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Avifaunal Records from Chalis Ek, North Andaman Island: Insights into Distribution of Some Andaman Island Birds

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Abstract: Species records are important for assessing the distribution and status of species over a spatiotemporal scale. Andaman archipelago, off Southeast Asia, is a high avian endemism area, covering an area of >5000 km^2. We conducted this survey in 2011 to make an inventory of avifauna of Chalis Ek area. A total of 73 species, belonging to 61 genera and 34 families were recorded, of which 60 were resident, 11 were winter migrants, one vagrant, and a single species introduced from mainland India. Three species were found to be new records, expanding distribution. Thirteen were endemic to the Andaman and Nicobar group of islands and eleven were listed as near threatened in the IUCN Red List. This study shows that sites such as Chalis Ek, even though subject to moderate anthropogenic disturbance, still hosts a large and distinctive avifauna and should be protected.

Introduction

Bird surveys provide useful information for basic and applied ecology, and are useful for identifying priority areas for conservation (Daniels *et al.* 1991; Peterson *et al.* 2000). The Andaman and Nicobar group of islands (06°45'-13°30' N, 92°20'-93°56' E) located in the Bay of Bengal, off Southeastern Asia show diversity in forest types (Champion and Seth 1968). The latitudinal gradient in rainfall and seasonality and differences in island sizes have resulted in diverse habitats for birds (Davidar *et al*. 2001, 2002; Hortal *et al*. 2009). Of a total of 204 birds found in the Andaman and Nicobar islands (Grimmett *et al*. 2011) 25 species are known to be endemic (Jathar and Rahmani 2006), although there are no single island endemics except *Rhyticeros narcondami* Hume, 1873 (Jathar and Rahmani 2006; Sundaramoorthy 2010).

Due to their remote location, few efforts have been made to explore avifaunal diversity of these islands as compared to mainland India. Major contributions to avifaunal studies in Andaman and Nicobar islands include Ripley and Beehler (1989), Davidar *et al*. (1996, 2001, 2002, 2007), Grimmett *et al*. (1998, 2011), Sankaran (1998), Kazmierczak and Perlo (2000), Fergusson-Lees *et al*. (2001), Rasmussen and Anderton (2005), Ezhilarasi and Vijayan (2006), Naoroji (2007), Pande *et al*. (2007, 2011), Sundaramoorthy (2010) and Manakadan *et al.* (2011). During 1992-1994, avifaunal surveys on 45 islands of Andaman group, including 16 islands from North Andaman group, and North Andaman Island were carried out (Davidar *et al.* 2001, 2002, 2007). Davidar *et al.* (2007) recorded 63 species belonging to 27 families at North Andaman Island during the survey, after which the information has not been updated. Locality wise avifaunal inventories are useful in devising administrative strategies pertaining to the habitat as well as the species conservation. Chalis Ek (Figure 1) is an important site for research and conservation of the Edible-nest Swiftlet *Aerodramus fuciphagus* (Thunberg, 1812), breeding in limestone caves (Sankaran 2001; Manchi and Sankaran 2009; Figure 2A). While studying the Edible-nest Swiftlet it was understood that Chalis Ek, with its diverse habitats in a small area should be a good opportunity to study avian species composition. With this background, during 2011 winter season (January-April), avifaunal survey was carried out at Chalis Ek hillock and the area around it. This paper reports sight records of few rare and endemic species, and updates previous knowledge on North Andaman Island's avifauna.

Materials and Methods

Study Site

Chalis Ek (13°2'55.20" N, 92°59'26.34" E, 108 m above sea level; Figure 1) is a small limestone hillock at Pattilevel near Ramnagar village located in North Andaman Island, India. The study area lies between 13°01'54.6" to 13°03'38.65" N and 92°58'58.54" to 93°00'01.99" E, and spans an area of 6.0 km^2. The study area includes scattered human settlements and mixed forest type (Semi Evergreen and Dry Deciduous forest patches) of Pattilevel village, Semi Evergreen forests of Chalis Ek hillock, and landscape under human use (human settlements, agriculture, roads) of Ramnagar village.

Data Collection

Varied methodologies were used to obtain the check list of the birds in the area, during January to April 2011: 1) belt transects were used to record forest dwelling birds; 2) point counts and call surveys were used to record crepuscular as well as nocturnal bird species. For belt transects standard methods in Gibbons and Gregory (2006) were followed. A total of five transects of 50 m width and variable lengths (300 m to 2000 m) were laid in and around Chalis Ek, considering Chalis Ek hillock as center. Surveys were carried out at both mornings (6:00-12:00 h) and evenings (16:00-18:00 h), with emphasis on morning sessions. Each transect was walked repeteadly until the species accumulation curve reached an asymptote. A gap of at least fifteen days was kept between any two subsequent transects on the same transect line. Night surveys were

difficult due to lack of night vision instruments; hence call surveys were adapted to record nocturnal species. Observations were taken by considering the Edible-nest Swiftlet protection camp as center. Call surveys and point counts (Gibbons and Gregory 2006) were of variable time (10-20 min). Call surveys were carried out during afternoon and night, whereas point counts were carried out during morning (6:00 h) and/or afternoon (12:00 h). Nocturnal birds were identified by listening to their calls while sitting at a site. The practice was repeated at dusk (18:00-20:00 h), midnight (23:00 h) and dawn (4:00 h). Dusk period was revealed to be an adequate time for such surveys as most of the birds either come out or go to their respective roosts. Field guides (Grimmett *et al.* 1998; Kazmierczak and Perlo 2000) were used for field identification. Authenticated bird photograph databases (OBC Image Database 2011; IBC 2011; Owlpages 2011) and forums (India Nature Watch 2011) were accessed to identify some of the unidentified birds recorded in photographs. For binomial names and authorities, a list made by Manakadan and Pittie (2001), and Avibase website (Lepage 2012) was referred. A database of calls of nocturnal birds of Andamans was obtained from Xeno-canto bird call database (Xeno-canto 2011) and research articles (King 2003; Rasmussen and Anderton 2005; Grimmett *et al*. 2011). Recorded unidentified calls were analyzed using Raven Lite 1.0 (Charif *et al*. 2006) and compared with available sonograms. For each recorded call, range of call frequency in kHz, call duration, and interval between two calls was compared with that of available data.

