Site B and Site C) **(Table 3)**. Study of the guild structure revealed that insectivores dominated in the forest types, followed by omnivores. The percentage of carnivores, granivores, frugivores, and nectarivores among forest type habitats **(Tables 4, 5)**, indicate differential availability of the resources in the habitat studied.

Discussion & conclusion

The results indicate that pine mixed forest has high number of unique species as compared to other forests. This shows that pine mixed forest has its own bird community. According to Thiollay *et al*. (1988), each forest type has its own species composition. Similarity indices indicate the similarity between species associated with vegetation types. The distribution and abundance of many bird species are determined by the configuration and composition of the vegetation that comprises a major element of their habitat (Cody 1985; Morrison 1992; Block & Brennan 1993). It is interesting to know that the abundance of Red Jungle fowl *Gallus gallus* was good in site C forest showing less human interaction/ poaching in this area.

In this study it was found that insectivore species were dominant in forest habitats, indicating rich abundance and easy availability of insects. The variation in bird community, consistent with the distribution of food resources was also reported by Lefebvre & Poulin (1997). Some studies conducted in the Indian Subcontinent (Johnsingh *et al*. 1994; Kropil 1996; Sharma 2001; Singh 2004) have also shown that the insectivore guild is dominant in forest habitats. We also found that species diversity fluctuated across seasons among forest types and maximum diversity was found in spring/summer season at mid-elevation forest (Bhowali). Very few studies have been conducted in this area and our knowledge of the avifauna is virtually unknown. Hudson (1930), documented 124 bird species in Nainital (seven hills); Briggs (1931) documented 83 avian species in Ranikhet forest; Tak (1995) documented 127, 94, and 82 species of birds from Nainital, Almora, and Pithoragarh districts, and Sultana (1997) documented 182, 81, and 162 bird species from Almora, Nainital, and Pithoragarh respectively.

The difference observed in species diversity among study areas could be due to elevation and vegetation differences associated with elevation. For example, the Bhowali forest is mixed (e.g. *P. roxburghii, Q. leucotrichophora* along with some *Ficus*), providing better food resources for bird communities compared to Nainital or Haldwani forests where mostly *C. deodara* and *S. robusta* trees predominate, respectively. Probably due to this habitat characteristic the Bhowali forest (mid-elevation) supports more avian species compared to low and high elevation forest. Similarity, the positive relationship between habitat characteristics and BSD has been demonstrated by a number of studies (Wines 1989; Wilson & Comet 1996; Raman et al. 2005; Vijayan & Gokula 2006). It has also been suggested that species similarity or turnover along elevation is the consequence of vegetation types and climatic conditions (Terborgh 1977; Terborgh & Weske 1975; Rehbek 1995, 1997).

Table 1. Showing the Vegetation zone and elevation sections of the study areas

Study area	Vegetation zone	Approximate Elevation	Climate Zone	Annual mean temp. (°C)
Nainital	Oak–Conifer forest	1900–2450 m asl	Temperate	14.73
Bhowali	Pine–Oak mixed	1450–1700 m asl	Subtropical	16.03
Haldwani	Broad leaf mixed	350–500 m asl	Tropical	23.45

Table 2. Showing the comparative diversity indices of species in forest habitat along elevational gradient (2006-2007)

	Site A (Nainital forest)	Site B (Bhowali Forest)	Site C (Haldwani forest)
Dominant Tree species	Deodar, Oak	Pine, Oak	Khair, Sal
Shannon's diversity index (H')	3.72	3.86	3.77
Species richness (R)	10.21	11.67	10.43
Exclusive species in forest habitat	26	39	34
Rare species (n<5)	17	13	13
Species individuals (N)	5029	8064	8170

Table 3. Matrix of number of species in common (upper right) and percentage similarity (Sorensen's index) (lower left) for birds of different study areas

Study areas forest	Site A	Site B	Site C
A (Nainital)	0	62 (no. of common species)	40 (no. of common species)
B (Bhowali)	49 (% similarity)	0	55 (no. of common species)
C (Haldwani)	31 (% similarity)	43 (% similarity)	0

Table 4. Showing the species feeding guilds in forest habitat at different study sites (2006–2007)

Main feeding guilds	Sub feeding guilds	Nainital	Bhowali	Haldwani
Insectivore	6	58 (65.90%)	58 (54.71 %)	51 (53.68 %)
Omnivore	2	9 (10.22 %)	13 (12.26 %)	14 (14.73 %)
Frugivore	2	7 (7.95 %)	9 (8.49 %)	14 (14.73 %)
Carnivore	4	6 (6.81 %)	8 (7.54 %)	7 (7.36 %)
Granivore	2	6 (6.81 %)	15 (14.15 %)	7 (7.36 %)
Nectarivore	2	2 (2.27 %)	3 (2.83 %)	2 (2.10 %)

Acknowledgements

Financial assistance from UGC-SAP grant is gratefully acknowledged.

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Table 5. Showing the species sub feeding guilds in forest habitat among different study sites (2005–2006)

Main- & sub-feeding guilds	Site A (Nainital)	Site B (Bhowali)	Site C (Haldwani)
Insectivore			
Aerial insectivore	22 (25%)	20 (18.86%)	19 (20%)
Bark gleaning insectivore	9 (10.22%)	7 (6.60%)	12 (12.63%)
Foliage gleaning insectivore	6 (6.81%)	6 (5.66%)	2 (2.10%)
Sallying insectivore	9 (10.22%)	10 (9.43%)	9 (9.47%)
Under-storey insectivore	8 (9.09%)	9 (8.49%)	5 (5.26%)
Grass land insectivore	4 (4.54%)	6 (5.66%)	4 (4.21%)
Omnivore			
Terrestrial omnivore	4 (4.54%)	7 (6.60%)	6 (6.31%)
Arboreal terrestrial omnivore	5 (5.68%)	6 (5.66%)	8 (8.42%)
Granivore			
Granivore seed eater	4 (4.54%)	9 (8.49%)	4 (4.21%)
Frugivore granivore insectivore seed eater	2 (2.27%)	6 (5.66%)	3 (3.15%)
Frugivore			
Frugivore seed eater	4 (4.54%)	6 (5.66%)	10 (10.52%)
Frugivore insectivore	3 (3.40%)	3 (2.83%)	4 (4.21%)
Carnivore			
Sallying carnivore	1 (1.13%)	4 (3.77%)	4 (4.21%)
Arboreal terrestrial carnivore	2 (2.27%)	1 (0.94%)	1 (1.05%)
Terrestrial carnivore	1 (1.13%)	3 (2.83%)	1 (1.05%)
Wading carnivore	2 (2.27%)	0	1 (1.05%)
Nectarivore			
Nectarivore insectivore	1 (1.13%)	1 (0.94%)	1 (1.05%)
Nectarivore	1 (1.13%)	2 (1.88%)	1 (1.05%)

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Appendix

Species recorded during the present study (2006–2007)

Species	Feeding guild	Status	Distribution at study sites
Accipitridae			
Black-shouldered Kite *Elanus caeruleus*	Carnivore	r	H
Black Kite *Milvus migrans*	Carnivore	r	N; B; H
Egyptian Vulture *Neophron percnopterus*	Carnivore	r	H
Indian White-backed Vulture *Gyps bengalensis*	Carnivore	r	N; B
Himalayan Griffon *G. himalayensis*	Carnivore	r	N
Besra Sparrowhawk**Accipiter virgatus*	Carnivore	r	B
Common Buzzard *Buteo buteo*	Carnivore	wv	N; B
Booted Eagle* *Hieraaetus pennatus*	Carnivore	wv	H
Phasianidae			
Black Francolin *Francolinus francolinus*	Insectivore	e	B
Common Quail *Coturnix coturnix*	Insectivore	r	B; H
Koklass Pheasant *Pucrasia macrolopha*	Insectivore	am	N
Red Junglefowl *Gallus gallus*	Insectivore	r	H
Kaleej Pheasant *Lophura leucomelanos*	Insectivore	am	B; N
Cheer Pheasant (* Vocal)* *Catreus wallichii**	Insectivore	r	N
Indian Peafowl *Pavo cristatus*	Insectivore	r	H
Columbidae			
Blue Rock Pigeon *Columba livia*	Granivore	r	H; B; N
Oriental Turtle-Dove *Streptopelia orientalis*	Granivore	r	N; B
Spotted Dove *S. Chinensis*	Granivore	r	B; H
Eurasian Collared-Dove *S. decaocto*	Granivore	r	H
Emerald Dove* *Chalcophaps indica*	Granivore	r	B
Psittacidae			
Alexandrine Parakeet *Psittacula eupatria*	Frugivore	r	H
Rose-ringed Parakeet *P. krameri*	Frugivore	r	H; B
Slaty-headed Parakeet *P. himalayana*	Frugivore	r	N; B
Plum-headed Parakeet *P. cyanocephala*	Frugivore	r	B
Cuculidae			
Pied Crested Cuckoo *Clamator jacobinus*	Omnivore	sv	H
Indian Cuckoo *Cuculus micropterus*	Omnivore	r	H –B; N
Common Cuckoo *Cuculus canorus*	Omnivore	r	H
Asian Koel *Eudynamys scolopacea*	Omnivore	r	H; B
Greater Coucal *Centropus sinensis*	Omnivore	r	H
Lesser Coucal *Centropus bengalensis*	Omnivore	r	H
Capitonidae			
Great Barbet *Megalaima virens*	Insectivore	r	N; B
Brown-headed Barbet* *M. zeylanica*	Insectivore	r	B
Lineated Barbet* *M. lineata*	Insectivore	r	B
Blue-throated Barbet *M. asiatica*	Insectivore	r	B; H
Coppersmith Barbet* *M. haemacephala*	Insectivore	r	H
Picidae			
Speckled Piculet *Picumnus innominatus*	Insectivore	r	N
Brown-capped Pygmy Woodpecker *Dendrocopos nanus*	Insectivore	r/am	B; N
Grey-capped Pygmy Woodpecker *D. canicapillus*	Insectivore	r	N
Brown-fronted Pied Woodpecker *D. auriceps*	Insectivore	r	B
Fulvous-breasted Pied Woodpecker *D. macei*	Insectivore	R	B
Rufous-bellied Pied Woodpecker *D. hyperythrus*	Insectivore	R	B; H
Himalayan Pied Woodpecker *D. himalayensis*	Insectivore	R	H; B
Small Yellow-naped Woodpecker *Picus chlorolophus*	Insectivore	r	N
Little Scaly-bellied Green Woodpecker* *P. xanthopygaeus*	Insectivore	r/am	B
Large Scaly-bellied Green Woodpecker *P. squamatus*	Insectivore	r	N; B
Black-naped Green Woodpecker *P. canus*	Insectivore	r	B; H

