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43/2 Varadarajulu Nagar, 5th Street West, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Registered Office: 3A2 Varadarajulu Nagar, FCI Road, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Ph: +91 9385339863 | www.threatenedtaxa.org
Email: sanjay@threatenedtaxa.org

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Cover: Common Keeled Skink *Eutropis carinata* in oil pastels, colour pencils, & micron pen adapted from photograph by H. Byju © Pooja Ramdas Patil.



Avifauna of four protected areas of Terai-Arc Landscape, India: significant records and a checklist of species

Shariq Safi^{1†} , Tanveer Ahmed^{2†} , Junid Nazeer Shah³ , Meraj Anwar⁴ & Kamlesh K. Maurya⁵

¹Department of Wildlife Sciences, Aligarh Muslim University, Aligarh, Uttar Pradesh 202002, India.

²Department of Landscape Planning and Management, Wildlife Institute of India, Dehradun, Uttarakhand 248001, India.

³Ajaz Environment Consultants, Sharjah, P.O. Box 48521, UAE.

^{4,5}WWF-India, 172-B, Lodi Estate, New Delhi 110003, India.

¹shariq4920.ss@gmail.com, ²tanveerwildlife@gmail.com, ³jnshah@aj-env.com, ⁴anwar.meraj@gmail.com,

⁵kamlesh.wii@gmail.com (corresponding author)

† These authors contributed equally to this work.

Abstract: Protected areas (PAs) in Terai-Arc landscape are relatively poorly explored as far as bird communities are concerned. Here we report a checklist and significant records of birds recorded during opportunistic observations and systematic bird surveys in four PAs: Katarniaghat Wildlife Sanctuary (2001–2004, 2006, 2008, and 2015); Pilibhit Tiger Reserve (2014–15); Valmiki Tiger Reserve (2014–17), and Udaipur Wildlife Sanctuary (2018). We have compiled a checklist of 424 species that includes 358 species in the Katarniaghat Wildlife Sanctuary, 306 species in the Valmiki Tiger Reserve, 236 species in the Pilibhit Tiger Reserve, and 128 species in Udaipur Wildlife Sanctuary. Most species belong to the Insectivore guild (190 species, 44.8%), while the nectivorous guild was the least represented (10 species, 2.35%). A total of 9% of species in the region were either globally threatened (6 Critically Endangered, 5 Endangered, and 8 Vulnerable) or Near Threatened (19 species). Sightings of species of conservation importance have been discussed.

Keywords: Bird diversity, Critically Endangered, globally threatened, Katarniaghat Wildlife Sanctuary, Pilibhit Tiger Reserve, species richness, Udaipur Wildlife Sanctuary, Valmiki Tiger Reserve.

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INTRODUCTION

The Terai-Arc landscape is a part of the Terai-Duar Savanna Eco-region, between River Bagmati (Nepal) to the Yamuna (India) spreading over an area of 30,000 km². In India, the region runs parallel to the foothills of the Himalayas encompassing the Shivalik hills, the Bhabar tract, and the Terai plains (Rodgers & Panwar 1988). Once covered with a continuous mosaic of dense forest and tall grassland, the natural vegetation of the region today exists amid human habitation and agricultural land (Johnsingh et al. 2004). The natural vegetation is being conserved and managed under four national parks (NP): Rajaji NP, Corbett NP, Dudhwa NP, and Valmiki NP, along with five wildlife sanctuaries (WS): Sonanadi WS, Kishanpur WS, Katarniaghat WS, Suhelwa WS, and Sohagibarwa WS, which sustain birds and mammals representing Himalayan and Gangetic plain affinities along with many species of national and international importance (Rahmani et al. 1989; Pandey et al. 1994; Chanchani et al. 2014).

Protected areas (PAs) of the Terai-Arc landscape have been explored relatively less as far as bird communities are concerned. Previous research on avifauna was either to assess community structure and status of particular groups or species and has been restricted to limited PAs of this landscape. Pandey et al. (1994) assessed the bird community structure of Rajaji NP. Dhakate et al. (2008) and Kidwai et al. (2013) highlighted the status of water birds and terrestrial birds of Corbett NP respectively. Rahmani et al. (1989) and Javed et al. (1999) determine the status of Bengal Florican *Houbaropsis bengalensis* and Swamp Francolin *Francolinus gularis*, respectively, in Dudhwa NP. Maheswaran & Rahmani (2005) studied the breeding biology of Black-necked Stork *Ephippiorhynchus asiaticus* in Dudhwa NP. Kalam (2005) and Sethy & Chauhan (2011) conducted studies to look at avian diversity in Katarniaghat WS. Very few ornithological studies have been carried out in the Valmiki Tiger Reserve (TR) (Sinha 2012; Choudhury 2016). Hence avifaunal composition of many PAs of the Terai-Arc landscape is not known hitherto and it is therefore desirable to understand the avifaunal composition to bridge the knowledge gap.

STUDY AREA

Avifaunal surveys were carried out in Pilibhit TR and Valmiki TR, and Katarniaghat WS, and Udaipur WS. These PAs are situated on the Indo-Nepal border in Uttar

Pradesh and Bihar (Figure 1).

Katarniaghat WS (KWS) (27.916–28.416 °N, 81.000–81.416 °E) covers an area of 400.09 km² and is located in the Upper Gangetic plain in the Terai of Bahraich district, Uttar Pradesh, India (Figure 1). KWS was declared as a wildlife sanctuary in 1976. It is connected with Bardia NP in Nepal via the Khata corridor. The Girwa (Karnali) river and a major canal flow through this sanctuary, which is a part of the Dudhwa TR. Other areas of the sanctuary are disturbed because the narrow forest is bisected by a railway line and several roads. The major forest types found here are northern moist deciduous sal forest, northern dry plain sal forest, northern tropical dry deciduous sal forest, tropical seasonal swamp forest, low alluvial savannah, and moist sal savannah forests (WWF-India 2007).

Pilibhit Tiger Reserve (PTR) (28.866–28.767 °N, 79.916–82.250 °E) is spread over an area of 730.24 km² and is located in Pilibhit District of Uttar Pradesh, India. It is connected with the Terai-Bhabar forests of the Surai range of Terai East forest division in Uttarakhand in the north-west, Kishanpur WS in the south-east and Shuklaphanta NP in Nepal in the north. PTR supports a mosaic of dry and moist deciduous, scrub savannah and alluvial grasslands (Anwar et al. 2010).

Valmiki Tiger Reserve (VTR) (area 901.2 km², 27.167–27.50 °N, 83.833–84.167 °E) is located in the West Champaran district of Bihar in the eastern part of Terai-Arc landscape and the west by the Gandak River. It is contiguous with Nepal's Chitwan NP in the north, sharing a boundary of ~100 km along which is forested habitat. VTR's elevation ranges between 140 m and 874 m. Vegetation is represented by the bhabar dun sal forest, dry Shivalik sal forest, western Gangetic moist mixed deciduous forest, Khair-sissoo forest, cane brakes, eastern wet alluvial grassland, and Barringtonia swamp forest (Champion & Seth 1968; Maurya & Borah 2013) which makes it one of the 16 important bird area (IBA) in Bihar (Rahmani et al. 2016).

Udaipur Wildlife Sanctuary (UWS) (26.778–26.820 °N, 84.406–84.454 °E) encompassing an area of 887.35 ha of forest land is situated in the West Champaran district of Bihar, 50–60 km south to VTR. The unique feature of UWS is its being a forested wetland. The sanctuary has 'Saraiyaman Lake', an IBA (Rahmani et al. 2016). The vegetation is represented by mixed deciduous forest, riverine forest dominated by *Syzygium cumini*, plantation, grasslands, and aquatic vegetation.

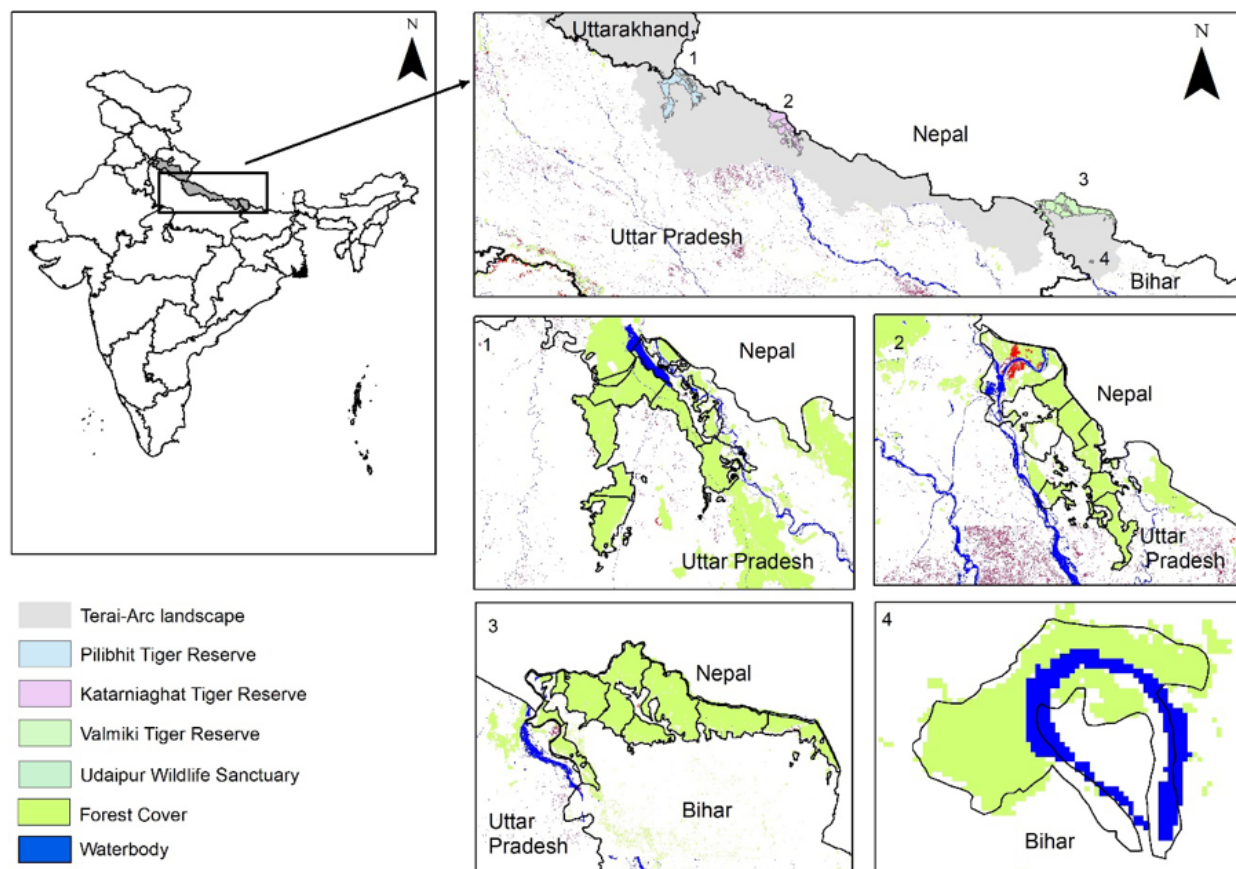


Figure 1. Map of study areas in Terai Arc landscape, India.