Results and Discussion

A total of 73 bird species belonging to 61 genera and 34 families were recorded during the four month survey, of which, 56 were recorded on transects and 17 species off transect through casual sightings (Table 1). The best represented family was Columbidae (six species), followed by Accipitridae, Ardeidae, Strigidae, and Sturnidae, all with four species each. Sixty one species were resident and ten were winter migratory (Grimmett *et al.* 2011). Fifty six species were forest dwelling birds (76.7%), whereas 17 species were wetland associated (23.3%). High percentage of forest dwelling birds in the total list, as compared to wetland associated birds, is partially due to high sampling efforts in forested areas as compared to the sea shore. The list includes Common Myna *Acridotheres tristis* (Linnaeus, 1766), an introduced species from mainland India (Lepege 2012). Only a single pair of the species always associated with human settlements of Ramnagar village was observed during the survey. Violet Cuckoo *Chrysococcyx xanthorhynchus* (Horsfield, 1821) is thought to be a vagrant to Andaman Island (Grimmett *et al*. 2011). A single vocal male individual of the species was sighted once near sea shore during the survey (Figure 2B). Overall, thirteen species are endemic to Andaman group of islands (Jathar and Rahmani 2006). According to the IUCN Red List, eleven species are listed as globally 'near threatened' (IUCN 2011), of which seven species are endemic to Andaman Islands (Jathar and Rahmani 2006). The inventory contains seven species which are listed as 'data deficient' in IUCN Red List (IUCN 2011), three of which are endemic to Andaman Islands (Jathar and Rahmani 2006). Four species belonging to Accipitridae are included in the Schedule-I of Wildlife Protection Act (1972).

Three out of the 73 species recorded are new records to the North Andaman Island: Blyth's Reed-Warbler

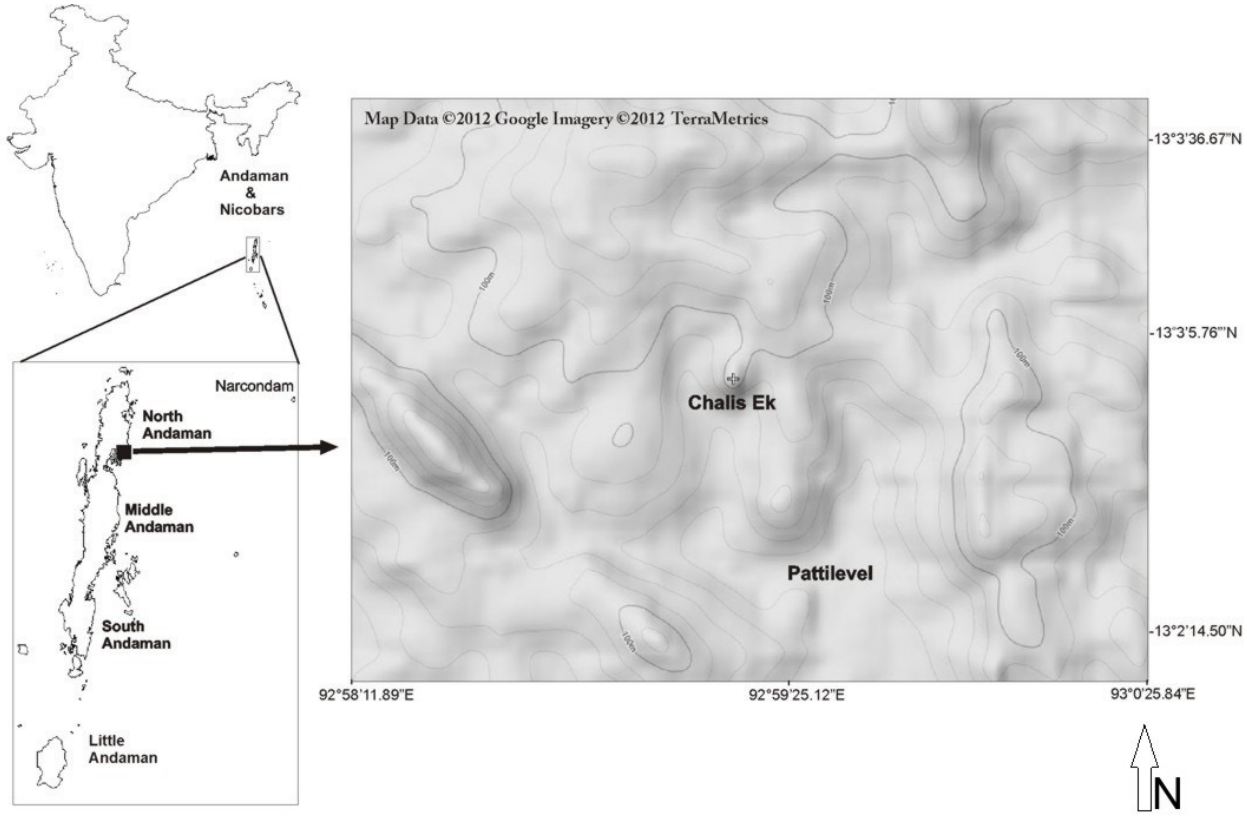

Figure 1. Map of study site at north Andaman Island, Indian (Hijmans *et al.* 2004, Google Inc. 2011).