Species	Feeding guild	Status	Distribution at study sites
Himalayan Golden-backed Woodpecker *Dinopium shorii*	Insectivore	r	B; N
Common Golden-backed Woodpecker* *D. javanense*	Insectivore	sv	H; B
Lesser Golden-backed Woodpecker *D. benghalense*	Insectivore	r	N; B
Greater Golden-backed Woodpecker *Chrysocolaptes lucidus*	Insectivore	r	B
Great Slaty Woodpecker* *Mulleripicus pulverulentus*	Insectivore	r	B
Alaudidae			
Eurasian Skylark *Alauda arvensis*	Granivore	wv	H
Eastern Skylark *A. gulgula*	Granivore	wv	H
Motacillidae			
White Wagtail *Motacilla alba*	Insectivore	wv	H; B
Grey Wagtail *M. cinerea*	Insectivore	wv	H; B
Eurasian Tree Pipit *Anthus trivialis*	Granivore	r	H
Upland Pipit *A. sylvanus*	Granivore	r	H
Campephagidae			
Large Cuckoo-Shrike *Coracina macei*	Insectivore	r	B; H
Bar-bellied Cuckoo-Shrike *C. striata*	Insectivore	wv	H; B
Small Minivet *Pericrocotus cinnamomeus*	Insectivore	wv	H; B
Long-tailed Minivet *P. ethologus*	Insectivore	wv	N
Scarlet Minivet *P. flammeus*	Insectivore	r	B; N
Pied Flycatcher-Shrike *Hemipus picatus*	Insectivore	r/am	B; N
Common Woodshrike *Tephrodornis pondicerianus*	Omnivore	r/am	H; B
Pycnonotidae			
Red-whiskered Bulbul *Pycnonotus jocosus*	Frugivore	r	H
Himalayan Bulbul *P. leucogenys*	Frugivore	r	H; B; N
Red-vented Bulbul *P. cafer*	Frugivore	r	H; B; N
Black Bulbul *Hypsipetes leucocephalus*	Frugivore	am	N; B
Muscicapidae			
Blue-headed Rock-Thrush *Monticola cinclorhynchus*	Insectivore	wv	B
Blue Whistling-Thrush *Myophonus caeruleus*	Insectivore	r/am	H; B; N
Grey-winged Blackbird *Turdus boulboul*	Insectivore	r/am	N
Himalayan Rubythroat * *Luscinia pectoralis*	Insectivore	r/am	B
Oriental Magpie-Robin *Copsychus saularis*	Insectivore	sv	H
Indian Robin *Saxicoloides fulicata*	Insectivore	r	H
White-capped Redstart *Chaimarrornis leucocephalus*	Insectivore	wv	N; B
Plumbeous Redstart *Rhyacornis fuliginosus*	Insectivore	wv	B
Black-backed Forktail *Enicurus immaculatus*	Insectivore	r	B
Common Stonechat *Saxicola torquata*	Insectivore	wv	H
Pied Bushchat *S. caprata*	Insectivore	wv	H; B
Grey Bushchat *S. ferrea*	Insectivore	wv	H
Indian Chat *Cercomela fusca*	Insectivore	r/am	H
White-throated Laughingthrush *Garrulax albogularis*	Insectivore	sv	N
White-crested Laughingthrush *G. leucolophus*	Insectivore	wv	B
Streaked Laughingthrush *G. lineatus*	Insectivore	wv	B; N
Rusty-cheeked Scimitar-Babbler *Pomatorhinus erythrogenys*	Insectivore	wv	B
Common Babbler *Turdoides caudatus*	Insectivore	r	H
Striated Babbler *T. earlei*	Insectivore	r/am	N; B
Jungle Babbler *T. striatus*	Insectivore	sv	H
Rufous Sibia *Heterophasia capistrata*	Insectivore	r/am	N
Yellow-naped Yuhnia *Yuhina flavicollis*	Insectivore	r	N
Brown Prinia *Prinia crinigera*	Insectivore	r/am	B
Black-throated Prinia *P. atrogularis*	Insectivore	r	B
Jungle Prinia *P. sylvatica*	Insectivore	r/am	H
Ashy Prinia *P. socialis*	Insectivore	sv	H
Plain Prinia *P. inornata*	Insectivore	r	H
Blanford's Bush-Warbler *Cettia pallidipes*	Insectivore	sv	H
Aberrant Bush-Warbler *C. flavolivacea*	Insectivore	r	B
Yellow-bellied Bush-Warbler * *C. acanthizoides*	Insectivore	r	N; B
Grey-sided Bush-Warbler *C. brunnifrons*	Insectivore	wv	N; B
Common Tailorbird *Orthotomus sutorius*	Insectivore	r/am	H
Tickell's Leaf-Warbler *Phylloscopus affinis*	Insectivore	r	N
Orange-barred Leaf-Warbler *P. pulcher*	Insectivore	wv	B
Grey-faced Leaf-Warbler *P. maculipennis*	Insectivore	r	B
Lemon-rumped Leaf-Warbler *P. chloronotus*	Insectivore	r	B; N
Greenish Leaf-Warbler *P. trochiloides*	Insectivore	r	N
Gold-spectacled Flycatcher-Warbler *Seicercus burkii*	Insectivore	r	N
Grey-headed Flycatcher-Warbler *S. xanthoschistos*	Insectivore	r	N; B
Common Lesser Whitethroat * *Sylvia curruca*	Insectivore	r	B
Asian Brown Flycatcher *Muscicapa dauurica*	Insectivore	sv	B
Red-throated Flycatcher *Ficedula parva*	Insectivore	r/am	N; B
Little Pied Flycatcher *F. westermanni*	Insectivore	r	H; B
Verditer Flycatcher *Eumyias thalassina*	Insectivore	r	N; B; H
Small Niltava *Niltava macgrigoriae*	Insectivore	r	B
Rufous-bellied Niltava *N. sundara*	Insectivore	r/am	B
Blue-throated Flycatcher * *Cyornis rubeculoides*	Insectivore	r/am	N
Grey-head Flycatcher *Culicicapa ceylonensis*	Insectivore	r	N; B; H
Asian Paradise-Flycatcher *Terpsiphone paradisi*	Insectivore	wv	B
Yellow-bellied Fantail *Rhipidura hypoxantha*	Insectivore	r	N
White-throated Fantail *R. albicollis*	Insectivore	r	H; B
White-browed Fantail *R. aureola*	Insectivore	r	N; B
Paridae			
Rufous-bellied Crested Tit* *Parus rubidiventris*	Omnivore	r	N
Spot-winged Crested Tit *P. melanolophus*	Omnivore	r	N
Brown Crested Tit *P. dichrous*	Omnivore	r	B; N
Great Tit *P. major*	Omnivore	r	N
Green-backed Tit *P. monticolus*	Omnivore	r	N
Black-lored Yellow Tit *P. xenthogenys*	Omnivore	r	N; B
Black-spotted Yellow Tit *P. spilonotus*	Omnivore	r	N; B; H
Sittidae			
Chestnut-bellied Nuthatch *Sitta castanea*	Insectivore	r	N
Certhiidae			
Eurasian Tree-Creeper *Certhia familiaris*	Insectivore	r	N; B
Dicaeidae			
Thick-billed Flowerpecker *Dicaeum agile*	Insectivore	r	N
Fire-breasted Flowerpecker *D. ignipectus*	Insectivore	r	H
Nectariniidae			
Purple Sunbird *Nectarinia asiatica*	Nectarivore	am	N
Crimson Sunbird *Aethopyga siparaja*	Nectarivore	r	B; H
Fringillidae			
Common Rosefinch *Carpodacus erythrinus*	Granivore	r/am	H
Passeridae			
Cinnamon Tree Sparrow *Passer rutilans*	Insectivore	r	H
Chestnut-shouldered Petronia *Petronia xanthocollis*	Insectivore	r	N
Baya Weaver *Ploceus philippinus*	Granivore	r	B; N
Sturnidae			
Chestnut-tailed Starling *Sturnus malabarica*	Insectivore	am	H; B; N
Brahminy Starling *S. pagodarum*	Insectivore	am	H
Asian Pied Starling *S. contra*	Insectivore	r	H; B
Common Myna *Acridotheres tristis*	Omnivore	r	H
Jungle Myna *A. fuscus*	Insectivore	r	H
Oriolidae			
Indian Oriole *Oriolus kundoo*	Frugivore	r	H; B
Black-headed Oriole *O. xanthornus*	Frugivore	r	H
Common Iora *Aegithina tiphia*	Omnivore	r	H
Dicruridae			
Black Drongo *Dicrurus macrocercus*	Insectivore	r	H; B
Spangled Drongo *D. hottentottus*	Insectivore	r	N
Corvidae			
Eurasian Jay *Garrulus glandarius*	Frugivore	r	B; H
Black-headed Jay *G. lanceolatus*	Omnivore	r	H; B; N
Yellow-billed Blue Magpie *Urocissa flavirostris*	Frugivore	r	N
Red-billed Blue Magpie *U. erythrorhyncha*	Frugivore	r	N
Indian Treepie *Dendrocitta vagabunda*	Frugivore	r	N
Grey Treepie *D. formosae*	Frugivore	r	H –B; N
House Crow *Corvus splendens*	Frugivore	r	AL –B; N
Jungle Crow *C. macrorhynchos*	Omnivore	r	N; B
Common Raven *C. corax*	Frugivore	r	N; B

Abbreviations: ai = aerial insectivore, bgi = bark-gleaning insectivore, fgi = foliage-gleaning insectivore, si = sallying insectivore, usi = under-storey insectivore, gli = grassland insectivore, to = terrestrial omnivore, ato = arboreal terrestrial omnivore, gse = granivore seedeater, fgse = frugivore granivore insectivore seedeater, fse = frugivore seedeater, fi = frugivore insectivore, sc = sallying carnivore, atc = arboreal terrestrial carnivore, tc = terrestrial carnivore, wc = wading carnivore, ni = nectarivore insectivore, n = nectarivore, r = resident, am = altitudinal migratory, sv = summer visitor, wv = winter visitor, B= Bhawali, H= Haldwani, N= Nainital.

Fig. 1. Greater Adjutant-Stork *L. dubius*. Photo: D. N. Choudhary

Distribution, and potential breeding records, of Lesser- *Leptoptilos javanicus*, and Greater- *L. dubius* Adjutant-Stork in Bihar, India

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Choudhary, D. N., Mandal, J., & Rohitashwa, R., 2011. Distribution, and potential breeding records, of Lesser- *Leptoptilos javanicus* and Greater- *L. dubius* Adjutant-Stork in Bihar, India. *Indian BIRDS* 7 (2): 38–40.
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Manuscript received on 5 November 2009.

Introduction

There are about 2,000 species of birds found in the Indian Subcontinent (Ali & Ripley 1987) including the migrants that come during winter to this part of the world. Out of 1,200 species found in India around 22% are totally dependent on wetlands (BirdLife International 2007). One such wetland-dependent group, whose population is declining alarmingly, comprises storks (Order Ciconiiformes) (Ishtiaq 2001).

There are 19 species of storks found in the world of which 15 are regionally threatened. Tropical Asia and Africa have the largest concentrations of storks (Ishtiaq 2001).

Since 2004 we have been studying the breeding and nesting behavior of a few stork species, mainly Asian Openbill-Stork *Anastomus oscitans*, Lesser- *Leptoptilos javanicus*, and Greater- *L. dubius* Adjutant-Storks, Black-necked Stork *Ephippiorhynchus asiaticus*, and Painted Stork *Mycteria leucocephala* in different parts of Bihar.

Besides Asian Openbill-Stork the other four species, which have been categorised as Threatened, are breeding successfully in different districts of Bihar, especially in the northern and eastern parts of the state, and their numbers are significantly increasing (Choudhary *et al.* 2008; Mishra *et al*. 2010; Choudhary *et al*. 2010). In this note, we provide our observations on breeding Lesser- and Greater- Adjutant-Storks in new locations.

Breeding of Lesser Adjutant-Stork

According to Ali & Ripley (1987) the Lesser Adjutant-Stork breeds only in Sri Lanka, India (Kerala, Tamil Nadu, parts of the Malabar Coast, and Assam), and Bangladesh. Subramanya (1996), in his detailed work on heronries in India, reported the nesting of Lesser Adjutant-Stork at Bhitarkanika Wildlife Sanctuary, Orissa. This is the only documented breeding site outside north-eastern India. The Lesser Adjutant-Stork has been declared Vulnerable. Its global population is estimated at about 5,000 birds, and the population of this species in Assam is believed to exceed 2,000 individuals (BirdLife International 2007).

However, 31 nests in 2004, 33 in 2005, and 38 in 2006 in Kishanganj- and Katihar- districts of northern Bihar have already been reported by Choudhary *et al*. (2006), and Mishra *et al*., (2005) recorded about 42 nests in the Koshi region of northern Bihar. In Kishanganj district we found nine nests in 2006 and 14 in 2008. In 2008, the storks nested on banyan *Ficus bengalensis* and semal *Salmalia malabarica* trees at Koabari village under Taiyabpur railway station **(Fig. 2)**. In 2008 many nests of Asian Openbill-Stork surrounded the two nests of Lesser Adjutant-Stork. This was the first time that Asian Openbill-Storks bred at this site. Presently both the species are breeding together on these trees.

Koabari village is located on the Thankurganj–Kishanganj road, and River Mahananda flows *c*. 500 m away from this village. This river is most likely the major source of food and water for both Asian Openbill-Stork and Lesser Adjutant-Stork.