METHODS

Birds were recorded traversing trail and road transects in PTR (between March and May 2014, February and May 2015); and KWS (during 2001–2004, 2006, 2008, and 2015) (MacKinnon & Phillips 1993). In VTR, birds were recorded randomly during camera traps exercises and while travelling within the forests between 2014 and 2017. Birds of UWS were surveyed between 17 and 19 February 2018 for terrestrial birds (MacKinnon & Phillips 1993) and the total count method for water birds. Species photo-captured in camera traps (used for tiger census) were also included to compile the species list of each protected area.

MacKinnon's species richness was used for terrestrial species enumeration. One km long linear transects were laid in/along various habitats viz. woodland (sal, sal-mixed, moist riverine, dry riverine, teak plantation), water body (river and streams), grassland, barren land, and scrubland. On each transect, a list of 20 different species in KWS, PTR, and VTR, while a list of 15 species in UWS was generated traversing slowly at a speed of

0.5 km/hr. Once a list was completed, another list was prepared. No species was recorded more than once in each list. A total of 266 lists in KWS, 108 lists in PTR, 58 lists in VTR, and 18 lists in UWS were prepared. Birds were surveyed between 0700 h and 1000 h in the morning and 1600 h to 1900 h in the evening. All the bird species identified by sight or calls were recorded along with their number. Only confirmed identified bird species were included in the study.

The total count method was used to determine the richness of water birds. Species were recorded along with their number from morning hours till noon (0700–1200 h). Since it was not possible to cover the entire 'Saraiyaman Lake' from a single point, birds were counted by selecting more than one point. The survey was not conducted during adverse climatic conditions like rain and cloudy days. Bird species recorded were classified into various feeding guilds and migratory status based on the diet descriptions available (Ali & Ripley 1987; Grimmett et al. 2011). Sorenson's similarity index was used to calculate the similarity between bird species in different study sites using the following formula:

$S = 2C/A+B$, where,

C—common species between the sites | A—total number of species in site A | B—total number of species in site B.

RESULTS AND DISCUSSION

A checklist of 424 species; 298 terrestrial, 82 water birds, and 44 water-associated ones representing 20 orders and 78 families was compiled from four PAs of the Terai-Arc landscape (Table 1). The diversity of birds might be underestimated because some may have been missed due to their cryptic nature and observer inattention. The total bird species compiled from PAs of Terai-Arc Landscape represents around 30% of the Indian Subcontinent (Praveen et al. 2019) and 47% of the Indian Himalaya (Mandal et al. 2018) indicating that Terai-Arc landscape as among the most avifaunal diverse regions of India. The Terai-Arc landscape is located at the confluence of the Himalaya and Gangetic plains (Rodger & Panwar 1988) and hence supports species of both biogeographic zones.

The richness of species was observed maximum in KWS (n=358), followed by VTR (n = 306), PTR (n = 236), and UWS (n = 128, Table 2). The high richness of birds in KWS may be attributed to the structural complexity and diverse habitat that offer foraging and nesting opportunities to birds (Tews et al. 2004; Ahmed et al. 2019). Moreover, the Terai-Arc landscape is a mosaic of diverse habitat types; sal-forest, sal-mixed forest, dry riverine forest, moist riverine forest, grassland, scrubland, open lands, and wetlands and rivers (Chanchani et al. 2014). Benton et al. (2003) highlighted a heterogeneous landscape is likely to support more species owing to the (a) specialization of various resources and, (b) reduced competition between species (Fahrig et al. 2011) and landscape complementation (Dunning et al. 1992).

The earlier comprehensive study in KWS, conducted by Kalam (2005), reported 154 species, while Sethy & Chauhan (2011) documented 200 species. We report 358 species in KWS, of which 148 species were common with those of Kalam (2005), and 173 species with Sethy & Chauhan (2011). The present study didn't record six species such as Drongo Cuckoo *Surniculus lugubris*, Wallcreeper *Tichodroma muraria*, and Eurasian Blackbird *Turdus merula* reported earlier by Kalam (2005) and 21 species by Sethy & Chauhan (2011). These include Lesser Cuckoo *Cuculus poliocephalus*, Common Flameback *Dinopium javanense*, Red-headed Trogon *Harpactes erythrocephalus*, Rosy Minivet *Pericrocotus*

roseus, Red-headed Finch *Amadina erythrocephala* and Caspian Tern *Hydroprogne caspia*.

In VTR, an earlier study conducted by Choudhary (2016) has reported 246 species. Of these, 205 were found common with the present study (n = 306). There are 40 bird species such as Amur Falcon *Falco amurensis*, Vernal Hanging-Parrot *Loriculus vernalis*, Red-breasted Parakeet *Psittacula alexandri*, and Plumbeous Redstart *Rhyacornis fuliginosa* reported by Choudhary (2016) that we didn't report. We recorded 101 different species which were not observed in the earlier study by Choudhary (2016).

In PTR and UWS, no scientific studies have been carried out so far. However, records in the management plan of UWS report 91 species, of which, 89 were common with the present study (n = 128).

Significant records: Threatened Species

Among the species recorded (n = 424), 19 (CR: 6, EN: 5, VU: 8) species were globally threatened and 19 species were near threatened (Table 2, IUCN 2018). The critically endangered (CR) species recorded during the survey were White-rumped Vulture *Gyps bengalensis*, Indian Vulture *Gyps indicus*, Slender-billed Vulture *Gyps tenuirostris*, Red-headed Vulture *Sarcogyps calvus*, Bengal Florican *Houbaropsis bengalensis* and Yellow-breasted Bunting *Emberiza aureola* (IUCN 2018). The sightings of threatened birds are enumerated below:

Vultures

Seven species of vultures: White-rumped Vulture (WRV), Indian Vulture (IV), Slender-billed Vulture (SBV), Red-headed Vulture (RHV), Egyptian Vulture *Neophron percnopterus* (EV), Himalayan Vulture *Gyps himalayensis* (HV) and Griffon Vulture *Gyps fulvus* (GV) were recorded from the PAs of Terai-Arc Landscape. In KWS, a flock of 155 individuals consisting of WRV (n = 152) and IV (n = 3) was sighted feeding on a cattle carcass near Bichia village in 2001. Besides, 32 active nests of WRV were found along the Girwa River. During March 2016, a mixed flock of HV, WRV, and SBV was sighted feeding on carcasses between Dhakerwa town and Bichia market near Katarniaghat WS. In VTR, a mixed flock of WRV and IV were sighted feeding on carcasses in the Harnatand range (36 individuals), perching on a *Bombax ceiba* tree in Valmiki Nagar Range (RHV: 1, HV: 2), and flying over Ganauli range (EV: 1).

Pallas's Fish Eagle *Haliaeetus leucorhynchus*

Endangered. In KWS, an active nest of Pallas's Fish Eagle was recorded near Girija Barrage during 2001–

Table 1. Systematic checklist and status of birds in four protected areas of Terai-Arc landscape, India.

Family	Species name	Habitat	Feeding guild	IUCN Red List status	KWS	PTR	VTR	UWS	Status in PAs
Phasianidae	Black Francolin <i>Francolinus francolinus</i>	GL	O	LC	2015	2014, 2015	2016	2018	R
Phasianidae	Grey Francolin <i>Francolinus pondicerianus</i>	GL/AGR	O	LC	2001, 2002, 2004, 2015	2014, 2015	2014, 2015, 2017	2018	R
Phasianidae	Swamp Francolin <i>Ortygornis gularis</i>	ML/GL	O	VU	2001	-	2016	-	R
Phasianidae	Common Quail <i>Coturnix coturnix</i>	GL	O	LC	2001, 2002, 2004, 2008, 2015	-	2014, 2016, 2017	-	R
Phasianidae	Small Buttonquail <i>Turnix sylvaticus</i>	GL/AGR	O	LC	-	-	2017	-	R
Phasianidae	Jungle Bush Quail <i>Perdica asiatica</i>	GL	O	LC	2002, 2006, 2015	-	-	2018	R
Phasianidae	Rain Quail <i>Coturnix coromandelica</i>	GL	O	LC	2002, 2003, 2008	-	-	-	WV
Phasianidae	Blue-breasted Quail <i>Synoicus chinensis</i>	GL	O	LC	-	-	2014	-	R
Phasianidae	Red Spurfowl <i>Gallus spadicea</i>	SF/MF	O	LC	-	2015	-	-	R
Phasianidae	Red Junglefowl <i>Gallus gallus</i>	SF/MF	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Phasianidae	Kalij Pheasant <i>Lophura leucomelanos</i>	SF/MF	O	LC	-	-	2016, 2017	-	R
Phasianidae	Indian Peafowl <i>Pavo cristatus</i>	MF	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Anatidae	Lesser Whistling Duck <i>Dendrocygna javanica</i>	WL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Anatidae	Fulvous Whistling Duck <i>Dendrocygna bicolor</i>	WL	H	LC	2001, 2002, 2003, 2006	-	-	-	WV
Anatidae	Greylag Goose <i>Anser anser</i>	WL	H	LC	2001, 2002, 2006, 2008	-	-	-	WV
Anatidae	Bar-headed Goose <i>Anser indicus</i>	WL	H	LC	2001, 2002, 2006	2014	2016	-	WV
Anatidae	Comb Duck <i>Sarkidiornis melanotos</i>	WL	O	LC	2001, 2002, 2003, 2006, 2008, 2015	-	-	-	R
Anatidae	Ruddy Shelduck <i>Tadorna ferruginea</i>	WL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2015, 2016, 2017	2018	WV
Anatidae	Cotton Teal <i>Nettapus coromandelianus</i>	WL	H	LC	2001, 2003, 2006, 2015	2015	-	2018	R
Anatidae	Gadwall <i>Mareca strepera</i>	WL	H	LC	2001, 2003, 2006	-	-	2018	WV
Anatidae	Eurasian Wigeon <i>Mareca penelope</i>	WL	H	LC	2002, 2003, 2006, 2015	2014	-	2018	WV
Anatidae	Mallard <i>Anas platyrhynchos</i>	WL	H	LC	2002, 2003, 2006	2015	-	2018	WV
Anatidae	Indian Spot-billed Duck <i>Anas poecilorhyncha</i>	WL	H	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2015	2015, 2016, 2017	2018	WV
Anatidae	Northern Shoveler <i>Spatula clypeata</i>	WL	O	LC	2002, 2006, 2015	2015	-	-	WV
Anatidae	Northern Pintail <i>Anas acuta</i>	WL	H	LC	2001, 2002, 2004, 2008, 2015	-	2016, 2017	2018	WV
Anatidae	Garganey <i>Spatula querquedula</i>	WL	H	LC	2001, 2002, 2006, 2008, 2015	-	-	-	WV
Anatidae	Green-winged Teal <i>Anas crecca</i>	WL	H	LC	2001, 2002, 2006, 2008	-	-	2018	WV
Anatidae	Red-crested Pochard <i>Netta rufina</i>	WL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2015, 2016, 2017	2018	WV
Anatidae	Common Pochard <i>Aythya ferina</i>	WL	O	LC	2001, 2002, 2006, 2008, 2015	-	-	2018	WV
Anatidae	Ferruginous Duck <i>Aythya nyroca</i>	WL	O	NT	2001, 2002, 2006	2016	-	2018	WV
Anatidae	Tufted Duck <i>Aythya fuligula</i>	WL	O	LC	2001, 2002, 2008	2014	-	-	WV
Anatidae	Common Merganser <i>Mergus merganser</i>	WL	P	LC	2015	-	2017	-	WV
Podicipedidae	Little Grebe <i>Tachybaptus ruficollis</i>	WL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2015	2015, 2017	2018	R