Acrocephalus dumetorum Blyth, 1849 and Eyebrowed Thrush *Turdus obscurus* Gmelin, 1789 are winter migrants, whereas Pale-footed Bush-Warbler *Cettia pallidipes* (Blanford, 1872) is known to be resident in the Middle and South Andaman Islands (Table 2). Previous records for Blyth's Reed-Warbler and Eyebrowed Thrush occurs in South Andaman Island (Grimmett *et al.* 1998; Kazmierczak and Perlo 2000; Rasmussen and Anderton 2005) about 155 km southwards from the current record at Chalis Ek. Whereas previous records for Pale-footed Bush Warbler are from Middle Andaman Island (Rasmussen and Anderton 2005) about 61 km southwards from Chalis Ek. The geographic distribution of Eyebrowed Thrush is known in the form of isolated records from South Andaman Islands (Kazmierczak and Perlo 2000; Rasmussen and Anderton 2005; Grimmett *et al*. 2011) and Great Nicobar Island (Sivakumar and Sankaran 2002). A single Eyebrowed Thrush was observed on 28 January 2011 at 13:08 h feeding on unidentified red colored fruits at Edible-nest Swiftlet protection camp at Chalis Ek (13°2'55.20" N, 92°59'26.34" E). The individual showed overall dull appearance, uniform olive brown upperparts, and absence of grey colored head, all of which identified it as a first winter female (Grimmett *et al*. 1998). The female was in a mixed flock of Andaman Bulbul *Pycnonotus fuscoflavescens* (Hume, 1873), Small Minivet *Pericrocotus cinnamomeus* (Linnaeus, 1766), Asian Fairy Bluebird *Irena puella* (Latham, 1790) (Figure 2C), Andaman Treepie *Dendrocitta bayleyii* Tytler, 1863, and Greater Racket-tailed Drongo *Dicrurus paradiseus* (Linnaeus, 1766). The distributional range of Eyebrowed Thrush is uncertain and seems to extend to North Andaman Island. We sighted Blyth's Reed-Warbler twice in the semi-evergreen forest of Chalis Ek hillock and dry deciduous forest of Pattilevel village. This species is a known winter migrant to Indian subcontinent (Grimmett 2011). According to Grimmett (2011), and Kazmierczak and Perlo (2000), fourteen species of warblers have been recorded from Andaman and Nicobar Islands, of which four species belong to *Acrocephalus*, whereas *Cettia* genus is represented by only a single species, Pale-footed Bush-warbler. Identification of Pale-footed Bush-Warbler was primarily driven by field characters: black eye-brow, brown upperparts, and narrow eye-streak, and known distributional records. Pale-footed Bush-Warbler was sighted three times during the survey. The species was always sighted in reeds and shrubs close to sea-shore near Pattilevel village. The species is resident of Middle (Rasmussen and Anderton 2005) and South Andaman Island (Kazmierczak and Perlo 2000; Grimmett 2011; Table 2). A Common Stonechat *Saxicola torquatus* (Linnaeus, 1766) was observed on 24 January 2011, at 11:28 h (Figure 2D). The bird was recurrently seen for two consecutive months (January and February 2011). Common Stonechat is winter migratory to India and has been sighted at South Andaman Island (Kazmierczak and Perlo 2000, Rasmussen and Anderton 2005, and Grimmett *et al*. 1998). During 1992-1994, Davidar *et al*. (2007) recorded the species at East Island of North Andaman group of islands, but no further comments on its presence were made. Davidar *et al.* (2007) sighting falls around 67 km northwards from Chalis Ek. From the records above we postulate that ranges of resident as well as migratory birds are expanding within the archipelago.

An injured full grown adult of Hume's Hawk-Owl *Ninox obscura* Hume, 1872 (Figure 2E) was rescued during one of the cave surveys. Photographs were taken and the individual was released back into its habitat. Hume's Hawk-Owl is a well-known predator of Edible-nest Swiftlet (Manchi and Sankaran 2009). These owls are known to ambush at the cave mouths and prey on bats and birds at dawn and dusk. Presence of *Otus balli* (Hume, 1873) and *Otus sunia* (Hodgson, 1836) was confirmed with the calls heard, recorded, and compared (Richards and King 1986). A call similar to that given by *Tyto* species was recorded (Figure 3A, 3B) on 7 March 2011 at 18:48 h at Chalis Ek hillock near a cave (13°2'56.94" N, 92°59'11.70" E). The call (XC94701, Forum No. 3138) was continuous and heard for almost an hour (Xeno-canto 2011). The same call was heard for the next three days. Two recorded calls show pitch range from 1901 to 4268 Hz, and call duration range from 0.624 to 0.83 s. This description matches with the one given by Rasmussen and Anderton (2005) for Andaman Masked Owl *Tyto deroepstorffi* (Hume, 1875) (pitch range 2000-4000 Hz, call duration 0.5-0.7 s) (Figure 3C).

Chalis Ek area is moderately disturbed by human activities. Villagers of Pattilevel and Ramnagar are converting forested areas into paddy-fields. Fuel wood and NTFP collection, and cattle grazing are common in the area, although restricted to the base of the hillock. Animal poaching for meat is common, however only selected species like Andaman Crake *Rallina canningi* (Blyth, 1863) are frequently poached. Killing of birds as pest, especially White-rumped Munia *Lonchura striata* (Linnaeus, 1766), was also observed twice (Figure 2F).