About 150 m away from this nesting site stands another big semal tree, on the same side of the road, completely covered with Indian flying fox *Pteropus giganteus*. According to the villagers more than 1,000 have been roosting on this tree since a decade or more. Asian Openbill-Storks have also occupied this tree, and we recorded three nests, containing three grown-up chicks each, in October 2008. Roosting flying foxes surrounded all the three nests, but there was apparently no disturbance to the nesting birds. In July 2009 we recorded 21 nests of Asian Openbill-Stork on the same tree. Asian Openbill-Storks start to assemble here to breed after the second week of May, where as Lesser Adjutant-Storks commence building nests in August.

Dr Lakshmi Narayan Sharma, a popular Ayurveda doctor of this region, owned this tree, and he was ready to sell it. Our regular visits to study the birds convinced him and his family members not to do so. Gradually they began protecting the nesting birds. Mr Gopal Choudhary, a local press reporter and resident of this village (Koabari) is enthusiastic to save these

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Fig. 2. Lesser Adjutant-Stork *L. javanicus* on nest with juvenile.

nesting birds. His articles favouring their conservation have created a positive awareness among the villagers and local community. The awareness for protecting the birds is one of the main reasons for letting them breed undisturbed. The number of nesting Lesser Adjutant-Storks, and Asian Openbill-Storks are gradually increasing in this area.

Lesser Adjutant-Storks are regularly seen in pairs or in a flock of five–seven, in cultivated fields and nearby wetlands, in other parts of the district. We regularly communicate with villagers and remain alert for new nesting records in other areas. Recently we received some reports about their nesting in villages along the Indo–Nepal border, in the Kishanganj-, and Araria- districts of Bihar. We plan to survey these areas in the near future. The numbers of nests of Lesser Adjutant-Storks have increased at Dandkhora (10 in 2008), and Karhagola (8 in 2008) in Katihar district, in comparison to the previous report of Choudhary *et al*. (2006).

Breeding of Greater Adjutant-Stork

The Greater Adjutant-Stork **(Fig. 1)** has been categorised as Endangered by BirdLife International (2007). According to IUCN (2007) the global population of this species may be 650–800 birds. At the beginning of the Twentieth Century the Greater Adjutant-Stork was found often in large numbers in South and South-East Asia, from Pakistan through northern India, Nepal, Bangladesh, Vietnam, and the Kingdom of Cambodia. But now their global numbers have decreased alarmingly. This massive decline is due to the effects of pollutants, and the continuous reduction in the availability of nesting-, and the quality of, feeding sites (Islam & Rahmani 2002).

IUCN (2007) reports that there are only two potential breeding sites in the world: Assam (India), and Cambodia. Indian records are from the Brahmaputra and Gangetic plains (Singha 2001; Choudhury 2007, 2009). Choudhary (2009) reported that 313 Greater Adjutant-Storks were recorded by a local birdwatcher, Mr Lakhan Tron, near Deepor beel, Guwahati (Assam), in January 2008. However, a larger congregation of 446 birds was recorded by Choudhary (2009) at the Paschim Boragaon dumping ground in Guwahati in September 2008.

We recorded 13 live nests of Greater Adjutant-Storks with their chicks for the first time in December 2006 at two *diara*[1] villages under Naugachia block in Bhagalpur district. These two diara villages are Kashimpur and Ashramtola surrounded by many smaller and larger wetlands but mainly affected by River Koshi and its tributary. The Greater Adjutant-Stork was also found foraging and roosting in these wetlands and tributaries. The distance between these two villages is about two kilometers. Six nests were recorded at Kashimpur on a big peepal tree *F. religiosa* located adjacent to this village, whereas seven nests were recorded at Ashramtola on a pakar tree *F. virens*. In both the sites the nests were located at the top of the tree, which has thin foliage covering. Both the trees were very large, and widely branched.

One of us (JM) observed the nesting for the first time and was the basis for a more detailed survey that resulted in the information provided above.

The birds were provisioning chicks at the end of the third week of March 2007. Out of 13 nests, eight (four each in Kashimpur and Ashramtola) contained two chicks each, whereas five nests (two in Kashimpur and three in Ashramtola) contained three chicks each **(Fig. 3)**. However, two dead chicks were found fallen on the ground in Kashimpur in the first week of April 2007. In all, the birds successfully raised 29 chicks, i.e., 2.2 chicks per breeding pair. When we observed them, they were leaping in the air from the nest floor, flapping their wings.

In January 2009, in the same diara villages Kashimpur and Asharamtola, we recorded 17 nests in both the sites. Of these, seven were at Kashimpur on the same peepal tree. Ten were found at Asharamtola, of which four were on the top of a large kadam tree *Anthocephalus cadamba*, and six on a large semal tree. This shows an increasing trend in the population of Greater Adjutant-Storks in Bihar.

Additional observations regarding Greater Adjutant-Stork

- Greater Adjutant-Storks generally prefers to build their nests on large, widely-branched trees with thin foliage cover.
- Though nesting sites were located within the village, they suffered minimum human disturbances.
- The tributary of River Koshi, and the wetlands surrounding the villages are the main sources of food and water for Greater Adjutant-Storks.
- All the nests were looking like spherical baskets made of plant twigs of *c*. 1–1.5 m diameter at the treetop.
- Both the parent birds alternately shared in incubation.
- After the eggs hatched, the parents were observed guarding the chicks alternately, during which time they also rearrange the nesting materials, nurse the chicks by preening and shading by spreading their opened wings above the chicks.
- Juvenile birds (90–100 days old) were observed leaping into the air, from the nest floor, flapping their wings vigorously.
- Sometimes the juveniles took short flights, and returned to their nest, just like those of Asian Openbill-Stork and Lesser Adjutant-Stork.
- Parents fed their young more actively during the middle of the day.
- We found that the breeding period of Greater Adjutant-Storks in Bihar is between October and March. Nest construction begins before mid-October, and the chicks fledge between March and April.

Choudhary & Ghosh (2004) first reported Greater Adjutant-Stork from the wetlands of Bihar, i.e., near Kursella, Naugachia, Bihpur, and Pasraha, while Choudhary *et al*. (2004) reported it from Vikramshila Gangetic Dolphin Sanctuary in Bhagalpur,

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Fig. 3. Greater Adjutant-Stork *L. dubius* juveniles (110–120 days) in Ashramtola.

[1] Area covered by floodwaters of a river.

Bihar. However, the largest congregation of Greater Adjutant-Storks, containing 53 individuals, was recorded on the banks of River Ganga, within Vikramshila Gangetic Dolphin Sanctuary in May 2006, along with 57 Painted Storks, and other water birds (Choudhary & Mishra 2006). The sighting of such a large numbers of Greater Adjutant-Storks and Painted Storks catalysed us to be more vigilant.

In the last week of January 2009 two Greater Adjutant-Storks were recorded roosting, with seven Lesser Adjutant-Storks, on a large banyan tree in Koabari village (Kishanganj district, northern Bihar). Villagers report that their number could be more than five. But their sudden appearance here reveals that in future this could become a preferred site for roosting or breeding and that their numbers may ultimately increased. This is certainly a good sign for us.

Conclusion

The above facts make it quite clear that both the threatened storks are breeding successfully in Bihar. Tolerance of villagers towards the birds, and awareness created by members of Mandar Nature Club, Bhagalpur help in their successful breeding. Traditional beliefs of farmers combined with relatively simple awareness programmes to ensure villagers retain pride can aid to improve numbers of species that are of global conservation concern.

Acknowledgements

We are grateful to the villagers of Koabari (Kishanganj district, Bihar) for cooperating in various ways, during our field observation. We convey our special thanks to Dr Lakshmi Narayan Sharma, and Mr Gopal Choudhary for providing security to these nesting birds and also for creating awareness in the local community. We are again grateful to the villagers and tree owners of Kashimpur and Ashramtola of Naugachia block of Bhagalpur district, for their cooperation and hospitality during our field trips. We are thankful to Dr T. K. Ghosh, Dr Amita Moitra, Dr Sunil Agrawal, Mr Arvind Mishra, and Dr T. K. Pan of Mandar Nature Club, Bhagalpur for their valuable suggestions.

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High density nesting of White-Bellied Sea-Eagles *Haliaeetus Leucogaster* on Netrani Island, Karnataka: a possible IBA site

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Pande, S., Sant, N., Pednekar, S., Sakhdeo, N., & Mahabal, A., 2011. High density nesting of White-Bellied Sea-Eagles *Haliaeetus leucogaster* on Netrani Island, Karnataka: a possible IBA site. *Indian BIRDS* 7 (2): 40–43.

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Manuscript received on 28 August 2010.

Introduction

Netrani Island (14°59'N 74°19'E) is a heart-shaped, steep-sloped offshore island jutting out of the Arabian Sea off Uttar Kannada district. It is about 19.6 km from the coastal town of Murudeshwar, and 24 km from coastal town of Bhatkal, in Karnataka, India **(Figs 1 & 2)**. It is 4.2 km^2 in area, and ranges in altitude from 0 m to 77 m above mean sea level. It is covered with dense evergreen vegetation, with *Ficus* sp., dominating, along with lianas, climbers, shrubs, and grasses. A small un-named rocky islet is located to the south-west of Netrani **(Fig. 2)**, and is devoid of trees, but some grass was seen.

White-bellied Sea-Eagle *Haliaeetus leucogaster* is widely distributed along the Indian seaboard and offshore islands south of the latitude of Mumbai (*c.* 19°N), and affects the seacoast, tidal creeks, and estuaries (Ali & Ripley 1968). Extralimitally, it is recorded on the coasts of Myanmar, the Malay Peninsula, and archipelagos east to Australia, Tasmania, and W. Polynesia (Ali & Ripley 1968). It breeds in India from October to January (Ali & Ripley 1968).

Pande (2005) had recorded pre-breeding activity of about 60 White-bellied Sea-Eagles flying over Netrani Island during October 2005, when Pande, and others (NS, SP) had observed

these eagles and some of their nests from an Indian Coast Guard ship, from a distance, but had not set foot on the island. We therefore visited the island again in November 2008, for a preliminary avifaunal survey, and also to evaluate the breeding activity of this eagle during its breeding season.

Methodology

We reached Netrani Island **(Fig. 3)** in motorised boats hired at Murudeshwar, and conducted the avifaunal survey during 22 and 23 November 2008. A 90-minute boat ride later we landed on the island on 22 November in the evening and returned to the mainland at night. In the morning of 23 November we re-visited Netrani for a full day's survey, returning at night.

We walked and conducted a visual survey for birds, and nests, exploring the entire island, and mapping our route and marking the location of White-bellied Sea-Eagle nests on it **(Fig. 4)**. We also recorded details like height of the nest from the ground, the dimensions of the nest, the distance between adjacent nests, nest material, status of occupancy of each nest, parental and chick activity, presence of prey remains under the nests, on the branches, or on the ground, *etc*. We circumnavigated the island by boat, searching for nests on the tall trees growing on the steep slopes where we could not have otherwise reached on foot. We were especially on the lookout for any aerial activity of birds around the island. From the boat we also, visually, surveyed the un-named adjacent rocky islet for any nesting activity. We photographed birds seen on both, the island, and the islet.

Observations & results

1. Netrani Island: 25 nests were located, of which 18 were active, and the remaining seven, unoccupied **(Table 1)**. All nests were on *Ficus* spp. The minimum height of the nest from the ground was 5 m, and the maximum height was 20 m (Table 1)—their average height being 12.7 m. The average diameter of nests was 2 m, and the average thickness was 1.2 m. Adjacent nests were, on an average, 35 m apart (range 25–50 m). Nesting trees held only one nest per tree, except for two, where two nests each were present; but of these only one was active, and the other either old, broken, and not in use. No nests were seen on cliffs.

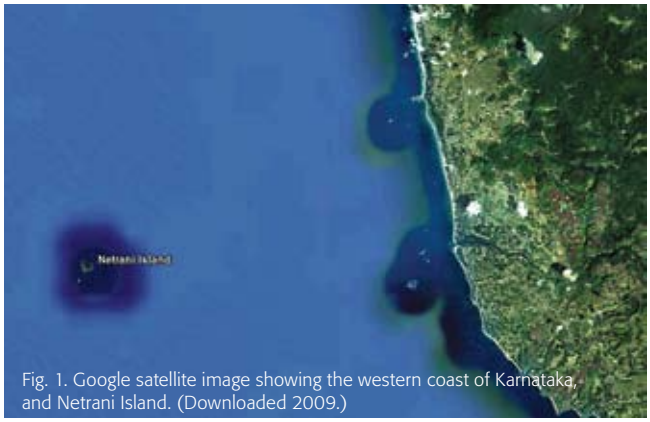

Fig. 1. Google satellite image showing the western coast of Karnataka, and Netrani Island. (Downloaded 2009.)