Family	Species name	Habitat	Feeding guild	IUCN Red List status	KWS	PTR	VTR	UWS	Status in PAs
Podicipedidae	Great Crested Grebe <i>Podiceps cristatus</i>	WL	O	LC	2001, 2004, 2006, 2008, 2015	2015	2015, 2016	2018	WV
Ciconiidae	Painted Stork <i>Mycteria leucocephala</i>	WL	P	NT	2015	2014, 2016	2017	-	LM
Ciconiidae	Asian Openbill <i>Anastomus oscitans</i>	WL	C	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2015	2015, 2016	2018	R
Ciconiidae	Black Stork <i>Ciconia nigra</i>	WL	C	LC	-	-	2016, 2017	-	WV
Ciconiidae	Woolly-necked Stork <i>Ciconia episcopus</i>	WL	C	VU	2008, 2015	2014, 2016	2017	-	R
Ciconiidae	White Stork <i>Ciconia ciconia</i>	WL	C	LC	2001	2014	-	-	WV
Ciconiidae	Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	WL	C	NT	2003	2016	2018	-	R
Ciconiidae	Lesser Adjutant <i>Leptoptilos javanicus</i>	WL	C	VU	2006, 2015	2014	2017	-	R
Threskiornithidae	Black-headed Ibis <i>Threskiornis melanocephalus</i>	WL	C	NT	2008, 2015	2015	-	-	LM
Threskiornithidae	Red-naped Ibis <i>Pseudibis papillosa</i>	WL/ML	C	LC	2003, 2006, 2015	-	2015, 2016	-	LM
Threskiornithidae	Eurasian Spoonbill <i>Platalea leucorodia</i>	WL	O	LC	2001, 2002, 2003, 2006, 2008, 2015	-	-	-	LM
Ardeidae	Little Bittern <i>Ixobrychus minutus</i>	WL/ML	C	LC	2001, 2002, 2006, 2015	2014	-	-	WV
Ardeidae	Yellow Bittern <i>Ixobrychus sinensis</i>	WL/ML	C	LC	2001, 2002, 2003, 2006, 2008, 2015	-	-	-	R
Ardeidae	Cinnamon Bittern <i>Ixobrychus cinnamomeus</i>	WL/ML	C	LC	2002, 2004, 2008	-	2015	-	R
Ardeidae	Black Bittern <i>Ixobrychus flavicollis</i>	WL/ML	C	LC	2015	-	-	2018	R
Ardeidae	Striated Heron <i>Butorides striata</i>	WL/ML	C	LC	2002, 2003, 2008	2015	-	-	R
Ardeidae	Black-crowned Night Heron <i>Nycticorax nycticorax</i>	WL	C	LC	2003, 2004	2015	2015	-	R
Ardeidae	Indian Pond Heron <i>Ardeola grayii</i>	WL/ML	C	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Ardeidae	Grey Heron <i>Ardea cinerea</i>	WL	P	LC	2001, 2002, 2004, 2006, 2008, 2015	2014	2015, 2017	2018	WV
Ardeidae	Purple Heron <i>Ardea purpurea</i>	WL	C	LC	2001, 2002, 2004, 2006, 2015	2014, 2015	-	-	R
Ardeidae	White-eared Night Heron <i>Gorsachius magnificus</i>	WL/RF	C	EN	-	-	2016	-	R
Ardeidae	Cattle Egret <i>Bubulcus ibis</i>	WL/ML	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Ardeidae	Great Egret <i>Ardea alba</i>	WL	C	LC	2002, 2003, 2008	2014	2016, 2017	-	R
Ardeidae	Intermediate Egret <i>Ardea intermedia</i>	WL	C	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2015, 2016, 2017	2018	R
Ardeidae	Little Egret <i>Egretta garzetta</i>	WL	C	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014	2014, 2015, 2016, 2017	2018	R
Pelecanidae	Great White Pelican <i>Pelecanus onocrotalus</i>	WL	P	LC	2001	-	-	-	WV
Pelecanidae	Spot-billed Pelican <i>Pelecanus philippensis</i>	WL	P	NT	2001	-	-	-	WV
Anhingidae	Oriental Darter <i>Anhinga melanogaster</i>	WL	P	NT	2002, 2004, 2015, 2016	2016	2016, 2017	-	R
Phalacrocoracidae	Little Cormorant <i>Microcarbo niger</i>	WL	P	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2015, 2016, 2017	2018	R
Phalacrocoracidae	Indian Cormorant <i>Phalacrocorax fuscicollis</i>	WL	P	LC	2002, 2003, 2006, 2008, 2015	2014, 2015	2016, 2017	-	R
Phalacrocoracidae	Great Cormorant <i>Phalacrocorax carbo</i>	WL	P	LC	2001, 2002, 2003, 2006, 2008	2014	2015, 2017	2018	R
Falconidae	Collared Falconet <i>Microhierax caerulescens</i>	SF	C	LC	-	-	2017	-	R

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Falconidae	Common Kestrel <i>Falco tinnunculus</i>	GL	C	LC	2003, 2006	-	2014, 2017	-	WV
Falconidae	Red-necked Falcon <i>Falco chicquera</i>	GL	C	LC	-	-	2014	-	R
Falconidae	Eurasian Hobby <i>Falco subbuteo</i>	MF/WGL/AGR	C	LC	-	-	2015	-	PM
Falconidae	Laggar Falcon <i>Falco jugger</i>	GL	C	NT	2004	-	2017	-	R
Falconidae	Peregrine Falcon <i>Falco peregrinus</i>	ML	C	LC	2002, 2006, 2008	2014	2017	-	WV
Pandionidae	Osprey <i>Pandion haliaetus</i>	WL	C	LC	2001, 2002, 2003, 2004, 2008, 2015	2015	2015, 2016	2018	WV
Accipitridae	Black-winged Kite <i>Elanus caeruleus</i>	MF/WGL	O	LC	2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	-	R
Accipitridae	Black Kite <i>Milvus migrans</i>	MF/WGL	O	LC	2001, 2002, 2003, 2004, 2006, 2008	2014	2015, 2017	2018	R
Accipitridae	Brahminy Kite <i>Haliastur indus</i>	WL	C	LC	2008	2015	2014, 2015, 2016	-	WV
Accipitridae	White-tailed Sea Eagle <i>Haliaeetus albicilla</i>	WL	C	LC	2003	-	-	-	WV
Accipitridae	Pallas's Fish Eagle <i>Haliaeetus leucoryphus</i>	WL	C	EN	2001, 2002, 2016	-	2017	-	WV
Accipitridae	Grey-headed Fish Eagle <i>Haliaeetus ichthyaeus</i>	WL/MF	C	NT	2008, 2015	2015	2016	-	R
Accipitridae	Black Eagle <i>Ictinaetus malaiensis</i>	MF	C	LC	-	-	2015, 2016	-	R
Accipitridae	Short-toed Snake Eagle <i>Circaetus gallicus</i>	WGL/MF	C	LC	2004, 2006	2015	2015	-	R
Accipitridae	Crested Serpent Eagle <i>Spilornis cheela</i>	MF/WGL	C	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Accipitridae	Oriental Honey-buzzard <i>Pernis ptilorhynchus</i>	MF	I	LC	2001, 2002, 2003, 2004, 2006, 2015	2015	2015, 2016, 2017	2018	R
Accipitridae	Himalayan Buzzard <i>Buteo refectus</i>	MF/SF	C	LC	-	-	2015	-	WV
Accipitridae	Egyptian Vulture <i>Neophron percnopterus</i>	GL/MF/RB/AGL	C	EN	2016	2015	2016	2018	R
Accipitridae	White-rumped Vulture <i>Gyps bengalensis</i>	GL/RB/AGL	C	CR	2001, 2002, 2004, 2015, 2016	-	2016	2018	R
Accipitridae	Indian Vulture <i>Gyps indicus</i>	RB/AGL/GL	C	CR	2001	2014	2016	-	LM
Accipitridae	Slender-billed Vulture <i>Gyps tenuirostris</i>	AGL	C	CR	2001-2004, 2008, 2016	-	-	-	R
Accipitridae	Himalayan Vulture <i>Gyps himalayensis</i>	AGL/RB	C	NT	2016	-	2016	-	WV
Accipitridae	Griffon Vulture <i>Gyps fulvus</i>	RB/MF	C	LC	2016	-	-	2018	WV
Accipitridae	Red-headed Vulture <i>Sarcogyps calvus</i>	GL/AGR/MF	C	CR	2015	-	2016	2018	R
Accipitridae	Eurasian Marsh Harrier <i>Circus aeruginosus</i>	WL/WGL	C	LC	2001, 2004, 2015	-	2015	2018	WV
Accipitridae	Hen Harrier <i>Circus cyaneus</i>	GL	C	LC	2001, 2004	-	2014	-	WV
Accipitridae	Pallid Harrier <i>Circus macrourus</i>	GL/WGL/AGR	C	NT	2004	-	2016	-	WV
Accipitridae	Crested Goshawk <i>Accipiter trivirgatus</i>	MF	C	LC	-	-	2016	-	R
Accipitridae	Shikra <i>Accipiter badius</i>	MF	C	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Accipitridae	Besra <i>Accipiter virgatus</i>	MF	C	LC	-	-	2015	-	R
Accipitridae	Eurasian Sparrowhawk <i>Accipiter nisus</i>	MF	C	LC	2006	2015	2015	-	R
Accipitridae	White-eyed Buzzard <i>Butastur teesa</i>	MF/GL	C	LC	2001, 2003, 2006	2015	2015	-	R
Accipitridae	Long-legged Buzzard <i>Buteo rufinus</i>	MF/GL	C	LC	2001, 2002, 2008	-	-	-	WV
Accipitridae	Greater Spotted Eagle <i>Clanga clanga</i>	WL	C	VU	2002	-	2016	-	WV
Accipitridae	Tawny Eagle <i>Aquila rapax</i>	MF/WGL	C	LC	2006, 2008	2015	2015	-	R
Accipitridae	Steppe Eagle <i>Aquila nipalensis</i>	MF/WGL	C	EN	2001, 2002	-	2014, 2015, 2017	-	WV