The species inventory reveals presence of high proportion of endemics (52%) with respect to total number of endemics to the archipelago. Most of the endemics were sighted in Semi Evergreen forest. Three species: Andaman Flowerpecker *Dicaeum virescens* Hume, 1873, Andaman Treepie, and Andaman Serpent Eagle *Spilornis elgini* (Blyth, 1873) (Figure 4A) were always observed in mixed forest of Pattilevel village, whereas a flock of 40 White-headed Starlings *Sturnus erythropygius* (Blyth, 1846) (Figure 4B) was observed in paddy-fields. The three new sight records and the record of Common Stonechat provide additional information on the presence of species on different temporal and spatial scales. During the survey, nocturnal birds were surveyed using call recording and comparison. Although identifying different species by listening to the calls is difficult, visualizing and comparing the calls using sonograms is relatively easy. A relatively high number of threatened and endemic species in the checklist, and habitat disturbance discussed above represents urgency towards landscape level conservation efforts. Multi species as well as multi taxa conservation approach are needed for such high avian endemism areas. Such areas are prone to further destruction if not well protected. Avifauna in islands is highly vulnerable to extinction, thus it is of utmost importance to protect Andaman and Nicobar forests and the wildlife they support.

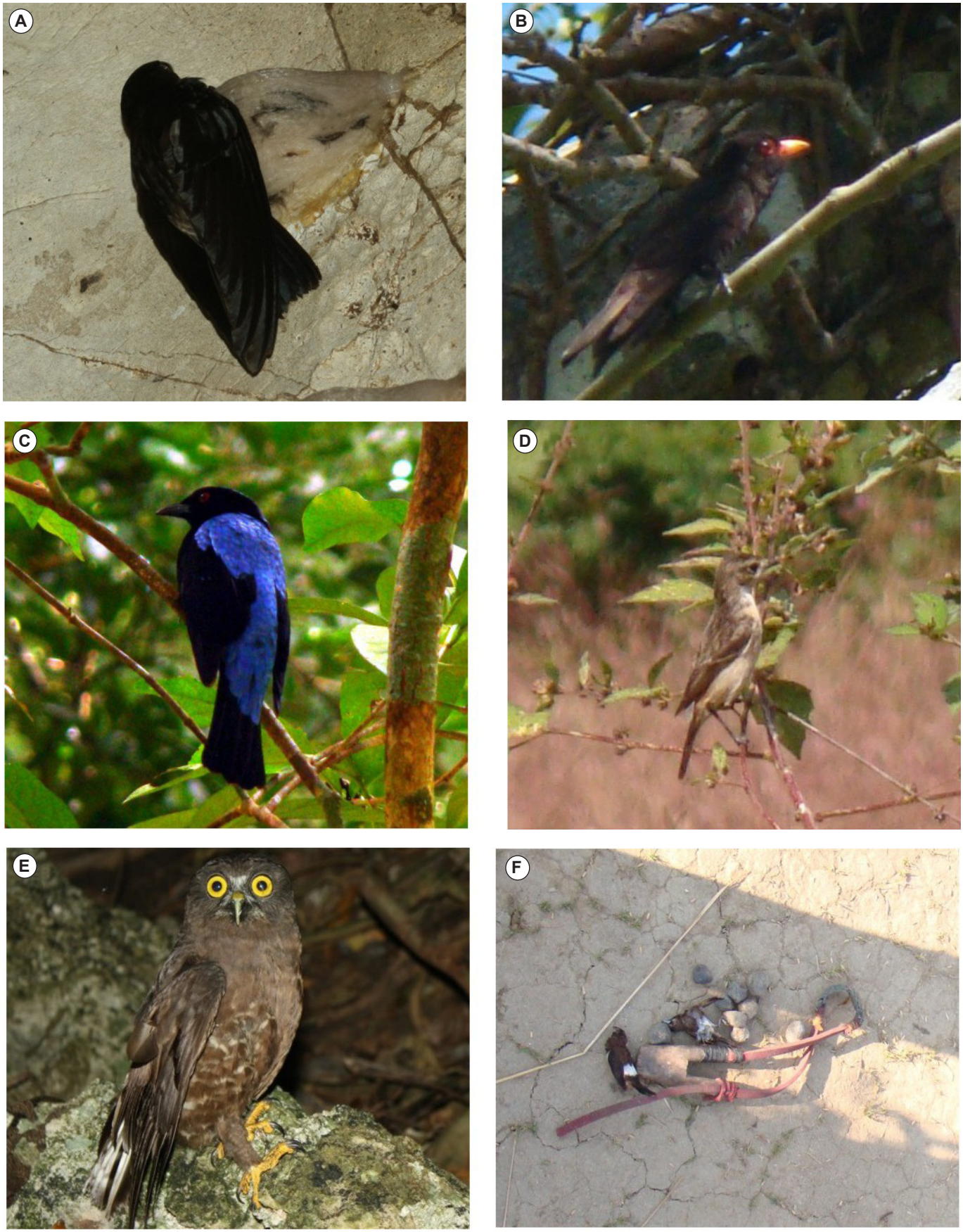

Figure 2. Photographic records of some species of Chalis Ek, North Andaman Island, India. A: Edible-nest Swiftlet, B: Violet Cuckoo, C: Asian Fairy Bluebird (male), D: Common Stonechat (female), E: Hume's Hawk Owl, F: White-rumped Munia killed by a farmer. Photographs by PK.