Fig. 2. Google satellite image of the heart-shaped Netrani Island, and the un-named adjacent rocky islet. (Downloaded 2009.)

We observed White-bellied Sea-Eagles engaged in various activities: noisily chasing each other, soaring, courtship display, cart-wheeling with locked talons **(Fig. 5)**, offering prey to a mate, mating, bringing nesting material, and hunting at sea. Some parents were engaged in feeding their chicks. They were also guarding their nests from approaching raptors such as Common Kestrel *Falco tinnunculus* and Brahminy Kite *Haliastur indus*. When these species came near the nest of the White-bellied Sea-Eagle, the eagle chased them away. We never saw them perching on the tree bearing the nest of the White-bellied Sea-Eagle.

Nests were constructed of twigs, sticks, and branches of trees. The shallow cup in the nest was lined with green leaves. The chicks were noted to be sitting in this small cup **(Fig. 6)**. However, some of the larger chicks were seen at the edge of the nest. Based on their plumage, the age of these chicks was estimated between one to three weeks. We recorded two chicks each in 14 nests, and a single chick each in four nests: totaling 32 chicks. When two chicks were present in one nest they were interacting with each other in the form of pecking or wing flapping. Such activity was followed by periods of sleeping. The chicks also vocalised when they saw their parents approaching.

We saw the White-bellied Sea-Eagles bringing waterfowl **(Fig. 7)**, sea snakes, and fishes for the young. We also found remains of sea snakes (Family: Hydrophiinae) on the branches of the nest trees, and also on the ground below nests. Amongst prey remains those of the fish called *pakit* (local Kannada name) *Balistes stellatus* were most abundant. We were told that this fish is commonly netted by fishermen in the area, and is unfit for human consumption because it has a thick skin. These fish can grow up to 0.3 m in length, have prominent canine teeth, and can gnaw fishing nets thereby causing economic loss to the fishermen. The fishermen are aware that sea-eagles consume this fish, and look upon the sea-eagles as its natural controllers. Other fish remains under the nests were shark *Scoliodon laticaudus*, puffer-fish *Diodon hystrix*, *Clupea* sp., and other fishes known in local language as *tarli*, *surmai, shedaka, daeen*, and *dayan*. We also saw a partially eaten skink under one nest, along with some crabs, feathers of birds, and mollusc shells. The nest trees were heavily infested with


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Fig. 3. Netrani Island.

red ants that had been attracted by the prey remains.

We recorded four nests of Brahminy Kites *Haliastur indus*, 25 m high on *Ficus* sp. trees. The kites were bringing nesting material, and displaying.

2. Un-named rocky islet: There were at least three nests of the White-bellied Sea-Eagles on the un-named rocky islet, but we could not evaluate their status, as they were located on ledges, high up on the rocks. No nests of Brahminy Kites were observed.

Discussion

The nests of the White-bellied Sea-Eagle are generally widely spaced on the seaboard of the western coast in Maharashtra, with an average of one nest per 2.6 km in Ratnagiri district, and one nest per 3.8 km in Sindhudurga district (Katdare *et al*. 2003, 2004). Pande *et al*. (2007a) recorded nests of White-bellied Sea-eagles on Andaman and Nicobar Islands, where the nests were also widely spaced, not clustered. Pande *et al*. (2007b) did not record White-bellied Sea-Eagles, or their nests, in the Lakshadweep Archipelago.

However, records of White-bellied Sea-Eagles nesting on Netrani Island exist since January 2003, when Madhyastha (2004) reported *c*. 100 nests on tall trees, such as *Ficus*. Further, he has also stated that there is no other such congregation of these eagles along the Indian coast. Our November survey recorded 18 active, and 7 inactive nests. It is likely that more eagles may arrive on the island subsequently in December–January, later in their breeding season.

It is possible that reasons such as bombing practices by the navy, (information given to authors SP and NS by local fishermen and coast guard personnel) with Netrani Island as the target, may have caused a drastic reduction in the number of nests of these eagles from 100 to 25 in a short span of 4 to 5 years. We also saw a few empty bomb shells on the island during the survey. Therefore, it will be interesting to visit the island periodically throughout their breeding season to precisely document the current nesting status of the eagles on the island. However, it is undeniable that the nesting density of the White-bellied Sea-eagles on Netrani Island is not only high but also unusual and unique.

Fig. 4. Sketch map of Netrani Island showing various locations of 18 active nests, and the survey route followed by the study team. Nest sites are shown by solid dots and the route is marked by a line with arrows to indicate the direction of in which the survey was undertaken.

Table 1. Nest data of White-bellied Sea-Eagles recorded on Netrani Island on 22 and 23 November 2008.

Nest Number	Approximate height of the nest from the ground in meters	No. of chicks in the nest
1	18 m	2
2	12 m	2
3	12m	2
4	10 m	2
5	10 m	2
6	15 m	2
7	8 m	1
8	10 m	2
9	12m	2
10	16 m	1
11	5 m	1
12	18 m	2
13	20 m	1
14	18 m	2
15	15 m	2
16	12 m	2
17	12 m	2
18	15 m	2
19	10 m	Inactive
20	13 m	Inactive
21	9 m	Inactive
22	12 m	Inactive
23	12 m	Inactive
24	11 m	Inactive
25	12 m	Inactive

White-bellied Sea-eagles are known to use the same nest or site traditionally for over 50 years (Ali & Ripley 1968). The height of the tree-nest from the ground level on Netrani Island was quite low (5 to 20 m) as compared to the documented range of 10–50 m (Ali & Ripley 1968); 20–40 m in Ratnagiri district, and 10–30 m in Sindhudurga district, Maharashtra (Katdare *et al*. 2003, 2004). Though nests on Netrani Island are constructed only on *Ficus* sp., on the western coast of Maharashtra nests were recorded on eleven tree species with the commonest being *Mangifera indica* and *Casuarina equisetifolia*, followed by *Ficus* sp. (Katdare *et al*. 2003, 2004).

The absence of nests on the cliffs of Netrani Island indicates that trees play an important role in nesting of these eagles at

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Fig. 5. White-bellied Sea-Eagles *Haliaeetus leucogaster* cart wheeling with locked talons.

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Fig. 6. White-bellied Sea-Eagles *Haliaeetus leucogaster* chicks, and a half-eaten fish in the nest.

Netrani. On Burnt Island, Vengurla Rocks, Maharashtra, or on other offshore islands in the Arabian Sea, which are relatively devoid of any tall trees, there is only an occasional incidence of nesting of the White-bellied Sea-eagles (unpublished observation of SP). On the contrary, on such barren offshore islands particularly on the Burnt Island, though there are no trees, the islands alternatively offer nesting opportunities for other pelagic ground nesting birds like various species of terns (Pande 2002a, b).

Local fishermen revealed that the average catch around the island is about 600 quintals on a good day. This indicates the richness of marine life in the waters adjacent to Netrani. This is no doubt important for sustaining such a large breeding population of the White-bellied Sea-eagles on such a small island. At the same time, since the island is quite far away from the nearest coast, there are no regular human visitors on the island except during the annual pilgrimage when fishermen come to the island to the worship the local deities. The landing on the island is also difficult, even on calm days; hence the human interference is almost negligible. All these factors are favourable for the nesting of these eagles.

Recommendations

The observation of high density nesting of the White-bellied Sea-Eagles on Netrani Island stresses the need for its protection. Apart from the White-bellied Sea-Eagles the avifaunal diversity on the island is substantial, comprising 40 spp., from 32 genera in 27 Families (Pande *et al*., in press). The Indian Swiftlet *Aerodramus unicolor*, which is a protected species, also nests in the cave on Netrani Island (Mahabal *et al*. 2007). Hence, Netrani Island may be considered as a befitting candidate for declaration as an Important Bird Area (IBA). It may be pointed out here that Burnt Island, which is an important breeding site of pelagic terns, and the Indian Swiftlet, is already notified as an IBA site (code IN-MH-02), meeting IBA criteria as A4iii (Islam & Rahmani 2004).

Islands present fragile, ecologically sensitive, and bio-geographically significant ecosystems (Das 2001). The conservation of the flora on the island is of utmost importance for the successful and continued breeding of the White-bellied Sea-Eagles. In the past, the Indian Navy has used Netrani Island for bombing exercises from the ships. If such exercises are continued in the future, the trees on the island could be destroyed, and in turn, the nest sites further reduced, causing an irreversible damage to a very important and unique high-density nesting site of the White-bellied Sea-Eagles in India.

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Fig. 7. White-bellied Sea-Eagles *Haliaeetus leucogaster* with a waterfowl (Aves: Rallidae?).

Acknowledgements

The survey team included Satish Pande, Niranjan Sant, Shivkumar Pednekar, Nitin Sakhdeo, and Amit Pawashe of Ela Foundation, Pune. We thank the local fishermen for their cooperation. We thank Vice Admiral Manohar P. Awati, AVSM, for his continued support and encouragement. Dr Sanjay Kharat, Principal, Modern College of Arts, Science, and Commerce, Ganeshkhind, Pune, identified the fish remains. Ela Foundation, Pune, supported the project.

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Additions to the birds of Goa, India

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The avifaunal diversity of Goa has been fairly well documented over the years (Grubh & Ali 1972; Rane 1982; Saha & Dasgupta 1992; Lainer 1999). Lainer's (2004) well-researched work listed around 420 species of birds from Goa. Recently, the Zoological Survey of India added 38 species to his work (Mahabal & Patil 2008) thereby bringing the tally of birds of Goa to 458.

Though Goa's avifaunal diversity has been well documented by researchers, as well as visiting birdwatchers, as always, there is scope for new discoveries as more and more people get interested in field work, as in the instances of the White-backed Woodpecker *Chrysocolaptes festivus* (Rangnekar & Lad 2009), and the Blue-cheeked Bee-eater *Merops persicus* (Holt 2009).

In this note we report for the first time from Goa, the occurrence of Slaty-legged Crake *Rallina eurizonoides*, Spotted Creeper *Salpornis spilonotus*, and Streaked Weaver *Ploceus manyar*.

Slaty-legged Crake On 15 June 2009 PL spotted a pair at Ganje, on the outskirts of Bondla Wildlife Sanctuary. They were foraging in sparse undergrowth along the roadside. PR observed an adult, and a juvenile on 8 August 2009 at the same location. An enthusiast birdwatcher accompanying him managed to take a video of the bird. The presence of an adult with a juvenile indicates that this crake is a breeding resident.

Spotted Creeper Both the authors first sighted this bird on 25 April 2004 in the Mhadei Wildlife Sanctuary near Bondirwada on the way to Cadval. It was part of a mixed-hunting party. It was seen a second time, in Bondla Wildlife Sanctuary on 15 November 2007 by PR, near the artificial waterbody on the way to the entry gate. The presence of the bird in two different locations, in two different seasons, clearly suggests that the sightings are not of stragglers; neither is the bird known to migrate.

Streaked Weaver has been observed in and around Mhadei Wildlife Sanctuary. The birds were first observed in April 2000 in Keri village wherein they were nesting at two locations, one in the sugarcane fields opposite the government primary school, and the second on vegetation along the nullah flowing under the water distribution canal of the Anjunem Reservoir. A few individuals nested on the electricity wires passing over sugarcane fields. The birds have been subsequently observed regularly at the same locations every year. Streaked Weavers have been spotted at two other locations on 9 June 2002; in Mhadei Wildlife Sanctuary at Satrem, and at Karmali, Sattari.

The addition of these three species increases the number of species for Goa to 462.

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The status and distribution of Amur Falcon *Falco amurensis* in Gujarat, India

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Fig. 1. Female Amur Falcon *Falco amurensis*.

Introduction

Amur Falcon *Falco amurensis* is a long distance migrant, occurring as a passage migrant in Gujarat. It breeds in central Siberia east to Amurland, south to northern and eastern China and winters in eastern and southern Africa (Naoroji 2006).