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Accipitridae	Eastern Imperial Eagle <i>Aquila heliaca</i>	WGL/AGR	C	VU	-	-	2016	-	WV
Accipitridae	Bonelli's Eagle <i>Aquila fasciata</i>	MF	C	LC	2006, 2015	2015	-	-	R
Accipitridae	Booted Eagle <i>Hieraetus pennatus</i>	MF	C	LC	-	-	2014	-	WV
Accipitridae	Changeable Hawk Eagle <i>Nisaetus limnaeetus</i>	MF	C	LC	2002, 2003, 2008	2015	2015, 2017	-	R
Otididae	Bengal Florican <i>Houbaropsis bengalensis</i>	GL	O	CR	-	2014	-	-	R
Rallidae	Ruddy-breasted Crake <i>Zapornia fusca</i>	ML	O	LC	2004	-	-	-	R
Rallidae	White-breasted Waterhen <i>Amaurornis phoenicurus</i>	ML	O	LC	2001, 2002, 2003, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	-	R
Rallidae	Brown Crake <i>Zapornia akool</i>	ML	O	LC	2004, 2008	2014	-	-	R
Rallidae	Watercock <i>Gallicrex cinerea</i>	ML	O	LC	2002, 2003	-	-	-	SV
Rallidae	Purple Swampphen <i>Porphyrio porphyrio</i>	WL	O	LC	2001, 2003, 2008, 2015	2014	2015, 2016	-	R
Rallidae	Common Moorhen <i>Gallinula chloropus</i>	ML	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Rallidae	Eurasian Coot <i>Fulica atra</i>	WL	O	LC	2001, 2002, 2003, 2006, 2015	2015	-	2018	WV
Gruidae	Sarus Crane <i>Antigone antigone</i>	ML/WL	O	VU	2001, 2004	2014	2017	-	R
Burhinidae	Eurasian Thick-knee <i>Burhinus oedicnemus</i>	GL	I	LC	2001, 2002, 2006, 2008, 2015	-	-	-	R
Burhinidae	Great Thick-knee <i>Esacus recurvirostris</i>	GL	I	NT	2006	-	2017	-	R
Jacaniidae	Pheasant-tailed Jacana <i>Hydrophasianus chirurgus</i>	WL	H	LC	2001, 2002, 2004, 2006, 2008, 2015	-	2015, 2016	2018	R
Jacaniidae	Bronze-winged Jacana <i>Metopidius indicus</i>	WL	H	LC	2001, 2002, 2003, 2004, 2006, 2015	2015	2015, 2016, 2017	2018	R
Recurvirostridae	Black-winged Stilt <i>Himantopus himantopus</i>	WL	O	LC	2004, 2006, 2008	2014	2015, 2016, 2017	-	WV
Charadriidae	River Lapwing <i>Vanellus duvaucelii</i>	WL/ML	I	NT	2001, 2002, 2004, 2015	2016	2016	-	R
Charadriidae	Yellow-wattled Lapwing <i>Vanellus malabaricus</i>	WL/GL	I	LC	2001, 2006, 2008	-	2015, 2017	2018	R
Charadriidae	Grey-headed Lapwing <i>Vanellus cinereus</i>	WL/ML	I	LC	2004	2015	2014	2018	WV
Charadriidae	Red-wattled Lapwing <i>Vanellus indicus</i>	WL/GL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Charadriidae	White-tailed Lapwing <i>Vanellus leucurus</i>	WL	I	LC	2001	-	-	-	WV
Charadriidae	Pacific Golden Plover <i>Pluvialis fulva</i>	ML/GL	I	LC	2002	-	-	-	WV
Charadriidae	Little Ringed Plover <i>Charadrius dubius</i>	WL	I	LC	2001, 2002, 2004, 2006, 2015	-	2014, 2015, 2017	-	WV
Rostratulidae	Greater Painted-snipe <i>Rostratula benghalensis</i>	WL	O	LC	2001, 2002, 2008, 2015	-	-	-	R
Scolopacidae	Ruff <i>Calidris pugnax</i>	WL	I	LC	2001, 2002	-	-	-	WV
Scolopacidae	Jack Snipe <i>Lymnocyrtus minimus</i>	ML	I	LC	2002, 2003	-	-	-	WV
Scolopacidae	Common Snipe <i>Gallinago gallinago</i>	M	O	LC	2006	2014	-	2018	WV
Scolopacidae	Black-tailed Godwit <i>Limosa limosa</i>	ML	O	NT	2006	-	-	-	WV
Scolopacidae	Eurasian Curlew <i>Numenius arquata</i>	WL	C	NT	2002	-	2016	-	WV
Scolopacidae	Spotted Redshank <i>Tringa erythropus</i>	WL	I	LC	2002, 2003, 2006, 2015	-	-	-	WV
Scolopacidae	Common Redshank <i>Tringa totanus</i>	WL	I	LC	2006	2015	2015	-	WV
Scolopacidae	Marsh Sandpiper <i>Tringa stagnatilis</i>	WL	I	LC	2002, 2003, 2006	-	2014	-	WV
Scolopacidae	Common Greenshank <i>Tringa nebularia</i>	WL	C	LC	2008, 2015	-	-	-	WV
Scolopacidae	Green Sandpiper <i>Tringa ochropus</i>	WL	I	LC	2001, 2002, 2006, 2008, 2015	-	-	-	WV
Scolopacidae	Wood Sandpiper <i>Tringa glareola</i>	WL	P	LC	2008	2014	2015	-	WV

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Scolopacidae	Common Sandpiper <i>Actitis hypoleucos</i>	WL	I	LC	2001, 2002, 2003, 2006, 2008, 2015	2015	2014, 2016	2018	WV
Scolopacidae	Little Stint <i>Calidris minuta</i>	WL	O	LC	2006, 2008	2015	-	-	WV
Scolopacidae	Temminck's Stint <i>Calidris temminckii</i>	WL	O	LC	2001, 2002, 2008	-	-	-	WV
Glareolidae	Small Pratincole <i>Glareola lactea</i>	GL/WL	I	LC	2001, 2003, 2008	-	2014	-	R
Laridae	Pallas's Gull <i>Ichthyophaga ichthyophaga</i>	WL	C	LC	-	2014	2016, 2017	-	WV
Laridae	Brown-headed Gull <i>Chroicocephalus brunnicephalus</i>	WL	C	LC	2004, 2006	2015	-	-	PM
Laridae	Black-headed Gull <i>Chroicocephalus ridibundus</i>	WL	C	LC	2001, 2002, 2003, 2008, 2015	-	-	-	PM
Laridae	River Tern <i>Sterna aurantia</i>	WL	C	NT	2003, 2008	2016	-	-	R
Laridae	Little Tern <i>Sternula albifrons</i>	WL	C	LC	2002, 2004, 2006	-	-	-	R
Laridae	Black-bellied Tern <i>Sterna acuticauda</i>	WL	C	NT	2004, 2005, 2006, 2008, 2015	-	-	-	R
Laridae	Whiskered Tern <i>Chlidonias hybrida</i>	WL	C	LC	2002	2014	-	-	WV
Laridae	Indian Skimmer <i>Rynchops albicollis</i>	WL	C	EN	2015	-	-	-	PM
Columbidae	Rock Pigeon <i>Columba livia</i>	SF/MF	G	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Columbidae	Oriental Turtle Dove <i>Streptopelia orientalis</i>	SF	G	LC	2006, 2008, 2015	-	2015, 2017	-	WV
Columbidae	Eurasian Collared Dove <i>Streptopelia decaocto</i>	MF/SF/GL	G	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Columbidae	Red Collared Dove <i>Streptopelia tranquebarica</i>	GL	G	LC	2003, 2006, 2015	2015	2015, 2016	-	R
Columbidae	Spotted Dove <i>Stigmatopelia chinensis</i>	SF/MF	G	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Columbidae	Laughing Dove <i>Stigmatopelia senegalensis</i>	MF/GL	G	LC	2003, 2004, 2006, 2008, 2015	2015	2014, 2016	-	R
Columbidae	Orange-breasted Green Pigeon <i>Treron bincinctus</i>	SF/MF	F	LC	2001, 2002, 2006	2014, 2015	2014, 2015	-	R
Columbidae	Yellow-footed Green Pigeon <i>Treron phoenicopterus</i>	SF/MF	F	LC	2001, 2002, 2003, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	-	R
Columbidae	Pin-tailed Green Pigeon <i>Treron apicauda</i>	SF/MF	F	LC	2003, 2004, 2006, 2008	-	-	-	R
Columbidae	Ashy-headed Green Pigeon <i>Treron phayrei</i>	SF/MF	F	NT	-	-	2017	-	R
Columbidae	Emerald Dove <i>Chalcophaps indica</i>	SF	F	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Psittacidae	Alexandrine Parakeet <i>Psittacula eupatria</i>	MF/WGL	F	NT	2015	2015	2017	2018	R
Psittacidae	Rose-ringed Parakeet <i>Psittacula krameri</i>	MF/WGL	F	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Psittacidae	Plum-headed Parakeet <i>Psittacula cyanocephala</i>	MF/WGL	F	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Psittacidae	Slaty-headed Parakeet <i>Psittacula himalayana</i>	MF/WGL	F	LC	2002, 2003, 2015	-	-	-	R
Cuculidae	Pied Cuckoo <i>Clamator jacobinus</i>	MF/WGL	I	LC	2002, 2004, 2008	-	2015, 2017	-	SV
Cuculidae	Chestnut-winged Cuckoo <i>Clamator coromandus</i>	MF	I	LC	-	-	2015, 2016	-	SV
Cuculidae	Common Hawk Cuckoo <i>Hierococcyx varius</i>	MF/WGL	I	LC	2001, 2002, 2003, 2006, 2008, 2015	2015	2015, 2016, 2017	2018	R
Cuculidae	Indian Cuckoo <i>Cuculus micropterus</i>	MF/SF	I	LC	2002, 2003	2014	2015, 2016	-	SV
Cuculidae	Eurasian Cuckoo <i>Cuculus canorus</i>	MF/SF/GL	I	LC	2001, 2002	2015	2015, 2016	-	SV
Cuculidae	Banded Bay Cuckoo <i>Cacomantis sonneratii</i>	MF	I	LC	2002, 2003	-	-	-	R