Table 1. Species list of birds of Chalis Ek area, North Andaman Island, India recorded during January-April 2011. *: Casual sightings (other than transects); IUCN: IUCN red list data for given species (IUCN 2011); LC: Least concern species; NT: Near threatened species; DD: Data deficient species; WPA: Status of a given species as given by Wildlife Protection Act of India (WPA 1972); I: Schedule I species (high priority species); IV: Schedule IV species (relatively low priority species); End: Species endemic to Andaman and Nicobar groups of Islands; R: Breeding resident; M: Winter migratory; V: Vagrant, X: Presence

FAMILY/COMMON NAME	SCIENTIFIC NAME	IUCN	WPA	End	R	M	V
ANATIDAE							
Andaman Teal*	*Anas gibberifrons* Muller, S, 1842	DD	I		X		
ARDEIDAE							
Western Cattle Egret	*Bubulcus ibis* (Linnaeus, 1758)	LC	IV		X		
Indian Pond-Heron	*Ardeola grayii* (Sykes, 1832)	LC	IV			X	
Little Egret	*Egretta garzetta* (Linnaeus, 1766)	LC	IV			X	
Pacific Reef-Egret	*Egretta sacra* (Gmelin, JF, 1789)	LC	IV		X		
ACCIPITRIDAE							
Andaman Serpent Eagle	*Spilornis elgini* (Blyth, 1873)	NT	I	X	X		
Changeble Hawk Eagle	*Spizaetus limnaeetus* (Horsfield, 1821)	LC	I		X		
White-bellied Sea Eagle*	*Haliaeetus leucogaster* (Gmelin, 1788)	DD	I		X		
Besra	*Accipiter virgatus* (Temminck, 1822)	LC	I		X		
RALLIDAE							
Andaman Crake	*Rallina canningi* (Blyth, 1863)	NT	IV	X	X		
BURHINIDAE							
Beach Thick Knee*	*Esacus magnirostris* (Vieillot, 1818)	DD	IV		X		
DROMADIDAE							
Crab Plover*	*Dromas ardeola* Paykull, 1805	LC	IV		X		
SCOLOPACIDAE							
Common Sandpiper	*Actitis hypoleucos* (Linnaeus, 1758)	LC	IV		X		
Eurasian Curlew	*Numenius arquata* (Linnaeus, 1758)	NT	IV			X	
Wood Sandpiper*	*Tringa glareola* Linnaeus, 1758	LC	IV		X		
LARIDAE							
Black-naped Tern*	*Sterna sumatrana* (Raffles, 1822)	LC	IV		X		
COLUMBIDAE							
Andaman Green-Pigeon	*Treron chloropterus* Blyth, 1846	DD	IV		X		
Andaman Wood-Pigeon	*Columba palumboides* (Hume, 1873)	NT	IV	X	X		
Emerald Dove	*Chalcophaps indica* (Linnaeus, 1758)	LC	IV		X		
Green Imperial-Pigeon	*Ducula aenea* (Linnaeus, 1766)	LC	IV		X		
Nicobar Pigeon*	*Caloenas nicobarica* (Linnaeus, 1758)	NT	I		X		
Red Collared Dove	*Streptopelia tranquebarica* (Hermann, 1804)	LC	IV		X		
PSITTACIDAE							
Alexandrine Parakeet	*Psittacula eupatria* (Linnaeus, 1766)	LC	IV		X		
Long-tailed Parakeet	*Psittacula longicauda* (Boddaert, 1783)	NT	IV		X		
Vernal Hanging-Parrot	*Loriculus vernalis* (Sparrman, 1787)	LC	IV		X		
CUCULIDAE							
Asian Koel	*Eudynamys scolopaceus* (Linnaeus, 1758)	LC	IV		X		
Brown Coucal	*Centropus andamanensis* Beavan, 1867	LC	IV		X		
Violet Cuckoo	*Chrysococcyx xanthorhynchus* (Horsfield, 1821)	LC	IV				X
TYTONIDAE							
Andaman Masked Owl*	*Tyto deroepstorffi* (Hume, 1875)	DD	IV	X	X		
STRIGIDAE							
Andaman Hawk Owl*	*Ninox affinis* Beaven, 1867	NT	IV	X	X		
Hume's Hawk-Owl*	*Ninox obscura* Hume, 1872	DD	IV	X	X		
Andaman Scops Owl*	*Otus balli* (Hume, 1873)	NT	IV	X	X		
Oriental Scops Owl*	*Otus sunia* (Hodgson, 1836)	LC	IV		X		
APODIDAE							
Brown-backed Needletail	*Hirundapus giganteus* (Temminck, 1825)	LC	N/A		X		
Edible-nest Swiftlet	*Aerodramus fuciphagus* (Thunberg, 1812)	LC	N/A		X		
Glossy Swiftlet	*Collocalia esculenta* (Linnaeus, 1758)	LC	N/A		X		
ALCEDINIDAE							
Collared Kingfisher	*Todiramphus chloris* (Boddaert, 1783)	LC	IV		X		
Ruddy Kingfisher*	*Halcyon coromanda* (Latham, 1790)	LC	IV		X		
White-breasted Kingfisher	*Halcyon smyrnensis* (Linnaeus, 1758)	LC	IV		X		
MEROPIDAE							
Chestnut-headed Bee-eater	*Merops leschenaulti* Vieillot, 1817	LC	IV		X		