There is very little published data regarding the Amur Falcon in Gujarat. Naoroji (2006) has listed four sight records for Gujarat during autumn passage. Kazmierczak (2000) shows two records, Grimmett *et al.* (1998) show only one record, while Rasmussen & Anderton (2005) show its occurrence in southern Gujarat and southern Saurashtra areas during passage migration. Ali & Ripley (1978) did not show a single record for Gujarat. Ali (1954) did not record it during the surveys carried out in Gujarat. Dharmakumarsinhji (1955) also does not mention the bird.

Sightings

On 17 February 2011, I saw and photographed a single female Amur Falcon in the Little Rann of Kachchh area. On 24 April 2011, I again observed a female (Fig. 1), and a juvenile Amur Falcon near Navlakhi, Morbi. The sighting in February could be considered as autumn passage and the sighting in late April was indicative of the bird being seen during spring passage migration. Naoroji (2006) considered it to be only an autumn passage migrant to the Indian Subcontinent and states that, "From the scattered sight records it is difficult to build up a complete picture of the migration routes taken, especially the return migration route."

Amur Falcon has been observed and photographed recently from different areas in Gujarat. Sight records have been published in *Vihang*, and *Flamingo,* the local birdwatching journals published in Gujarati, and English respectively, and many photographs from Gujarat have been put up on birding and bird photography websites. I have tried to collect the published sight records **(Table 1, Fig. 2)**, and as many photographs as possible that have been posted on different websites, to bring up to date our knowledge about its status and distribution in Gujarat state.

Results

An analysis of the records shows that the earliest sighting is on 31 October, and the last, 7 May. Maximum records here are during the autumn migration from December to February. There are four records from late April–May, which suggest a spring migration. These records are the western-most sight records for India.

Recently, Meyburg and his team (*http://www.raptor-research.de*) have been tracking the migration of the Amur Falcon by satellite telemetry. The data has been published on the web (*http://www.kestreling.com*), and on other web based birding groups. The data relevant for Gujarat shows a satellite-tracked Amur Falcon was tracked crossing Gujarat during its spring migration. A rough migration path for Gujarat is shown in the map. It appears that the falcon travelled, roughly, in a straight line from the Gulf of Kachchh, eastward, up to north-eastern India. Co-incidentally, my sighting of the Amur Falcon in late April falls almost directly on the migration route as shown by the satellite-tracking project.

Table 1. Recorded sightings of Amur Falcon in Gujarat

St No	Place	Date	Observer
1	Naliya, Kutch (23°15'N 68°56'E)	7 May 2010	Gadhvi: INW
2	Positra Bay, Dwarka (22°23'N 69°10'E)	2 Feb 1996	Khacher 1997
3	Porbander area	Unknown	Mundkur in Naoroji 2006
	Near Madhavpur, Porbander (21°36'N 69°38'E)	16 Jan 1989	Mundkur & Pandya 1992
4	Gir National Park area (21°10'N 70°36'E)	Feb 1984	Mundkur & Pandya 1992
4	Gir National Park area	24–27 April 2010	Joshi 2010
5	Velavadar National Park, Bhavnagar (21°50' 72°06'E)	Unknown	Prakash in Naoroji 2006
5	Victoria Park, Bhavnagar	Nov 2008	Gadhvi 2009
6	Dharasana , Valsad District (20°36'N 72°54'E)	31 Oct 2009	Jat 2010
7	Dang Forest, Ahwa (20°45'N 73°41'E)	14 April 2008	Joshi 2010
8	Wadhwan, Surendranagar (22°43'N 71°38'E)	Nov 2010	Mori: INW
	Surendranagar	13 Nov 2010	Parmar 2011
9	Navlakhi, Near Morbi (22°58'N 70°27'E)	24 April 2011	Prasad Ganpule: author's sighting
10	Venasar area, Little Rann of Kachchh (23°20'N 71°15'E)	17 Feb 2011	Prasad Ganpule: author's sighting
11	Bajana area, Little Rann of Kachchh (23°12'N 71°34'E)	Feb 2008	Shah: INW
	Little Rann of Kachchh	Jan 2009	Shah: INW
	Little Rann of Kachchh	24 Dec 2008	Shah: OBI
	Little Rann of Kachchh	Jan 2011	Dutt: INW
	Little Rann of Kachchh	Jan 2011	Parekh: Delhibirdpix

Abbreviations: INW: http://indianaturewatch.net; OBI: http://orientalbirdimages.org; Delhibirdpix: http://groups.google.com/group/delhibirdpix

Conclusion

Looking at the available data and sightings it is clear that the Amur Falcon occurs in Gujarat during the autumn, as well as the spring migration. It is quite uncommon but not a vagrant. It can be said that a small number of these birds are regular passage migrants in Gujarat, though they are rarer during spring migration. Their distribution in Gujarat is widespread, with sightings from coastal areas, forest areas as well as from the desert areas, with the maximum sightings from the Little Rann of Kachchh area.

Acknowledgements

I thank Dr B. M. Parasharya for his help in the preparation of this note.

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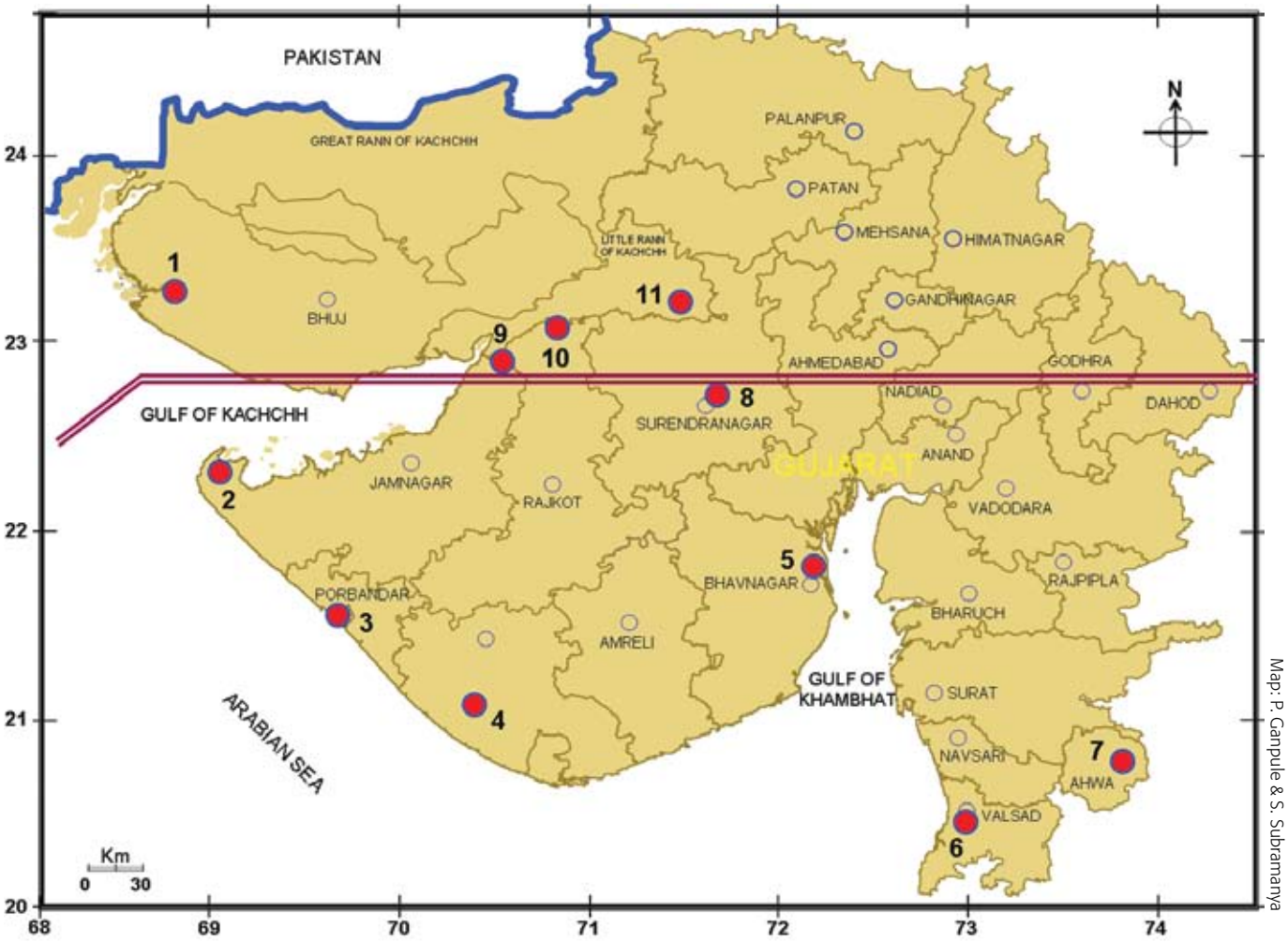
www.kestreling.com For the map showing the details of the passage migration route of the Amur Falcon from South Africa to its breeding grounds in Russia. [Accessed on 12 May 2011.]



Map: P. Ganpule & S. Subramanya

Fig. 2. Sightings of Amur Falcon Falco amurensis in Gujarat. "=="Approximate migration path of satellite tracked Amur Falcon through Gujarat.

Spotted Redshank *Tringa erythropus* catching fish in association with Great White Pelican *Pelecanus onocrotalus* in Rajasthan

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Spotted Redshank *Tringa erythropus* feeding in association with Great White Pelican *Pelecanus onocrotalus*. Photo: Harkirat Singh Sangha

Chhatrasagar (26º06′38″N 74º01′15″E) is an ephemeral lake at Nimaj, Pali district, Rajasthan. On 6 March 2009 we were watching birds from its high embankment. There were not many birds in the drying waterbody but *c.* 350 Great White Pelicans *Pelecanus onocrotalus* resting on the edge of the lake attracted our attention. Around 1400 hrs *c.* 30 pelicans entered water and started hunting fish in the lake. Soon afterwards eight Spotted Redshank *Tringa erythropus* were noticed swimming around these pelicans. They were moving with the pelicans either on one side or behind them. A few times they were observed swimming ahead of the pelicans and once or twice in their midst. While the pelicans were in a compact flock most of the time, the sandpipers were loosely scattered around them.

Swimming confidently, with head and neck almost immersed in water, the redshanks appeared to be working in a coordinated manner, perhaps hunting fish and/or invertebrates disturbed by the concerted action of the pelicans. We observed them for more than 20 mins. When not able to match the speed of the swimming pelicans, they took off two or three times and landed near the hunting pelicans to resume foraging.

While feeding behaviour of Spotted Redshank is typical of the genus, greater attenuation of form and bill gives added delicacy to all actions and it is able to forage in deeper water than any other *Tringa* species (Cramp & Simmons 1983; Colston & Burton 1988). Although their feet are not webbed, many waders can swim and several habitually do so (Hammond & Pearson 1994). Probably no other *Tringa* species swims as frequently, while foraging, as does Spotted Redshank, and virtually all of its foraging is done while standing or swimming in water rather than on muddy or sandy substrates (Johnsgard 1981).

The large *Tringa* sandpipers such as Spotted Redshank, Common Greenshank *T. nebularia*, and Marsh Sandpiper *T. stagnatilis* feed on small invertebrates, but during migration, and on wintering grounds they are prone to operate in large flocks that make fairly synchronised movements to drive together, and feed on schools of small fish in shallow water (del Hoyo *et al* 1996).

While Common Redshanks *T. totanus* periodically take a few small fishes measuring 2.5–4.0 cm in length (Nethersole-Thompson & Nethersole-Thompson 1986), Spotted Redshank is known to eat fishes up to 6–7 cm long (del Hoyo *et al.* 1996; van de Kam *et al.* 2004).

Spotted Redshank is known to forage socially in dense flocks of conspecifics, or mixed with other tringines, e.g., Common Greenshank, and may appear to be working in a co-ordinated way (del Hoyo *et al* 1996). In the Indian Subcontinent the species has been observed feeding in fairly deep open water and freely up-ending like ducks to reach the bottom mud (Ali & Ripley 1980). At Ghauspur (Pakistan) a closely packed flock was observed feeding in shallow water (Roberts 1991). Inglis (1903) recorded one bird with its 'gullet full of small fish' in Madhubani, Darbhanga district, Bihar.