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Cuculidae	Grey-bellied Cuckoo <i>Cacomantis passerinus</i>	GL/WGL	I	LC	2001	-	-	-	SV
Cuculidae	Asian Emerald Cuckoo <i>Chrysococcyx maculatus</i>	MF/SF	I	LC	2002, 2006, 2015	-	-	-	SV
Cuculidae	Drongo Cuckoo <i>Surniculus lugubris</i>	MF	I	LC	-	-	2015	-	SV
Cuculidae	Asian Koel <i>Eudynamis scolopaceus</i>	MF/SF	F	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2015	2014, 2015, 2016, 2017	2018	R
Cuculidae	Green-billed Malkoha <i>Phaenicophaeus tristis</i>	MF	I	LC	2008, 2015	2015	2014, 2016	-	R
Cuculidae	Sirkeer Malkoha <i>Taccocua leschenaultii</i>	MF/GL/WGL	F	LC	2015	-	2015, 2017	-	R
Cuculidae	Greater Coucal <i>Centropus sinensis</i>	MF/WGL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Cuculidae	Lesser Coucal <i>Centropus bengalensis</i>	GL	O	LC	2006	2014	2015	-	R
Tytonidae	Barn Owl <i>Tyto alba</i>	GL/MF	C	LC	2001, 2008	2015	2014, 2016	-	R
Tytonidae	Eastern Grass Owl <i>Tyto longimembris</i>	GL	C	LC	2001, 2006, 2015	-	-	-	R
Strigidae	Collared Scops Owl <i>Otus lettia</i>	MF/WGL	C	LC	2001, 2003	2015	-	-	R
Strigidae	Oriental Scops Owl <i>Otus sunia</i>	MF/AGR	C	LC	2015	-	2014, 2017	-	R
Strigidae	Indian Scops Owl <i>Otus bakkamoena</i>	MF/SF	C	LC	-	-	2015, 2016, 2017	-	R
Strigidae	Asian Barred Owlet <i>Glaucidium cuculoides</i>	SF/MF/GL	C	LC	2002, 2006, 2008, 2015	2014, 2015	2015, 2017	-	R
Strigidae	Jungle Owlet <i>Glaucidium radiatum</i>	SF/MF/GL	C	LC	2004, 2006	2014	2015, 2016, 2017	-	R
Strigidae	Spotted Owlet <i>Athene brama</i>	WGL/MF	C	LC	2001, 2002, 2004, 2006, 2008, 2015	2015	2014, 2016, 2017	2018	R
Strigidae	Eurasian Eagle Owl <i>Bubo bubo</i>	SF/MF/GL	C	LC	2001, 2006, 2015	-	-	-	R
Strigidae	Dusky Eagle Owl <i>Bubo coromandus</i>	SF	C	LC	2001, 2002, 2006	-	-	-	R
Strigidae	Brown Fish Owl <i>Ketupa zeylonensis</i>	WL/MF	C	LC	2001, 2003, 2004, 2015	-	2015, 2016, 2017	2018	R
Strigidae	Brown Wood Owl <i>Strix leptogrammica</i>	SF/MF	C	LC	2001, 2006	-	-	-	R
Strigidae	Brown Hawk Owl <i>Ninox scutulata</i>	MF	C	LC	2015	2014, 2015	2014, 2015, 2017	-	R
Caprimulgidae	Large-tailed Nightjar <i>Caprimulgus macrurus</i>	SF/WGL	I	LC	2002, 2006, 2008	-	2014, 2015, 2017	-	R
Caprimulgidae	Grey Nightjar <i>Caprimulgus indicus</i>	MF/SF	I	LC	-	-	2015	-	R
Caprimulgidae	Indian Nightjar <i>Caprimulgus asiaticus</i>	MF	I	LC	2002, 2003, 2015	2015	2014	-	R
Caprimulgidae	Savanna Nightjar <i>Caprimulgus affinis</i>	MF/WGL	I	LC	2002, 2003	-	-	-	R
Hemiprocidae	Crested Treeswift <i>Hemiprocne coronata</i>	MF/WGL	I	LC	2002, 2003, 2006	-	-	-	R
Apodidae	Asian Palm Swift <i>Cypsiurus balasensis</i>	AGR/WGL	I	LC	2015	2015	2014, 2015	-	R
Apodidae	Little Swift <i>Apus affinis</i>	AGR/GL	I	LC	2006, 2008	-	2014, 2016	-	R
Apodidae	White-rumped Needletail <i>Zoonavena sylvatica</i>	MF	I	LC	-	-	2016	-	LM
Upupidae	Common Hoopoe <i>Upupa epops</i>	GL/WGL/AGR	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Coraciidae	Indian Roller <i>Coracias benghalensis</i>	MF/GL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Coraciidae	Dollarbird <i>Eurystomus orientalis</i>	SF/MF	I	LC	-	-	2016, 2017	-	R
Alcedinidae	Stork-billed Kingfisher <i>Pelargopsis capensis</i>	WL/RF	P	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R

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Alcedinidae	White-throated Kingfisher <i>Halcyon smyrnensis</i>	WL/RF/GL	P	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Alcedinidae	Black-capped Kingfisher <i>Halcyon pileata</i>	WL	P	LC	-	-	2014	-	PM
Alcedinidae	Common Kingfisher <i>Alcedo atthis</i>	WL	P	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Alcedinidae	Crested Kingfisher <i>Megaceryle lugubris</i>	WL	P	LC	2001, 2002, 2004, 2006	-	-	-	R
Alcedinidae	Pied Kingfisher <i>Ceryle rudis</i>	WL	P	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Meropidae	Blue-bearded Bee-eater <i>Nyctornis athertoni</i>	MF/GL	I	LC	2002, 2003, 2004, 2008, 2015	2014, 2015	2015, 2016, 2017	-	R
Meropidae	Green Bee-eater <i>Merops orientalis</i>	MF/GL/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Meropidae	Blue-tailed Bee-eater <i>Merops philippinus</i>	MF/GL/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2015, 2016, 2017	2018	SV
Meropidae	Chestnut-headed Bee-eater <i>Merops leschenaulti</i>	MF/GL/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014	2014, 2015, 2016, 2017	2018	SV
Bucerotidae	Indian Grey Hornbill <i>Ocyrceros birostris</i>	SF/MF/GL	F	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Bucerotidae	Oriental Pied Hornbill <i>Anthraceroceros albirostris</i>	SF/MF/WGL	F	LC	2002, 2003, 2006, 2015	2014, 2015	2014, 2015, 2016, 2017	-	R
Bucerotidae	Great Hornbill <i>Buceros bicornis</i>	SF/MF	F	NT	2015	2016	2017	-	R
Megalaimidae	Brown-headed Barbet <i>Psilopogon zeylanicus</i>	SF/WGL	F	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Megalaimidae	Lineated Barbet <i>Psilopogon lineatus</i>	MF/AGR/SF	F	LC	-	2014	2014	-	R
Megalaimidae	Blue-throated Barbet <i>Psilopogon asiaticus</i>	SF/WGL	F	LC	2002, 2006, 2008, 2015	-	2017	-	R
Megalaimidae	Coppersmith Barbet <i>Psilopogon haemacephalus</i>	SF/MF/WGL	F	LC	2001, 2002, 2015	2014	2015, 2016, 2017	-	R
Picidae	Eurasian Wryneck <i>Jynx torquilla</i>	SF/RF/MF	I	LC	2008	-	2015	-	WV
Picidae	Speckled Piculet <i>Picumnus innominatus</i>	SF/MF	I	LC	-	-	2015	-	R
Picidae	Rufous Woodpecker <i>Micropternus brachyurus</i>	SF/WGL	I	LC	2002, 2006	2015	2014, 2015	-	R
Picidae	Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>	SF	I	VU	2004	2014	2017	-	R
Picidae	Brown-capped Pygmy Woodpecker <i>Yungipicus nanus</i>	RF/MF/SF/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2015	2014, 2015, 2016, 2017	2018	R
Picidae	Grey-capped Pygmy Woodpecker <i>Yungipicus canicapillus</i>	RF/MF/SF/WGL	I	LC	2001, 2002, 2003, 2004, 2008, 2015	2014	2014, 2015, 2016	2018	R
Picidae	Fulvous-breasted Woodpecker <i>Dendrocopos macei</i>	SF	I	LC	-	-	2014, 2016	2018	R
Picidae	Yellow-crowned Woodpecker <i>Leiopicus mahrattensis</i>	MF/WGL	I	LC	2015	2015	2015, 2016	-	R
Picidae	Lesser Yellownape <i>Picus chlorolophus</i>	SF	I	LC	2001, 2002, 2003, 2008, 2015	-	-	-	R
Picidae	Greater Yellownape <i>Chrysophlegma flavinucha</i>	SF	I	LC	2001, 2006	-	2015, 2016	-	R
Picidae	Streak-throated Woodpecker <i>Picus xanthopygaeus</i>	SF/WGL	I	LC	2003, 2006, 2015	2014, 2015	-	-	R
Picidae	Scaly-bellied Woodpecker <i>Picus squamatus</i>	SF/WGL	I	LC	2002, 2006, 2008	2015	-	-	R
Picidae	Grey-headed Woodpecker <i>Picus canus</i>	SF	I	LC	2001, 2003, 2008, 2015	2014, 2015	2014, 2015, 2016	-	R