Table 1. *Continued.*

FAMILY/COMMON NAME	SCIENTIFIC NAME	IUCN	WPA	End	R	M	V
PICIDAE							
Andaman Woodpecker	*Dryocopus hodgei* (Blyth, 1860)	NT	IV	X	X		
Fulvous-breasted Woodpecker	*Dendrocopos analis andamanensis* (Blyth, 1859)	LC	IV		X		
CAMPEPHAGIDAE							
Large Cuckooshrike (andamana)	*Coracina macei andamana* (Neumann, 1915)	LC	IV		X		
Scarlet Minivet	*Pericrocotus speciosus* (Latham, 1790)	LC	IV		X		
Small Minivet	*Pericrocotus cinnamomeus* (Linnaeus, 1766)	LC	IV		X		
LANIIDAE							
Brown Shrike (Philippine)	*Lanius cristatus lucionensis* Linnaeus, 1766	LC	IV			X	
ORIOLIDAE							
Black-hooded Oriole	*Oriolus xanthornus* (Linnaeus, 1758)	LC	IV		X		
Black-naped Oriole	*Oriolus chinensis* Linnaeus, 1766	LC	IV		X		
DICRURIDAE							
Andaman Drongo	*Dicrurus andamanensis* Beavan, 1867	NT	IV		X		
Greater Racket-tailed Drongo	*Dicrurus paradiseus* (Linnaeus, 1766)	LC	IV		X		
MONARCHIDAE							
Black-naped Monarch	*Hypothymis azurea* (Boddaert, 1783)	LC	IV		X		
CORVIDAE							
Andaman Treepie	*Dendrocitta bayleyii* Tytler, 1863	NT	IV	X	X		
Indian Jungle Crow	*Corvus culminatus* Sykes, 1832	LC	IV		X		
PYCNONOTIDAE							
Andaman Bulbul	*Pycnonotus fuscoflavescens* (Hume, 1873)	DD	IV	X	X		
Red-whiskered Bulbul	*Pycnonotus jocosus* (Linnaeus, 1758)	LC	IV		X		
CETTIIDAE							
Pale-footed Bush-Warbler	*Cettia pallidipes* (Blanford, 1872)	LC	IV		X		
ACROCEPHALIDAE							
Blyth's Reed-Warbler*	*Acrocephalus dumetorum* Blyth, 1849	LC	IV			X	
IRENIDAE							
Asian Fairy Bluebird	*Irena puella* (Latham, 1790)	LC	IV		X		
MUSCICAPIDAE							
Asian Brown Flycatcher	*Muscicapa dauurica* Pallas, 1811	LC	IV			X	
Common Stonechat	*Saxicola torquatus* (Linnaeus, 1766)	LC	IV			X	
TURDIDAE							
Andaman Shama	*Copsychus albiventris* (Blyth, 1859)	LC	IV	X	X		
Oriental Magpie Robin	*Copsychus saularis* (Linnaeus, 1758)	LC	IV		X		
Eyebrowed Thrush*	*Turdus obscurus* Gmelin, 1789	LC	IV			X	
STURNIDAE							
Asian Glossy Starling	*Aplonis panayensis* (Scopoli, 1786)	LC	IV		X		
Hill Myna	*Gracula religiosa* Linnaeus, 1758	LC	IV		X		
Common Myna*	*Acridotheres tristis* (Linnaeus, 1766)	LC	IV		X		
White-headed Starling	*Sturnus erythropygius* (Blyth, 1846)	LC	IV	X	X		
DICAEIDAE							
Andaman Flowerpecker	*Dicaeum virescens* Hume, 1873	LC	IV	X	X		
NECTARINIIDAE							
Olive-backed Sunbird	*Cinnyris jugularis* (Linnaeus, 1766)	LC	IV		X		
MOTACILLIDAE							
Forest Wagtail	*Dendronanthus indicus* (Gmelin, 1789)	LC	IV			X	
Grey Wagtail	*Motacilla cinerea* Tunstall, 1771	LC	IV			X	
Yellow Wagtail	*Motacilla flava* Linnaeus, 1758	LC	IV			X	
ESTRILIDIDAE							
White-rumped Munia	*Lonchura striata* (Linnaeus, 1766)	LC	IV		X		

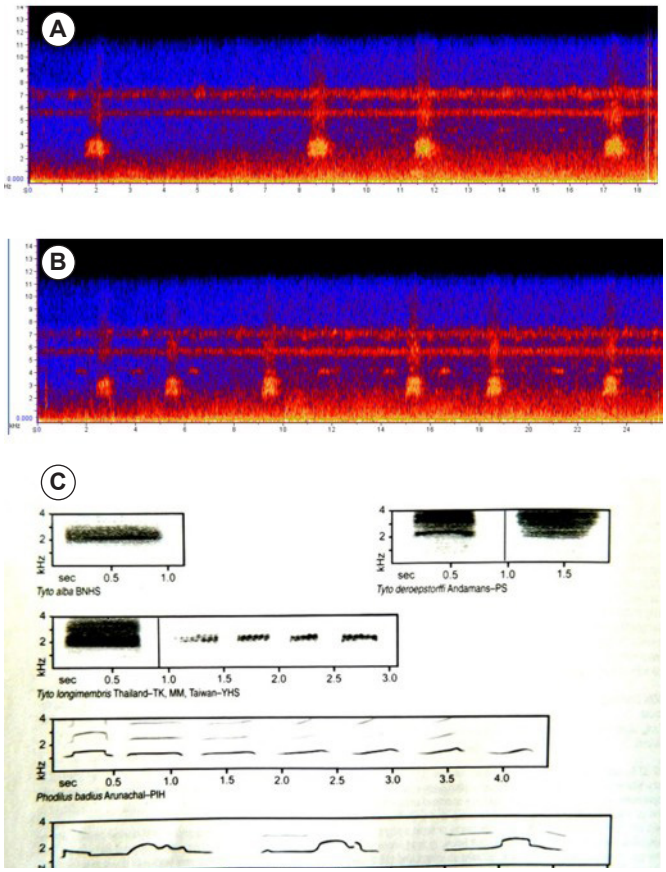

Figure 3. Comparative analysis of sonograms of Andaman Masked Owl with respect to other *Tyto* species found in Indian subcontinent. A and B: Sonograms of two recorded calls analyzed in Raven Lite 1.0 (Charif *et al.* 2006). C: Call analysis of three *Tyto* species, as given by Rasmussen and Anderton (2005).