Although feeding association with Mallard *Anas platyrhynchos* has been recorded (Cramp & Simmons 1983), we have not found any reference to their feeding association with Great White Pelican. This association appears to be an example of facultative commensalism.

Acknowledgements

Nandi Vardhan and Harsh Vardhan of Nimaj were helpful, hospitable, and generous with their time during our brief stay at Chhatrasagar.

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Wryneck *Jynx torquilla* feeding on bird in Sundarbans, West Bengal, India

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Fig. 1. Wryneck *Jynx torquilla* with a headless dead bird, possibly an Oriental Magpie-Robin *Copsychus saularis*.

An extensive perusal of literature shows that the diet of the Wryneck *Jynx torquilla* (Piciformes: Picidae) comprises, almost exclusively, ants, ant larvae and pupae, spiders, small coleopterans, and occasionally, berries (Terres 1980; Winkler *et al*.1995). There are also rare reports of Wryneck feeding on a terrestrial gastropod, *Limacus flavus*, and tadpoles (Allen 2004; Burnie *et al*. 2007). Despite being a member of the woodpecker family, Wrynecks seem to feed more on the ground than on trees, but have also been known to pick insects off branches and bark crevices (Ali & Ripley 1983). During a recent visit to the Indian Sundarbans, West Bengal, from 20–26 January 2010, we observed an unusual feeding behaviour of Wryneck that is reported below:

On 25 January 2010, in the early evening at about 1630 hrs, in the Tiger Camp Resort at Sathjalia Island, we spotted a Wryneck sitting very still on a lamp-post. This species has been listed as an uncommon winter migrant in the Indian Sundarbans (Chowdhury & Roy 2005). While one of us (NVM) quietly approached the bird to take a photograph, we were distracted by an agitated skirmish, and a peculiar shriek, in the bushes nearby. We searched the bushes and spotted a second Wryneck, sitting on a low branch, holding a smaller head-less dead bird, in its toes **(Fig. 1)**. The dead bird was black-and-white in colour, and we could see a prominent tail. When we attempted to get closer for a better photograph, the startled Wryneck transferred the bird to its beak and flew to a higher branch in another tree where it started feeding upon the carcass. It held the bird pinned under its toes and systematically plucked its feathers in small clumps to get to the body **(Fig. 2)**. Its feeding method was very much like that of small raptors and carrion consumers. Our observations suggest that this was a practised, natural feeding activity. We continued to observe the feeding for another five minutes before it flew away still clutching the remaining carcass. From the discarded black and white feathers, we believe that the dead bird was an Oriental Magpie-Robin *Copsychus saularis*, very common in that area.

Since the carcass was head-less when we first saw it, it is possible that the bird was not alive when the Wryneck picked it. This is why we have not deliberately used the term "prey" here, crediting this Wryneck the status of a "predator" in the strict sense. Wryneck is certainly a predator of ants, and other invertebrates, but it could also be an opportunistic scavenger that feeds on dead animals including dead birds. Are Wrynecks capable of hunting small birds? Was the skirmish we heard in the bush, before sighting the bird, the sound of its physically hunting the Oriental Magpie-Robin that resulted in the removal of the latter's head, or was it the result of an encounter between scavengers vying for the same carcass? We did look for the decapitated head, but could not locate it; nor did we spot another potential scavenger in the area.

Wrynecks are noisy at their nest sites and have also been known to evict other hole-nesting birds (ARKive 2010). Do they kill the evicted bird, or it's nestling, and secure a meal in the process? Our observations, in addition to reporting an unusual feeding behaviour, raise several questions about the food and feeding habits of Wryneck (Mermod *et al*. 2009).

Acknowledgements

We thank Dr Prasanna Sriya, and Professor Reginald Victor, who accompanied us during this field trip, and the latter also for his assistance in writing this short note.

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Fig. 2. Wryneck *Jynx torquilla* with a bunch of plucked feathers in its beak.

Unusual nesting site of the Red-wattled Lapwing *Vanellus indicus* in human habitation in Jaipur, Rajasthan

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Sangha, H. S. 2011. Unusual nesting site of the Red-wattled Lapwing *Vanellus indicus* in human habitation in Jaipur, Rajasthan. *Indian BIRDS* 7 (2): 49.
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Manuscript received on 22 February 2010.

The nest of Red-wattled Lapwing *Vanellus indicus* is a natural depression or scrape in the ground sometimes lined with mud pellets or goats' droppings and prepared with bits of cow dung or pebbles and sited on waste or stony land, fallow fields, dry bed of village tanks, and shingle banks or islets in rivers (Ali & Ripley 1980).

The species is also known to nest at unusual sites like the flat concrete roof of a residential bungalow in New Delhi (Ali & Ripley 1980), and on the ballast of railway lines, so close to the rails that the rail-boards of carriages actually pass over the nests (Baker 1929; McCann 1941).

Notes about the nesting on rooftops have accumulated over the years, and various reasons have been offered to explain the phenomenon (Gole & Mundkur 1980; Tehsin & Lokhandwala 1983; Patnaik 1980; Mundkur 1985). However, this habit is not new (Baker 1935).

Recently I discovered an unusual nest of the species near my residence in Jaipur (Rajasthan, India). This nest was on top of a stone boundary wall, and birds were incubating on 29 June 2009.

The nest was in an irregular depression, *c.* 30 cm at its maximum width, on top of the *c.*1.60 m high wall. The birds had actually filled the uneven depression with pieces of pebbles, grit, and limestone (*c.* 66) to create a somewhat flat surface in the depression. It is difficult to say why the bird chose this site to lay eggs even though fairly suitable open area was available in the vicinity, and the species has been observed breeding successfully on open ground.

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L: The nest with four eggs; R: Bird incubating.

Harkirat Singh Sangha

Western Crowned Warbler *Phylloscopus occipitalis* in Sitamata Wildlife Sanctuary, southern Rajasthan

Harkirat Singh Sangha & Gobind Sagar Bhardwaj

Sangha, H. S., & Bhardwaj, G. S., 2011. Western Crowned Warbler *Phylloscopus occipitalis* in Sitamata Wildlife Sanctuary, southern Rajasthan. *Indian BIRDS* 7 (2): 50.

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While birding near Sitabari / Valmiki Ashram (24°15'N 74°30'E) in Sitamata Wildlife Sanctuary, Chittorgarh district in southern Rajasthan on 21 December 2009 we noticed a comparatively large warbler foraging in the middle canopy, but our view was heavily criss-crossed with twigs and leaves, and the bird was constantly flitting back and forth, frantically feeding and picking off insects as it went. Eventually it flew towards us and stopped for a brief second, and allowed us to see it better. GSB managed to take photograph it during that brief period.

We looked at the results on the camera monitor and were quite pleased to identify it as Western Crowned Warbler *Phylloscopus occipitalis*. Later, this bird, and at least four more birds, in different parts of the sanctuary, gave clear views to us during the day. The species seemed to prefer denser parts of forest along the dry streambed. We realised the significance of this sighting in the evening when we consulted the available literature, in the forest rest house at Bansi. We found it was recorded only from Bharatpur in Rajasthan (Grimmett *et al.* 1998; Kazmierczak 2000).

Gobind Sagar Bhardwaj

The most obvious features of the first bird, which was photographed by GSB, were two yellowish wing-bars, crown stripe, light grey-brown legs, and conspicuous pinkish lower mandible (looked yellowish-orange in good light).

After better views and results on camera monitor, we were also able to discern that the bird had conspicuously long supercilia extending to nape, yellower before and above eye, whiter towards nape; lores and eye stripe dark-grey (looked almost black in bad light); cheeks and ear-coverts faintly yellowish. The upper parts had a greyish-green cast and the under parts and vent were essentially white with a grey wash to the breast and flanks. Two yellowish wing bars and the head pattern of a greyish-white crown stripe and two broad dusky olive coronal bands were very distinctive on the bird.

Western Crowned Warblers breed in the western Himalayas: Safed Koh, Chitral and Swat, and Baltistan, east to Garhwal and Kumaon, and winter in the Indian peninsula from southern Gujarat (Surat Dangs) and north-western Maharashtra (Dhulia), Madhya Pradesh (Raipur), and the Eastern Ghats (Visakhapatnam) south to the southern-most hills; more common on the western side of the peninsula (Ali & Ripley 1988) but winter distribution elsewhere is uncertain (Grimmett *et al.* 1998).

From the available literature it is not possible to determine its status in Rajasthan. None of the 20 specimens in the collection of Bombay Natural History Society is from Rajasthan (Abdulali 1986). The distribution map in Rasmussen & Anderton (2005) indicates that it is a passage migrant through eastern and southern Rajasthan but does not refer to any record. Kazmierczak (2000) shows only isolated record(s) from Bharatpur during passage. Although Ali & Ripley (1988) note that it is recorded on passage in Rajasthan, and refer to, "records from Rajasthan on 22 July," they have not indicated the location of these records in the state. While listing it in, "the list of birds ringed from Bharatpur bird sanctuary," Saxena (1975) has erroneously ascribed its status as resident in Bharatpur.

Thus the above sightings of the species in Sitamata Wildlife Sanctuary constitute the first wintering record of the species in Rajasthan. It is possible that Western Crowned Warbler winters more regularly in other suitable parts of southern Rajasthan and further reports are encouraged. It has been seen as late as December in Delhi and it has been suggested that odd individuals might winter there (Harvey et al. 2006), so a similar situation might pertain to Rajasthan.

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Dusky striped squirrel *Funambulus sublineatus* as a part of mixed-species bird flocks

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Vivek, R., Agarwal, P. R., Sreekar, R., 2011. Dusky Striped Squirrel *Funambulus sublineatus* as a part of mixed-species bird flocks. *Indian BIRDS* 7 (2): 51.

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Manuscript received on 9 October 2010.

Fig. 2. Grey-headed Flycatcher *Culicicapa ceylonensis*.

Mixed-species bird flock composition and structure changes in response to forest habitats and geographical locations (Shridhar *et al*. 2009). It has been hypothesized that mixed flocks evolve due to the increased benefits of foraging and reduced costs of predation (Greenberg 2000; Sridhar *et al*. 2009; Oommen & Shanker 2009). On certain occasions, small mammals form part of the mixed-species bird flocks, which are a characteristic feature in South, and South-East Asia (Nimnuan *et al*. 2004; Goodale *et al*. 2009). However, not many reports are available on the association of small mammals like treeshrews, squirrels with the avian component of mixed flocks from India (Goodale *et al*. 2009; Sridhar & Sankar 2008; Oomen & Shanker 2009). In the present note, we report the presence of dusky striped squirrel *Funambulus sublineatus* **(Fig. 1)** in mixed-species insectivorous bird flocks in the selection-felled forests of Kodayar (8°32'N 77°21'E; 1300 m above sea level) in Kalakad Mundanturai Tiger Reserve (KMTR), Tamil Nadu, India.

On the afternoon of 20 August 2010, while walking through a riparian forest fragment habitat in Upper Kodayar, a mixed-species insectivorous bird flock was sighted, which was led by a dusky striped squirrel. The flock comprised individuals of Quaker Tit-Babbler *Alcippe poioicephala*, Grey-headed Flycatcher *Culicicapa ceylonensis* **(Fig. 2)**, and a Greater Racket-tailed Drongo *Dicrurus paradiseus* led by a dusky striped squirrel. The flock was spread in the under-storey and mid-storey regions. The birds fed on the insects flushed by the squirrel as it gleaned on tree bark. We observed the flock for around ten minutes, till it disappeared in the woods.

One of us (RV) has been studying bird communities in this area and has observed the dusky striped squirrel in mixed-species flocks on 23 different occasions. Of the observed mixed foraging associations between squirrels, and other bird species, bark gleaning insectivorous species such as Velvet-fronted Nuthatch *Sitta frontalis*, and Common Flameback *Dinopium javanense* were detected only on two of those occasions. The Quaker Tit-Babbler and Grey-headed Flycatcher were detected in all the flocks. The Greater Racket-tailed Drongo was a participant on 16 occasions. A total of 17 species were associated with these flocks.