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Picidae	Himalayan Golden-backed Woodpecker <i>Dinopium shorii</i>	SF/MF/RF/WGL	I	LC	2008, 2015	2014	-	2018	R
Picidae	Lesser Golden-backed Woodpecker <i>Dinopium benghalense</i>	SF/MF/RF/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Picidae	Greater Golden-backed Woodpecker <i>Chrysocolaptes lucidus</i>	SF/WGL	I	LC	2006, 2015	2015	2016, 2017	-	R
Picidae	White-naped Woodpecker <i>Chrysocolaptes festivus</i>	SF/WGL	I	LC	-	2015	-	-	R
Pittidae	Indian Pitta <i>Pitta brachyura</i>	SF	I	LC	2001, 2002	2015	2016, 2017	-	SV
Tephrodornithidae	Large Woodshrike <i>Tephrodornis virgatus</i>	SF/MF/WGL	I	LC	2015	2015	2014, 2015, 2016	-	R
Tephrodornithidae	Common Woodshrike <i>Tephrodornis pondicerianus</i>	GL/SF/WGL	I	LC	2001	2015	2014, 2015, 2016	-	R
Artamidae	Ashy Woodswallow <i>Artamus fuscus</i>	SF	I	LC	2003, 2004, 2006	-	-	-	R
Campephagidae	Large Cuckooshrike <i>Coracina macei</i>	SF/WGL	I	LC	2001, 2003, 2008	2015	2014, 2017	2018	SV
Campephagidae	Black-winged Cuckooshrike <i>Lalage melaschistos</i>	SF/MF	I	LC	-	-	2015	2018	R
Campephagidae	Black-headed Cuckooshrike <i>Lalage melanoptera</i>	SF/MF	I	LC	-	-	2015, 2016	-	R
Campephagidae	Bar-winged Flycatcher-shrike <i>Hemipus picatus</i>	SF/RF/MF/WGL	I	LC	-	-	2014, 2015, 2017	-	R
Aegithinidae	Common Iora <i>Aegithina tiphia</i>	SF/RF/MF/WGL	I	LC	2002, 2008, 2015	2014	2014, 2015, 2016	-	R
Campephagidae	Small Minivet <i>Pericrocotus cinnamomeus</i>	SF/MF/WGL	I	LC	2002, 2004, 2006, 2008, 2015	2015	2014, 2015, 2016	2018	R
Campephagidae	Long-tailed Minivet <i>Pericrocotus ethologus</i>	SF/RF	I	LC	2002, 2003, 2008, 2015	2014	2014, 2015, 2016	-	R
Campephagidae	Short-billed Minivet <i>Pericrocotus brevirostris</i>	SF	I	LC	2002, 2004	-	2014	-	R
Campephagidae	Scarlet Minivet <i>Pericrocotus speciosus</i>	SF/MF	I	LC	2002, 2003, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	-	R
Laniidae	Brown Shrike <i>Lanius cristatus</i>	MF/AGR	I	LC	2015	-	2014, 2015	-	WV
Laniidae	Bay-backed Shrike <i>Lanius vittatus</i>	WGL	I	LC	2002	2015	2015, 2016	-	R
Laniidae	Long-tailed Shrike <i>Lanius schach</i>	WGL	C	LC	2003, 2008	2014	2014, 2015	-	R
Laniidae	Great Grey Shrike <i>Lanius excubitor</i>	MF/AGR	C	LC	-	-	2015	-	VA
Laniidae	Grey-backed Shrike <i>Lanius tephronotus</i>	AGR/MF	C	LC	2003	2015	-	-	WV
Laniidae	Isabelline Shrike <i>Lanius isabellinus</i>	WGL	C	LC	2015	2015	-	-	WV
Dicruridae	Lesser Racket-tailed Drongo <i>Dicrurus remifer</i>	SF/MF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Dicruridae	Greater Racket-tailed Drongo <i>Dicrurus paradiseus</i>	SF/MF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Dicruridae	Spangled Drongo <i>Dicrurus bracteatus</i>	SF/MF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014	2014, 2015, 2016, 2017	2018	R
Dicruridae	Black Drongo <i>Dicrurus macrocercus</i>	SF/MF/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Dicruridae	Ashy Drongo <i>Dicrurus leucophaeus</i>	SF	I	LC	2001, 2002, 2003, 2004, 2008, 2015	2014, 2015	2015, 2016, 2017	2018	WV
Dicruridae	White-bellied Drongo <i>Dicrurus caeruleus</i>	SF/MF/WGL/RF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Dicruridae	Crow-billed Drongo <i>Dicrurus annectans</i>	SF/MF/GL	I	LC	2003, 2015	2014	2015, 2016	-	SV
Oriolidae	Indian Golden Oriole <i>Oriolus kundoo</i>	MF/WGL	I	LC	2002, 2008, 2015	2014	2015, 2016	-	R
Oriolidae	Black-hooded Oriole <i>Oriolus xanthornus</i>	SF/MF/WGL/RF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R

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Stenostiridae	Yellow-bellied Fantail <i>Chelidorhynch hypoxanthus</i>	SF/MF/WGL	I	LC	2001, 2002, 2008, 2015	-	-	-	WV
Rhipiduridae	White-throated Fantail <i>Rhipidura albicollis</i>	WGL/GL	I	LC	2001, 2004, 2006, 2008, 2015	2015	2014, 2016	2018	WV
Rhipiduridae	White-browed Fantail <i>Rhipidura aureola</i>	SF/MF/WGL	I	LC	2001, 2002, 2008	2015	2015	-	R
Monarchidae	Indian Paradise-flycatcher <i>Terpsiphone paradisi</i>	SF/RF	I	LC	2001, 2002, 2004, 2006, 2008, 2015	2015	2014, 2015, 2016, 2017	-	SV
Monarchidae	Black-naped Monarch <i>Hypothymis azurea</i>	SF/RF	I	LC	2006	-	2017	-	WV
Corvidae	Red-billed Blue Magpie <i>Urocissa erythrorhyncha</i>	SF/MF/RF	O	LC	-	-	2014, 2015, 2016, 2017	-	R
Corvidae	Common Green Magpie <i>Cissa chinensis</i>	SF/RF	C	LC	-	-	2016, 2017	-	R
Corvidae	Rufous Treepie <i>Dendrocitta vagabunda</i>	SF/MF/WGL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Corvidae	Large-billed Crow <i>Corvus macrorhynchos</i>	SF/MF/WGL	C	LC	2001, 2002, 2003, 2004, 2006, 2015	-	2014, 2015, 2016	2018	R
Corvidae	House Crow <i>Corvus splendens</i>	MF/AGR	C	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Paridae	Cinereous Tit <i>Parus cinereus</i>	SF/MF/WGL/RF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Paridae	Green-backed Tit <i>Parus monticolus</i>	SF/MF	I	LC	-	-	2014	-	R
Paridae	Black-lored Tit <i>Machlolophus xanthogenys</i>	SF/MF	I	LC	-	-	2015	-	R
Paridae	Fire-capped Tit <i>Cephalopyrus flammiceps</i>	MF/RF	I	LC	2002, 2003	-	-	-	WV
Hirundinidae	Plain Martin <i>Riparia paludicola</i>	WL/ML	I	LC	2002, 2004, 2008, 2015	-	2014, 2015, 2016	2018	R
Hirundinidae	Sand Martin <i>Riparia riparia</i>	WL/ML/WGL	I	LC	2003, 2008	2015	-	-	WV
Hirundinidae	Eurasian Crag Martin <i>Ptyonoprogne rupestris</i>	ML/WL	I	LC	2001	2014	2015	-	WV
Hirundinidae	Dusky Crag Martin <i>Ptyonoprogne concolor</i>	ML/WL	I	LC	2001, 2004, 2006	-	2015	-	R
Hirundinidae	Streak-throated Swallow <i>Petrochelidon fluvicola</i>	GL/ML	I	LC	2002, 2003	2015	-	-	R
Hirundinidae	Wire-tailed Swallow <i>Hirundo smithii</i>	GL/WGL/AGR	I	LC	2001, 2002, 2003, 2008, 2015	2014, 2015	-	-	R
Hirundinidae	Barn Swallow <i>Hirundo rustica</i>	GL/ML	I	LC	2002, 2006, 2008, 2015	2014, 2015	-	2018	WV
Hirundinidae	Red-rumped Swallow <i>Cecropis daurica</i>	GL/ML	I	LC	2001, 2004, 2008	2015	-	-	R
Alaudidae	Singing Bushlark <i>Mirafra cantillans</i>	GL	G, I	LC	2006	-	2015	-	R
Alaudidae	Bengal Bushlark <i>Mirafra assamica</i>	GL	G, I	LC	2015	2014	2016	-	R
Alaudidae	Indian Bushlark <i>Mirafra erythroptera</i>	GL/AGR	G, I	LC	2001, 2006, 2008	2015	2014, 2015, 2016	-	R
Alaudidae	Rufous-tailed Lark <i>Ammomanes phoenicura</i>	GL	G, I	LC	-	-	2015	-	R
Alaudidae	Sand Lark <i>Alauda raytal</i>	ML/GL	G, I	LC	-	-	2014, 2015	-	R
Alaudidae	Ashy-crowned Sparrow Lark <i>Eremopterix griseus</i>	AGR/GL	G, I	LC	-	-	2015	-	R
Alaudidae	Crested Lark <i>Galerida cristata</i>	GL/AGR	G, I	LC	2015	2014	-	-	R
Alaudidae	Oriental Skylark <i>Auda gulgula</i>	GL/AGR	G, I	LC	2004, 2006	-	2015	-	R
Pycnonotidae	Himalayan Bulbul <i>Pycnonotus leucogenys</i>	MF/RF	I	LC	2001, 2002, 2004, 2006, 2015	-	2014, 2015, 2016, 2017	-	R
Pycnonotidae	Black-crested Bulbul <i>Rubigula flaviventris</i>	SF/MF	I	LC	-	-	2014, 2015, 2017	-	R
Pycnonotidae	Red-whiskered Bulbul <i>Pycnonotus jocosus</i>	SF/MF/RF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R