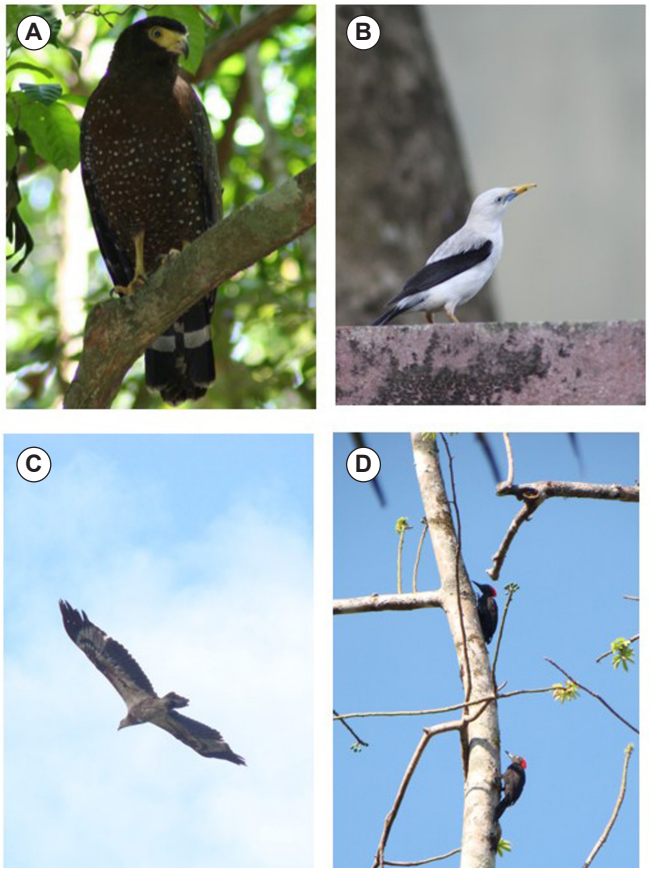

Figure 4. Photographic records of some species of Chalis Ek, North Andaman Island, India. A: Andaman Serpent Eagle, B: White-headed Starling, C: Andaman Woodpecker, D: White-bellied Sea Eagle. Photographs A and B by MS and C and D by PK.

Table 2. New avian sighting records from North Andaman Island, India, during a survey carried out in January-April 2011. * - Scarce/Stray/Individual Records; NA: North Andaman Island; MA: Middle Andaman Island; SA: South Andaman Island; NI: Nicobar Islands; D: Davidar *et al.* (2007); G: Grimmett *et al.* (2011); K: Kazmierczak (2000); RA: Rasmussen and Anderton (2005); RP: Rajan and Pramod (unpublished data 2011)

COMMON NAME	SPECIES NAME	PREVIOUS RECORDS FROM			
		NA	MA	SA	NI
Andaman Masked Owl	*Tyto deroepstorffi*	D*		G, K, RA	
Blyth's Reed-Warbler	*Acrocephalus dumetorum*			G*, K*	
Common Myna	*Acridotheres tristis*	RP*		G, K, RA*	RA*
Common Stonechat	*Saxicola torquatus*	D*		G*, RA*	
Eyebrowed Thrush	*Turdus obscurus*			G*, K*, RA	
Pale-footed Bush-Warbler	*Cettia pallidipes*		RA	G, K, RA	

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Literature Cited

Champion, H.G. and S.K. Seth. 1968. *A revised survey of forest types of India*. Delhi: Government of India Press. 404 p.

Charif, R.A., D.W. Ponirakis and T.P. Krein. 2006. *Raven Lite 1.0 User's Guide*. Ithaca: Cornell Lab of Ornithology. 36 p.

Daniels, R.J.R., M. Hegde, N.V. Joshi and M. Gadgil. 1991. Assigning conservation value: a case study from India. *Conservation Biology* 5(4): 464-475.

Davidar, P., T. R. K. Yoganand, T. Ganesh and N. Joshi. 1996. An assessment of common and rare forest bird species of the Andaman Islands. *Forktail* 12(1): 135-142.

Davidar, P., K. Yoganand and T. Ganesh. 2001. Distribution of forest birds in Andaman Islands: Importance of key habitats. *Journal of Biogeography* 28(5): 663-671.

Davidar, P., K. Yoganand, T. Ganesh and S.M. Devy. 2002. Distribution of forest birds and butterflies in the Andaman islands: Nested patterns and processes. *Ecography* 25(1): 5-17.

Davidar, P., K. Yoganand, T. Ganesh and K. Geetha-Nayak. 2007. Avifauna of Andaman Islands: Preliminary inventory and distributional patterns. *Journal of Bombay Natural History Society* 104(3): 35-47.

Ezhilarasi N. and L. Vijayan. 2006. Birds of Chidiyatapu Biological Park, South Andaman. *Zoo's Print Journal* 21(12): 2517-2518.