These observations suggest that the mixed flocks probably associate with the dusky striped squirrel in the absence of bark-gleaners like woodpeckers and nuthatches, which form an important part of a mixed-species insectivorous bird flock in the region. We observed dusky striped squirrel being at the forefront and followed by the birds. However, previous studies show that the Quaker Tit-Babbler is the leader species in mixed-species flocks (Goodale *et al*. 2009; Sridhar & Sankar 2008), which probably attracted other species by calling. It might be possible that Quaker Tit-Babblers formed flocks and led them to exploit the foraging dusky striped squirrel by following it.

Research efforts are needed to study the behaviour and role of the dusky striped squirrels in mixed-species flocks and elucidate species-specific associations and assessment of interactions between all members of these flocks.

Fig. 1. Dusky striped squirrel *Funambulus sublineatus*.

Acknowledgments

We would like to thank Dr T. Ganesh and the 'Academy for Conservation Sciences and Sustainability studies', ATREE for organising the certificate course and funding, Agasthyamalai Community Conservation Center, ATREE for providing logistic support. The Tamil Nadu Forest Department and Tamil Nadu Electricity Board for permission and logistics. RV would like to thank the Department of Science and Technology (GOI) and NORAGRIC (UMB) for support.

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Rose-ringed Parakeet *Psittacula krameri* feeding on an old beehive

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Manuscript received on 11 January 2011.

The Rose-ringed Parakeet *Psittacula krameri* is a common and widely occurring bird inhabiting all kinds of habitats in India (Rasmussen & Anderton 2005). It is seen in good numbers in all parts of Gujarat also.

On 21 December 2010, at around 1100 hrs, near my house in Morbi, Rajkot district, Gujarat (22°49'N, 70°50'E), I observed a flock of four Rose-ringed Parakeets feeding on an old and abandoned beehive. This beehive is constructed in the same tree every year probably by the giant honey bee *Apis dorsata*, which is known to make large beehives in trees, buildings, *etc*. The beehive is abandoned annually at the beginning of winter. The bees return in late February or early March and reoccupy/rebuild it.

The four Rose-ringed Parakeets were perched on the abandoned beehive and were breaking it apart with their beaks. They would then swallow a bit of the beeswax, and in their usual fashion, waste a large part of it. They continued doing this for about ten minutes and then flew away. I was able to take some photographs of this behaviour for one bird **(Fig. 1)**.

Fig. 1. Rose-ringed Parakeet *Psittacula krameri* feeding on wax from beehive.

I believe the birds were, either eating the wax, or searching for, and eating, residual honey in the comb. Though the beehive is repaired/constructed every year, this was the first time I had observed the Rose-ringed Parakeets eating the beeswax.

The eating of beeswax by birds is well documented. In a study conducted in Africa, many species of birds were observed feeding at an artificial beeswax 'feeding station' with the Common Bulbul *Pycnonotus barbatus* feeding regularly on the beeswax (Horne & Short 1990). Many seabirds, and Honeyguides (Indicatoridae) are also known to feed on wax. (Horne & Short 1990). In England, Green Woodpecker *Picus viridis*, Great Spotted Woodpecker *Dendrocopos major*, and Nuthatch *Sitta europea* have been observed pecking at beehives (Micklewright 1998).

The Rose-ringed Parakeet is particularly known for its habit of wasting far more than what it actually consumes (Ali 2002). According to Ali & Ripley (1981), these birds eat fruits, cereals, grains, flower petals, seeds, and nectar of various flowers. These birds are known to eat various seeds (Chaturvedi 1995), leaves of *Salvadora persica* (Balasubramanian 1989) and even shoots, bark, and mature phyllodes of *Acacia auriculiformis* (Tessier-Yandell 1976).

However, the Rose-ringed Parakeet is not known to eat beeswax from abandoned beehives, and this could be considered an addition to its varied diet.

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Oriental White-eye *Zosterops palpebrosus* and Purple Sunbird *Nectarinia asiatica* feeding on yellow oleander *Thevetia peruviana*

Janaki Turaga

Turaga, J., 2011. Oriental White-eye Zosterops palpebrosus and Purple Sunbird *Nectarinia asiatica* feeding on yellow oleander *Thevetia peruviana Indian BIRDS* 7 (2): 53.
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Yellow oleander *Thevetia peruviana* is an alien invasive species introduced purportedly from Tropical America (Reddy *et al.* 2008). Its native range includes the West Indies, and Mexico's dry and hot areas. It has found its range extended as an ornamental plant in the tropics (Krishen 2006). In India, its date and nature of introduction is unknown. Its primary promoters in India are the urban horticulturists and they use it extensively to 'green' urban areas, and it makes a pretty picture with its white, peach and yellow flowers lining the roads of our cities and towns. Its range is not confined to urban areas, but extends to rural areas of India. It is able to thrive in poor soils. Cattle do not feed on the leaves, enabling its survival, and which is one of the reasons why horticulturists favour this plant. Though, considered as an alien invasive species, its impact on the ecosystems that it invades is not much understood. It is one of the known poisonous plants of the world and all its parts are poisonous. But surprisingly, some birds have been observed to feed on its nectar and fruits.

A few of a flock of approximately ten Oriental White-eyes *Zosterops palpebrosus* were observed feeding on the unripe fruit which was still on the tree, of the poisonous yellow oleander tree on 7 December 2009. The yellow oleander trees were avenue trees in Palam Vihar, a residential colony in Gurgaon. This is an addition to the list of birds reported to have fruits of yellow oleander as part of their diet—Asian Koel *Eudynamys scolopacea* (Krishnan 1952; Kannan 1992), Indian Grey Hornbill *Ocyceros birostris* (Neelakantan 1953), Common Myna *Acridotheres tristis*, (Krishnan 1954), Lesser Coucal *Centropus bengalensis* (Raj 1963), Red-vented Bulbul *Pycnonotus cafer* (Raj 1960), White-headed Babbler *Turdoides affinis*, White-browed Bulbul *P. luteolus* (Raj 1960), Red-whiskered Bulbul *P. jocosus* (Raj 1963), Brahminy Starling *Sturnus pagodarum* (Raj 1963), and domestic fowl (Rajasingh & Rajasingh 1971). The ground below was littered with half eaten fruit indicating that the birds avidly ate the fruits. The half-eaten fruit litter was very like that of parakeets' feast of guava fruits in an orchard. Purple Sunbirds *Nectarinia asiatica* were also observed feasting on the nectar of flowers of yellow oleander.

It is well known that all parts of yellow oleander are poisonous to humans. What are not known are the immune properties of these birds *vis-á-vis* the poison contained in the fruits and flowers of yellow oleander and whether the poison is neutralised by ingestion of a neutralising agent. Also, whether the fruits of the yellow oleander are an integral part of the regular diet of these birds, or only taken during times of food scarcity. It is also not clear whether this is a phenomenon confined only to areas where the tree has been widely introduced by civic agencies in greening areas, especially urban, which could imply that given its relatively recent addition to the local ecosystems, it has increased the food diversity and security, especially, of urban populations of Oriental White-eyes. Further, it is also not known whether there is any impact of the toxins on predators of birds that have fed on the fruits and flower nectar of yellow oleander.

Acknowledgements

I thank Dr V. Santharam for his valuable inputs and guidance.

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The dates of seven new taxa described by W. E. Brooks (*Certhia Hodgsoni, Sitta Cashmirensis, Dumeticola major, Horites [sic] Pallidus, Phylloscopus Tytleri, Motacilla Cashmirensis*, and *Alauda Guttata*)

Aasheesh Pittie

Pittie, A., 2010. The dates of seven new taxa described by W. E. Brooks (*Certhia Hodgsoni, Sitta Cashmirensis, Dumeticola major, Horites [sic] Pallidus, Phylloscopus Tytleri, Motacilla Cashmirensis*, and *Alauda Guttata*). *Indian BIRDS* 7 (2): 54–55.
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In the Nineteenth Century, ornithologists from South Asia used the *Journal of the Asiatic Society of Bengal* (*JASB*) to publish descriptions of many new bird taxa. The *JASB* was however fraught with problems like financial constraints, and lack of editors, which resulted in delays in publication. Consequently, two dates are sometimes cited for the same description—one, the volume year, and the other, the year in which the *JASB* was actually published, or publication year. Sometimes, papers were read out in the monthly committee meetings of the Society and published as part of the dated minutes in the *JASB*. However, after 1865, the minutes were published separately in the *Proceedings of the Asiatic Society of Bengal* (Mitra 1885). This caused additional confusion, as some taxa seemed to be described as new in both, the *JASB*, and the *Proceedings*.

The ninth paper tabled at the 6 September 1871 meeting of the Asiatic Society of Bengal was by the Civil Engineer (Railways) of Etawah, William Edwin Brooks. It noticed eight avian taxa from 'Cashmir' [=Jammu & Kashmir], seven of which were considered 'new species' at the time (Brooks 1871; Table 1). Of these, two taxa, namely, *Motacilla Cashmirensis*, and *Alauda Guttata* have since become part of the synonymy of other taxa (Table 2). The remaining five taxa are still in use, but various authorities have recorded their dates of publication inconsistently, over the years—except for that of *Sitta cashmirensis* (Table 1).

At the end of Brooks's paper was an editorial note stating, "This paper will be published in full in the 1st number of the Natural History Part of the Journal for 1872," (p. 210). The paper was indeed published in the *Journal* of the Society (Brooks 1872b) in the first issue of Part II[1] of Volume 41, which dates from 1 May 1872, and this has usually been cited in subsequent ornithological works (see Table 2). However, the correct citation for these taxa is from the *Proceedings* (Brooks 1871).

Certhia Hodgsoni, *Sitta Cashmirensis*, *Dumeticola major*, *Horites* [*sic*] *pallidus*, and *Phylloscopus Tytleri*, are all valid new names with valid descriptions as published by Brooks (1871), and fulfill the requirements of the Principle of Priority laid down in

Table 1. Taxa described by Brooks (1871), and their year of publication given in various sources (Correct dating is in bold font)

Author(s)	*Certhia Hodgsoni*	*Sitta Cashmirensis*	*Dumeticola major*	*Horites* [*sic*] *pallidus*	*Phylloscopus Tytleri*	*Motacilla Cashmirensis*	Alauda Guttata
Oates 1889[2], 1890[3]	1872b	1871	1872b	1872b	1872a	1871	1872b
Baker 1922[4], 1924, 1926, 1930[5]	1872b	1871	1872b	1872b	1872a	1871	1872b
Mayr & Greenway 1960	–	–	–	–	–	–	1873[6]
Greenway 1967a	–	1871	–	–	–	–	–
Greenway 1967b	1873[7]	–	–	–	–	–	–
Ripley 1982	1872b	1871	1871	1872b	1872a	–	1872b
Watson *et al.* 1986	–	–	1872b	1872b	1872a	–	–
Ali & Ripley 1987	1872b	1871	1871	1872b	1872a	–	1872b
Dickinson *et al.* 2001	–	–	–	–	–	–	1871
Dickinson 2003	1873[8]	1871	1872b	1871	1872a	–	–
Bairlein 2006	–	–	1872b	1871	1872a?[9]	–	–
Harrap 2008b, a	1871[10]	1871				–	–
Dickinson 2008	1871	–	1871	–	1871	–	–

1 Part II comprised four issues in 'Natural Science' published between May and December 1872. The dates of issue of Part I are not known to me. The dates of publication of Part II are printed below the 'List of contributors,' after the title page.
2 Oates used an incorrect subsequent spelling: *Sitta kashmirensis* (1: 303).
3 Oates used an incorrect subsequent spelling in the synonymy of *Motacilla personata*: *Motacilla cashmeriensis* (2: 290).
4 Baker used an incorrect subsequent spelling: *Sitta kashmiriensis* (1: 128).
5 Baker used an incorrect subsequent spelling in the synonymy of *Motacilla alba personata*: *Motacilla cashmeriensis* (7: 260).
6 This is an erroneous date for Brooks 1872b.
7 This is an erroneous date for Brooks 1872b.
8 Wrong year. No reference cited.
9 Bairlein does not cite the source publication.
10 del Hoyo et al. (2008) quote the wrong reference: "Brooks, W.E. (1871). *J. Asiatic Soc. Bengal* 41 (1872): 74 [*Certhia hodgsoni*]" (p. 799).