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Pycnonotidae	Red-vented Bulbul <i>Pycnonotus cafer</i>	SF/MF/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Pycnonotidae	Black Bulbul <i>Hypsipetes leucocephalus</i>	SF/MF	I	LC	-	-	2014, 2017	-	R
Cisticolidae	Grey-breasted Prinia <i>Prinia hodgsonii</i>	GL/WGL	N	LC	2006, 2008, 2015	2015	2015, 2016	-	R
Cisticolidae	Jungle Prinia <i>Prinia sylvatica</i>	GL	I	LC	2004, 2008, 2015	2015	2015, 2016	-	R
Cisticolidae	Yellow-bellied Prinia <i>Prinia flaviventris</i>	GL	I	LC	2001, 2002, 2004, 2015	-	2015, 2016	-	R
Cisticolidae	Ashy Prinia <i>Prinia socialis</i>	GL/WGL	N	LC	2001, 2008	2015	2014, 2017	-	R
Cisticolidae	Plain Prinia <i>Prinia inornata</i>	GL/WGL	N	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2015	2014, 2015, 2016, 2017	2018	R
Cisticolidae	Zitting Cisticola <i>Cisticola juncidis</i>	GL	I	LC	2001, 2002, 2003, 2004, 2015	2015	2014, 2015, 2017	2018	R
Cisticolidae	Golden-headed Cisticola <i>Cisticola exilis</i>	GL	I	LC	2001, 2002, 2003	-	-	-	R
Cisticolidae	Common Tailorbird <i>Orthotomus sutorius</i>	SF/MF/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Locustellidae	Striated Grassbird <i>Megalurus palustris</i>	ML	I	LC	2003	2014	2015	-	R
Scotocercidae	Grey-sided Bush Warbler <i>Cettia brunnifrons</i>	GL	I	LC	2001, 2003	-	-	-	WV
Locustellidae	West Himalayan Bush Warbler <i>Locustella kashmirensis</i>	GL	I	LC	2003, 2004	-	-	-	WV
Locustellidae	Grasshopper Warbler <i>Locustella naevia</i>	ML	I	LC	2004, 2006	-	-	-	WV
Pellorneidae	Rufous-rumped Grassbird <i>Graminicola bengalensis</i>	GL	I	LC	2001	2014	2015	-	R
Acrocephalidae	Clamorous Reed Warbler <i>Acrocephalus stentoreus</i>	ML	I	LC	2001, 2002, 2008, 2015	-	2015	2018	WV
Acrocephalidae	Paddyfield Warbler <i>Acrocephalus agricola</i>	ML	I	LC	2002, 2003, 2006	-	2014, 2016	-	WV
Acrocephalidae	Blyth's Reed Warbler <i>Acrocephalus dumetorum</i>	ML	I	LC	2002, 2003, 2004, 2006	-	2014, 2015, 2016	-	WV
Scotocercidae	Grey-bellied Tesia <i>Tesia cyaniventer</i>	SF	I	LC	2002, 2003	-	-	-	WV
Phylloscopidae	Common Chiffchaff <i>Phylloscopus collybita</i>	MF/WGL	I	LC	2004, 2006	2015	2014, 2017	2018	WV
Phylloscopidae	Dusky Warbler <i>Phylloscopus fuscatus</i>	GL	I	LC	-	-	2014	-	WV
Phylloscopidae	Smoky Warbler <i>Phylloscopus fuliginenter</i>	WL	I	LC	2003, 2006	2015	-	-	WV
Phylloscopidae	Tickell's Leaf Warbler <i>Phylloscopus affinis</i>	MF/AGR	I	LC	2015	-	2014	-	WV
Phylloscopidae	Yellow-browed Warbler <i>Phylloscopus inornatus</i>	SF/MF/RF/WGL	I	LC	2001, 2002, 2003, 2008	-	-	-	WV
Phylloscopidae	Hume's Leaf Warbler <i>Phylloscopus humei</i>	MF/SF/RF/WGL	I	LC	2001, 2004, 2006	2015	2014, 2016	2018	WV
Phylloscopidae	Greenish Warbler <i>Phylloscopus trochiloides</i>	SF/MF/RF	I	LC	2001, 2003, 2015	2015	2014, 2015, 2016	-	WV
Phylloscopidae	Blyth's Leaf Warbler <i>Phylloscopus reguloides</i>	SF/MF/WGL	I	LC	2002, 2006	2014	2015	-	WV
Phylloscopidae	Western Crowned Warbler <i>Phylloscopus occipitalis</i>	SF/MF/RF/WGL	I	LC	2001, 2002, 2003, 2006, 2008	-	-	-	WV
Leiothrichidae	Nepal Fulvetta <i>Alcippe nipalensis</i>	SF/MF	I	LC	-	-	2014, 2017	-	R
Sylviidae	Lesser Whitethroat <i>Curruca curruca</i>	MF/SF	I	LC	2015	-	2014, 2015, 2016	-	WV
Sylviidae	Eastern Orphean Warbler <i>Curruca crassirostris</i>	MF/SCRUB	I	LC	-	-	2014	-	WV
Pellorneidae	Puff-throated Babbler <i>Pellorneum ruficeps</i>	SF/MF	I	LC	-	-	2014, 2015, 2017	-	R
Timaliidae	Pin-striped Tit Babbler <i>Mixornis gularis</i>	MF/WGL	I	LC	2003	2015	2015	-	R

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Timaliidae	Chestnut-capped Babbler <i>Timalia pileata</i>	GL	I	LC	2006, 2008, 2015	2015	-	-	R
Timaliidae	Tawny-bellied Babbler <i>Dumetia hyperythra</i>	MF/WGL	I	LC	2004, 2006	-	2014	-	R
Leiothrichidae	Common Babbler <i>Argya caudata</i>	MF	O	LC	2001, 2002, 2003, 2008, 2015	-	2014, 2015, 2016, 2017	-	R
Leiothrichidae	Striated Babbler <i>Argya earlei</i>	ML	O	LC	2001, 2002, 2006	2015	-	-	R
Leiothrichidae	Large Grey Babbler <i>Argya malcolmi</i>	MF/WGL	O	LC	2002, 2006	2014, 2015	2016, 2017	-	R
Leiothrichidae	Jungle Babbler <i>Argya striata</i>	MF/WGL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Sylviidae	Yellow-eyed Babbler <i>Chrysomma sinense</i>	GL/WGL	O	LC	2001, 2003, 2008	2014, 2015	2015	-	R
Leiothrichidae	White-throated Laughingthrush <i>Garrulax albogularis</i>	SF/MF	I	LC	-	-	2014, 2016	-	R
Leiothrichidae	Lesser Necklaced Laughingthrush <i>Garrulax monileger</i>	SF/MF	I	LC	-	-	2016, 2017	-	R
Leiothrichidae	Greater Necklaced Laughingthrush <i>Garrulax pectoralis</i>	SF/MF	I	LC	-	-	2016, 2017	-	R
Zosteropidae	Oriental White-Eye <i>Zosterops palpebrosus</i>	SF/MF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2015	2014, 2015, 2016, 2017	2018	R
Sittidae	Indian Nuthatch <i>Sitta castanea</i>	SF/MF	I	LC	2003, 2004, 2008	-	2014, 2016	-	R
Sittidae	Chestnut-bellied Nuthatch <i>Sitta cinnamoventris</i>	SF/MF	I	LC	2001, 2003, 2008	2015	2014, 2015, 2016	-	R
Sittidae	Velvet-fronted Nuthatch <i>Sitta frontalis</i>	SF/MF	I	LC	2001, 2002, 2003, 2006, 2015	-	2014, 2015, 2016	-	R
Certhiidae	Bar-tailed Treecreeper <i>Certhia himalayana</i>	SF	I	LC	2001, 2002, 2003, 2006, 2008, 2015	-	-	-	WV
Sturnidae	Jungle Myna <i>Acridotheres fuscus</i>	MF/WGL	O	LC	2001, 2003, 2006, 2008, 2015	2015	2014, 2015, 2016	-	R
Sturnidae	Bank Myna <i>Acridotheres ginginianus</i>	GL/WGL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Sturnidae	Common Myna <i>Acridotheres tristis</i>	GL/WGL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Sturnidae	Hill Myna <i>Gracula religiosa</i>	MF	O	LC	-	-	2015, 2016, 2017	-	R
Sturnidae	Asian Pied Starling <i>Gracupica contra</i>	WGL	O	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Sturnidae	Chestnut-tailed Starling <i>Sturnia malabarica</i>	WGL	O	LC	2001, 2002, 2008	2015	2015, 2016	-	R
Sturnidae	Brahminy Starling <i>Sturnia pagodarum</i>	MF/WGL	O	LC	2002, 2003, 2008, 2015	-	2016, 2017	2018	R
Sturnidae	European Starling <i>Sturnus vulgaris</i>	GL/AGR	O	LC	2002, 2003, 2006, 2015	2014, 2015	-	2018	WV
Sturnidae	Rosy Starling <i>Pastor roseus</i>	GL/AGR	F	LC	-	-	2015, 2017	-	PM
Sturnidae	Spot-winged Starling <i>Saroglossa spilopterus</i>	SF/MF	I	LC	-	-	2015	-	SV
Muscicapidae	Blue Whistling Thrush <i>Myophonus caeruleus</i>	SF	I	LC	2001, 2003, 2006, 2015	2015	2014, 2017	-	WV
Turdidae	Orange-headed Thrush <i>Geokichla citrina</i>	SF/MF	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2015, 2016, 2017	2018	R
Turdidae	Scaly Thrush <i>Zoothera dauma</i>	SF/MF	O	LC	-	-	2016	-	WV
Turdidae	Grey-winged Blackbird <i>Turdus boulboul</i>	SF	I	LC	2003, 2006	-	-	-	WV
Turdidae	Tibetan Blackbird <i>Turdus maximus</i>	SF	I	LC	-	-	2014, 2016, 2017	-	WV
Turdidae	Tickell's Thrush <i>Turdus unicolor</i>	MF	O	LC	-	-	-	2018	WV
Turdidae	Black-throated Thrush <i>Turdus atrogularis</i>	WGL	I	LC	2008, 2015	2015	2016	-	WV