Fergusson-Lees, J., D.A. Christie, K. Franklin, D. Mead and P. Burton. 2001. *Raptors of the World*. Singapore: A and C Black Ltd. 992 p.

Gibbons, D.W. and R.D. Gregory. 2006. Birds; p. 319-328 *In* W.J. Sutherland (ed.). *Ecological census techniques – a handbook.* Cambridge: Cambridge University Press.

Google Inc. 2011. *Google Earth Plus (version 6.0.0.1735) Beta.* Electronic version available at www.google.com. Captured at 5th June 2012.

Grimmett, R., C. Inskipp and T. Inskipp. 1998. *Birds of the Indian Subcontinent*. London: Oxford University Press. 384 p.Grimmett, R., C. Inskipp and T. Inskipp. 2011. *Birds of the Indian Subcontinent*. London: Oxford University Press. 528 p.

Hijmans, R.J., L. Guarino, C. Bussink, P. Mathur, M. Cruz, I. Barrentes and E. Rojas. 2004. *DIVA-GIS. Version 5.0. A geographic information system for the analysis of species distribution data*. Manual available at http://www.diva-gis.org.

Hortal, J., K.A. Triantis, S. Meiri, E. Thebault and S. Sfenthourakis. 2009. Island species richness increases with habitat diversity. *American Naturalist* 174(6): 205-217.

IBC (Internet Bird Collection). 2011. Electronic database accessible at: http://ibc.lunxeds.com. Captured on 1 July 2011.

India Nature Watch 2011. Electronic database accessible at: http://indianaturewatch.net/. Captured on 16 February 2011.

IUCN 2011. *IUCN Red List of Threatened Species. Version 2011.2*. Electronic database accessible at http://www.iucnredlist.org/. Captured on 15 July 2011.

Jathar, G.A. and A.R. Rahmani. 2006. Endemic birds of India. *Buceros* 11(2/3): 5-46.

Kazmierczak, K. and B. van Perlo. 2000. *A field guide to the birds of India, Sri Lanka, Pakistan, Nepal, Bhutan, Bangladesh and the Maldives*. Sussex: Pica Press. 352 p.

King, B. 2003. The song of *Ninox scutulata obscura. Journal of Bombay Natural History Society* 100(2/3): 388-389.

Lepage, D. 2012. Checklist of the birds of Andaman and Nicobar. Avibase, the world bird database. Electronic database accessible at http://avibase.bsc-eoc.org/checklist.jsp?lang=EN&region=Inan&list=clements&format=1. Captured on 10 August 2012.

Manakadan, R. and A. Pittie. 2001. Standardized English and scientific names of the birds of the Indian Subcontinent. *Buceros* 6(1): 1-37.

Manakadan, R., J.C. Daniel, and N. Bhopale. 2011. *Birds of Indian Subcontinent – a field guide*. New Delhi: Oxford University Press. 409 p.

Manchi, S. and R. Sankaran. 2009. Predators of swiftlets and their nests in the Andaman and Nicobar Islands. *Indian Birds* 5(4): 118-120.

Naoroji, R. 2007. *Birds of prey of the Indian Subcontinent*. New Delhi: Om Books International. 692 p.

OBC Image Database 2011. Electronic database accessible at http://orientalbirdimages.org. Captured on 1 January 2011.

Owlpages 2011. Electronic database accessible at www.owlpages.com. Captured on 13 March 2011.

Pande, S., N. Sant, S. Ranade, S. Pednekar, P. Mestry, P. Deshpande, S. Kharat and V. Deshmukh. 2007. Avifaunal survey of Andaman and Nicobar Islands, January 2007. *Indian Birds* 3(5): 162-180.

Pande, S. and A. Abbi. 2011. *Birds of Great Andamanese: Names, classification & culture*. Mumbai: Oxford University Press. 240 p.

Peterson, A.T., L.G. Ball and K.W. Brady. 2000. Distribution of the birds of the Philippines: biogeography and conservation priorities. *Bird Conservation International* 10(2): 149-167.

Rajan, P. and P. Pramod. 2011. Common birds of Andaman Islands with special emphasis to introduced birds. *International Congress on Indian Ornithology*, Salim Ali Centre for Ornithology and Natural History, Coimbatore.

Rassmusen, P. C. and J. C. Anderton. 2005. *Birds of South Asia. The Ripley Guide.* Volumes 1 & 2. Washington, D.C. and Barcelona: Smithsonian Institution and Lynx Edicions. 1061 p.

Richards, T.J. and B. King. 1986. Vocalizations of the owls of the genus *Otus* in Pakistan. *Ornis Scandinavica* 17(4): 299-305.

Ripley, S.D. and B.M. Beehler. 1989. Ornithographic affinities of the Andaman and Nicobar Islands. *Journal of Biogeography* 16(4): 323-332.

Sankaran, R. 1998. An annotated list of endemic avifauna of the Nicobar Islands. *Forktail* 13(1): 17-22.

Sankaran, R. 2001. The status and conservation of the Edible-nest Swiftlet (*Collocalia fuciphaga*) in the Andaman and Nicobar Islands. *Biological Conservation* 97(3): 283-294.

Sivakumar, K. and R. Sankaran. 2002. New records of birds from the Andaman and Nicobar Islands. *Forktail* 18(1): 149-150.

Sundaramoorthy, T. 2010. Bird diversity of Andaman and Nicobar Islands. *Eco News* 16(1): 3-8.

WPA (Wildlife Protection Act). 1972. *Wildlife Protection Act of India* (as amended up to 1993).

Xeno-canto 2011. Electronic database accessible at: http://xeno-canto.org. Captured on 15 January 2011.

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