Table 2. Recommended citations of taxa described by Brooks (1871)

Citation in Brooks 1871	Current Usage	Source	Recommended citation
Certhia Hodgsoni, p. 209	*Certhia familiaris hodgsoni*	Harrap 2008b	*Certhia familiaris hodgsoni* W.E. Brooks, 1871, *Proc. Asiatic Soc. Bengal* p. 209.
Sitta Cashmirensis, p. 209	*Sitta cashmirensis*	Harrap 2008a	*Sitta cashmirensis* W.E. Brooks, 1871, *Proc. Asiatic Soc. Bengal* p. 209.
Dumeticola major, p. 210	*Bradypterus major*	Bairlein 2006	*Bradypterus major* (W.E. Brooks, 1871), *Proc. Asiatic Soc. Bengal* p. 210.
Horites [*sic*] *Pallidus*, p. 210	*Cettia fortipes pallida*	Bairlein 2006	*Cettia fortipes pallida* (W.E. Brooks, 1871), *Proc. Asiatic Soc. Bengal* p. 210.
Phylloscopus Tytleri, p. 210	*Phylloscopus tytleri*	Bairlein 2006	*Phylloscopus tytleri* W.E. Brooks, 1871, *Proc. Asiatic Soc. Bengal* p. 210.
Motacilla Cashmirensis, p. 210	*Motacilla alba personata*	Sharpe 1885 Baker 1930	*Motacilla alba personata* Gould, 1861, *Birds of Asia*, pt. xiii, vol. iv., pl. 63.
Alauda Guttata, p. 210	*Alauda gulgula lhamarum*	de Juana *et al*. 2004	*Alauda gulgula lhamarum* R. Meinertzhagen & A. Meinertzhagen, 1926, *Bull. Brit. Orn. Cl.* 46: 100.

Article 23 of the International Code of Zoological Nomenclature (ICZN 1999). Therefore they have precedence over Brooks (1872a, b).

It is recommended that future citations follow column 4 in Table 2.

To further learn how *Alauda guttata* was placed in synonymy (Table 2) please see Dickinson *et al.* (2001).

Acknowledgements

I thank E. C. Dickinson for pointing out this anomaly to me, literally putting the facts on my plate, and commenting on earlier drafts; I also thank Dharan, *etc*., of BNHS library, Bombay, and Amar Bhagat, and Harsh Bajoria in Kolkata for help with publications of the Asiatic Society.

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Hume-*isms*

"So few birds, comparatively speaking, are named after ladies, that one grudges the loss of even one of these delicate tributes of affection, but still I much fear that Maria's *Pomatorhinus* must disappear into the shadow-realms of synonyms."
[*Stray Feathers* 5: 136, wherein stating that Blyth's *P. albogularis* (1855) was similar to Lord Walden's *P. mariae* (1875).]

Crested Serpent-Eagle *Spilornis cheela* preying on termites (Termitidae) in Shoolpaneshwar Wildlife Sanctuary, Gujarat, India

Anirudhkumar Vasava

Vasava, A., 2011. Crested Serpent-Eagle *Spilornis cheela* preying on termites (Termitidae) in Shoolpaneshwar Wildlife Sanctuary, Gujarat, India. *Indian BIRDS* 7 (X): 56.
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Manuscript received on 20 January 2011.

The Crested Serpent-Eagle *Spilornis cheela* has a wide-ranging diet comprising snakes, lizards, frogs, toads, small mammals, and birds (Naoroji & Monga 1984; Ali & Ripley 1987; Ferguson-Lees & Christie 2001; Waghray et al. 2003; Naoroji 2006). It occasionally supplements this diet with tree frogs, grubs, fish, and crabs (Ferguson & Christie 2001; Naoroji 2006). However, reports of it feeding on small insects are scarce (Naoroji 2006).

On 10 July 2009, at 1700 hrs I was in Shoolpaneshwar Wildlife Sanctuary (21°41'4.69"N 73°47'54.00"E) in Narmada district, Gujarat, India. While driving back from the Malsamot area I spotted a Crested Serpent-Eagle on the ground. It was about 130 m away from me, and was hopping around trying to catch, and feed upon some swarming termites (Termitidae). It also perched on low branches and swooped down to catch them as they flew about. The monsoon had just begun in western India and alates of these termites were emerging from the ground for their annual mating session. I observed the bird feeding for nearly 15 min., after which it flew away. Though Naoroji (2006) does list termites in the diet of the Crested Serpent Eagle, I present this observation, as it is an uncommon occurrence.

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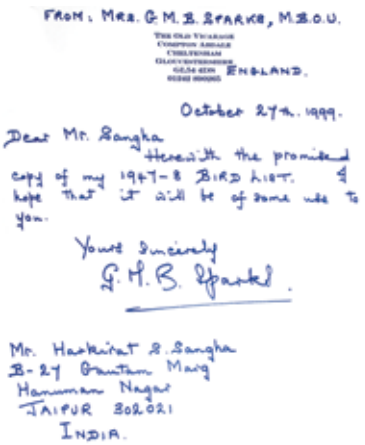
Letters to the Editor

Dear Sir,

I read the lead article on Gwendolen (Wendy) Mary Beryl Sparks in the *Indian BIRDS* volume 6 no. 6 with great interest, but also with a tinge of nostalgia, for I knew Wendy, in a way, and we corresponded for a few months by snail mail during 1998–1999. The article prompted me to pull out our old letters. She had graciously responded, to my appeal in the *Oriental Bird Club Bulletin* for records of Sociable Lapwing *Vanellus gregarious* from the Indian Subcontinent, by writing a detailed and formal letter on 26 August 1998. Interestingly she had recorded a large flock *c.* 200 Sociable Lapwings as early as 3 August on the golf course near Vijay Vilas Palace, Mandvi. In the concluding paragraph of the letter she advised me to contact M. K. S. Himmatsinhji if I was not, "already in correspondence with Himmatsinji Jadeja regarding his own records, and older records from Kutch."


FROM: MRS. G.M.B. SPARKS, M.B.O.U.
ENGLAND.
October 27th. 1999.
Dear Mr. Sangha
Herewith the promised copy of my 1947-8 BIRD LIST. I hope that it will be of some use to you.
Yours Sincerely
G.M.B. Sparks
Mr. Harkirat S. Sangha
B-27 Gautam Marg
Hanuman Nagar
JAIPUR 302021
INDIA.

In one of her letters to me she expressed her feelings and views quite freely. She wanted to send me the list of waders seen by her in India by going through her, "bird notes of 1947–8". However, "in the event this proved to be much more laborious," than she had anticipated and, therefore, promised to send me copy of her, "Indian Sub-continent bird lists," very soon. She added that she'd better get on with it, as at her advanced age, "one does not know how much time one has got. I am already eighty-two years old!"

Before sending her, "Indian Sub-continent bird lists," to me she informed me that her main list was in diary form, in chronological order, but lamented, "there were not many books available at the time," and, "Stuart Baker left much to be desired as a Field Guide!"

In her last letter to me, 27 October 1999, which was hand written in blue ink, matching the colour of the letterhead, she enclosed, "the promised copy," of her "1947–8 BIRD LIST."

Incidentally, while I was corresponding with Wendy Sparks I was also corresponding with Himmatsinhji of Bhuj. When I had asked for his views regarding the rather early arrival dates of Sociable Lapwing mentioned by Wendy Sparks, Himmatsinhji very promptly sent a handwritten letter (most letters were typewritten), and informed me that, "she had taken meticulous notes of the birds she had seen. In fact she was good at identification." He also shared some personal information about himself, adding, "she encouraged me a great deal in my hobby of birdwatching."

– Harkirat Singh Sangha
B-27, Gautam Marg, Hanuman Nagar, Jaipur 302021, Rajasthan, India.

Review

Nightjars, potoos, frogmouths, oilbird and owlet-nightjars of the world

Author: Nigel Cleere

ISBN: 978-1-903657-07-2

Pages: 464

Colour photos: 590

Cover: Hardback with dust jacket

Dimensions: 176mm x 250mm

Publisher: WILDGUIDES

Supporting: BirdLife International's Preventing Extinctions Programme

In forty years of tramping over India's wilderness, no order of birds has caused me so much consternation (and indeed joy) than the cryptically colored *Caprimulgiformes*—the nightjars (Caprimulgidae), and allied species. By day these nocturnal, hardly-seen, obscurely known species lurk hidden in tropical forests, or grassland, pretending to be tree-stumps, or leaf litter. To compound their esoteric behaviour, they all look similar, making them almost as difficult to identify as leaf-warblers (*Phylloscopus* spp.).

Therefore Nigel Cleere's *Nightjars of the World* comes as a great relief to those of us who have lain awake all night trying to figure out which nightjar we had a fleeting glimpse of. This path-breaking book covers 135 species of nightjars and 17 species of frogmouths (Podargidae). Even though the Indian birdwatcher, has to deal with only 11 nightjars and two frogmouths, I would strongly urge, those who can afford it, to buy it for the sheer pleasure of holding such a worthy tome.

Caprimulgus means 'goat-sucker' in Greek, as the ancients thought these birds, fed off the udders of livestock under cover of darkness, and so spread disease amongst their herds. The Indian birder, for whom this review is meant, has no such illusions, being occupied by the big question of how to differentiate between the 'Indian' and the 'Grey'. In recent times my friend Pam Rasmussen has (quite rightly) tried to bring some 'sanity' amongst this already confusing family. She has split the Large-tailed– earlier called Long-tailed and created Jerdon's of the southern peninsula. The Andaman Nightjar has been promoted to full species status, but beware; there still exists an 'Indian Jungle Nightjar' as well as a 'Little Indian Nightjar.' All this goes to prove how essential Cleere's book is!

The two frogmouths, found in India, are much easier to identify, only because they exist in separate parts of India, with the Sri Lankan Frogmouth being a peninsular bird, and Hodgson's, having scattered records from Eaglenest, Namdapha, and Bhutan in north-eastern India.

Most of us see nightjars in the murky evening light, or occasionally stumble upon them sitting motionless during the day, but they rarely afford a good look. Using vocalisation in identifying these birds is perhaps the best way to identify these birds and in the past most birders have depended on the calls for positive identification. Having said that, for nine species of (non-Indian) nightjars, vocalizations are yet to be recorded!

Cleere's book starts with a long and detailed introduction. His aim is "to present an easy-to-use guide to help identify nightjars and related birds by providing a tool to help identify [this family] … it is hoped to stimulate greater interest in finding, observing, and studying these phantoms of the night." The introduction, with broad distribution maps, discusses, *inter alia*, plumage and structure, the challenges of taxonomy and biology. The foreword by conservation expert Nigel Collar too makes for fascinating reading.

Over 550 photographs, (taken by 190 photographers) add great value to the book. As Collar says in his foreword, "artwork usually trumps photography to illustrate field guides and handbooks … but, on the other hand, if a publisher is so generous as to provide multiple shots of the species in question, a whole new dimension to the business of field identification opens up". Every species is illustrated, mostly with images of live birds, but in case where such photographs do not exist, photos of museum skins have been used. Interestingly these include five species that have not been seen since they were first discovered.

There has been some criticism that the text is too sketchy, and while this book does not provide detailed descriptions, the range map, identification pointers, and vocalization are enough to help the reader find his way. The exquisite photographs are of course a great help.

The book itself is a joy to hold, with the publisher not stinting on its production. The printing and binding are excellent as is the simple but elegant layout. I am not too sure about its easy availability in India, but if you can lay your hands on it, I urge you to buy it, for it is, in my opinion, one of the most significant books produced recently, and one that will give you immense pleasure as you browse through it in the late evenings.

–Bikram Grewal

Hume-*isms*

"His Lordship (Lord Tweeddale) in this letter seems to think that any one who ventures to dispute his dicta is a public offender. This is very childish; we are all quite willing to give him full credit for all the good work he does and has done; but of course if he *will* [use italics for caps] mar the effect of this by flagrant self-sufficiency adn an affectation of being the supreme authority in such matters, he *will* be laughed at despite all his merits, and when he makes blunders, as he and *all* of us too often do, *of course* he *will* be more sat upon than other less pretentious mortals."

[*Stray Feathers* 6: 54 footnote re a letter from Lord Tweeddale to the *Ibis* regarding some taxonomic matters.]

Niranjan Sant

Common Buzzard