Family	Species name	Habitat	Feeding guild	IUCN Red List status	KWS	PTR	VTR	UWS	Status in PAs
Muscicapidae	Bluethroat <i>Luscinia svecica</i>	GL/WL	I	LC	2006, 2008, 2015	2015	-	-	WV
Muscicapidae	Siberian Rubythroat <i>Calliope calliope</i>	GL/WL	I	LC	2001, 2002, 2008, 2015	-	2015, 2016	-	WV
Muscicapidae	Himalayan Rubythroat <i>Calliope pectoralis</i>	GL	I	LC	2002, 2003, 2006	-	-	-	WV
Muscicapidae	Oriental Magpie Robin <i>Copsychus saularis</i>	SF/MF/RF/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Muscicapidae	White-rumped Shama <i>Copsychus malabaricus</i>	SF/MF	I	LC	2001, 2002, 2003, 2008, 2015	2015	2014, 2015, 2016, 2017	-	R
Muscicapidae	Indian Robin <i>Copsychus fulicatus</i>	GL/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2015	-	2014, 2015, 2016, 2017	-	R
Muscicapidae	White-capped Redstart <i>Phoenicurus leucocephalus</i>	WL/ML	I	LC	2015	2015	2014, 2016, 2017	-	WV
Muscicapidae	Black Redstart <i>Phoenicurus ochruros</i>	RF/WGL	I	LC	2002, 2003, 2008, 2015	2015	2014, 2015, 2016, 2017	-	WV
Muscicapidae	Little Forktail <i>Enicurus scouleri</i>	SF/MF	I	LC	-	-	2014, 2017	-	UC
Muscicapidae	Black-backed Forktail <i>Enicurus immaculatus</i>	SF/MF	I	LC	-	-	2014, 2015, 2016	-	R
Muscicapidae	White-throated Bushchat <i>Saxicola insignis</i>	GL	I	VU	-	-	2016	-	WV
Muscicapidae	Siberian Stonechat <i>Saxicola maurus</i>	GL	I	LC	2001, 2002, 2004, 2006, 2015	2015	2014, 2017	2018	WV
Muscicapidae	White-tailed Stonechat <i>Saxicola leucurus</i>	GL	I	LC	2002, 2006, 2008	2015	-	-	R
Muscicapidae	Pied Bushchat <i>Saxicola caprata</i>	GL	I	LC	2002, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	-	R
Muscicapidae	Jerdon's Bushchat <i>Saxicola jerdoni</i>	WGL	I	LC	-	2015	-	-	R
Muscicapidae	Grey Bushchat <i>Saxicola ferreus</i>	WGL	I	LC	2001, 2006, 2008	2015	-	-	WV
Muscicapidae	Brown Rock Chat <i>Oenanthe fusca</i>	GL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	-	2014, 2015, 2016, 2017	-	R
Muscicapidae	Blue Rock Thrush <i>Monticola solitarius</i>	WGL	I	LC	2008, 2015	2015	-	-	WV
Muscicapidae	Asian Brown Flycatcher <i>Muscicapa dauurica</i>	MF/SF	I	LC	-	-	2014, 2015, 2016, 2017	-	R
Muscicapidae	Rufous-gorgeted Flycatcher <i>Ficedula strophilata</i>	RF	I	LC	2006, 2008, 2015	-	-	-	WV
Muscicapidae	Red-breasted Flycatcher <i>Ficedula parva</i>	SF/MF/RF/WGL	I	LC	2003, 2004, 2008	2015	2014, 2017	2018	WV
Muscicapidae	Taiga Flycatcher <i>Ficedula albicilla</i>	MF/SCRUB	I	LC	-	-	-	2018	WV
Muscicapidae	Little Pied Flycatcher <i>Ficedula westermanni</i>	SF/WGL	I	LC	2001, 2006, 2008	-	2014	-	WV
Muscicapidae	Ultramarine Flycatcher <i>Ficedula supercilialis</i>	SF/MF/DG	I	LC	2004, 2006, 2008, 2015	-	-	-	WV
Muscicapidae	Verditer Flycatcher <i>Eumyias thalassinus</i>	SF/MF/WGL	I	LC	2002, 2006, 2008	2015	2015, 2017	-	WV
Muscicapidae	Tickell's Blue Flycatcher <i>Cyornis tickelliae</i>	SF/MF/WGL	I	LC	2015	2015	-	-	WV
Muscicapidae	Pale-chinned Blue Flycatcher <i>Cyornis poliogenys</i>	MF/SF	I	LC	-	-	2015	-	UC
Stenostiridae	Grey-headed Canary-flycatcher <i>Culicicapa ceylonensis</i>	SF/MF/WGL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	WV
Chloropseidae	Golden-fronted Leafbird <i>Chloropsis aurifrons</i>	SF/MF	N	LC	2003, 2008, 2015	2014	2014, 2017	-	R
Chloropseidae	Orange-bellied Leafbird <i>Chloropsis hardwickii</i>	SF/MF	N	LC	2002, 2003, 2006, 2015	-	-	-	R
Dicaeidae	Thick-billed Flowerpecker <i>Dicaeum agile</i>	MF/SF	N	LC	-	-	2015, 2016	2018	R
Dicaeidae	Pale-billed Flowerpecker <i>Dicaeum erythrorhynchos</i>	SF/MF/RF	N	LC	2001, 2003, 2008	2015	2016	2018	R

Family	Species name	Habitat	Feeding guild	IUCN Red List status	KWS	PTR	VTR	UWS	Status in PAs
Nectariniidae	Purple Sunbird <i>Cinnyris asiaticus</i>	MF/WGL	N	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Nectariniidae	Crimson Sunbird <i>Aethopyga siparaja</i>	SF/MF	N	LC	2001, 2008, 2015	-	2014	-	R
Nectariniidae	Little Spiderhunter <i>Arachnothera longirostra</i>	MF/AGR	N	LC	-	-	2015	-	UC
Passeridae	House Sparrow <i>Passer domesticus</i>	MF/WGL	G	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	R
Passeridae	Yellow-throated Sparrow <i>Gymnoris xanthocollis</i>	SF/MF/WGL	G	LC	2001, 2002, 2003, 2006, 2008, 2015	2015	2015, 2016, 2017	2018	R
Ploceidae	Black-breasted Weaver <i>Ploceus benghalensis</i>	GL/WGL	O	LC	2002, 2003, 2008	-	-	-	R
Ploceidae	Streaked Weaver <i>Ploceus manyar</i>	GL/WGL	O	LC	2002, 2004	-	2015, 2017	-	R
Ploceidae	Baya Weaver <i>Ploceus philippinus</i>	GL	O	LC	2001, 2002, 2003, 2004, 2006, 2015	2015	2015, 2016, 2017	2018	R
Estrildidae	Indian Silverbill <i>Euodice malabarica</i>	GL/WGL	G	LC	2001, 2002, 2003, 2004, 2008, 2015	2014, 2015	2015, 2017	2018	R
Estrildidae	Red Avadavat <i>Amandava amandava</i>	GL	G	LC	2002, 2003, 2008	2015	2014, 2015, 2016	-	R
Estrildidae	White-rumped Munia <i>Lonchura striata</i>	GL	G	LC	2001, 2003, 2006, 2008, 2015	-	-	2018	R
Estrildidae	Scaly-breasted Munia <i>Lonchura punctulata</i>	GL	G	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2015, 2016, 2017	2018	R
Estrildidae	Black-headed Munia <i>Lonchura malacca</i>	GL	G	LC	2002, 2003, 2006, 2015	2015	2014, 2015, 2016	-	R
Motacillidae	Yellow Wagtail <i>Motacilla flava</i>	SF/MF/WGL	I	LC	2008, 2015	2014	2014, 2017	-	WV
Motacillidae	Citrine Wagtail <i>Motacilla citreola</i>	WL/WGL	I	LC	2001, 2002, 2003, 2008, 2015	2015	2014, 2015, 2016, 2017	2018	WV
Motacillidae	Grey Wagtail <i>Motacilla cinerea</i>	WL	I	LC	2001, 2002, 2003, 2004, 2006, 2015	-	2014, 2016, 2017	2018	WV
Motacillidae	White Wagtail <i>Motacilla alba</i>	WL	I	LC	2001, 2002, 2003, 2004, 2006, 2008, 2015	2014, 2015	2014, 2015, 2016, 2017	2018	WV
Motacillidae	White-browed Wagtail <i>Motacilla maderaspatensis</i>	WL/GL	I	LC	2002, 2003, 2008	2014	2014, 2015, 2017	-	WV
Motacillidae	Richard's Pipit <i>Anthus richardi</i>	GL	I	LC	2001, 2003, 2006	-	2015	-	WV
Motacillidae	Paddyfield Pipit <i>Anthus rufulus</i>	GL	I	LC	2002, 2003, 2008, 2015	2014	2014, 2015, 2016, 2017	-	R
Motacillidae	Tawny Pipit <i>Anthus campestris</i>	GL	I	LC	2001, 2002, 2003, 2006	-	2015	-	WV
Motacillidae	Blyth's Pipit <i>Anthus godlewskii</i>	GL	I	LC	-	-	2015	-	WV
Motacillidae	Tree Pipit <i>Anthus trivialis</i>	GL	I	LC	2006	2015	2014, 2017	-	WV
Motacillidae	Olive-backed Pipit <i>Anthus hodgsoni</i>	GL	I	LC	2001, 2003, 2008	-	2015, 2017	2018	WV
Fringillidae	Common Rosefinch <i>Carpodacus erythrinus</i>	MF/WGL	G	LC	2004, 2006, 2015	2015	-	-	WV
Emberizidae	Crested Bunting <i>Emberiza lathami</i>	GL	G	LC	2006, 2008	2015	-	-	WV
Emberizidae	White-capped Bunting <i>Emberiza stewarti</i>	GL	G	LC	2001, 2003	-	-	-	WV
Emberizidae	Chestnut-eared Bunting <i>Emberiza fucata</i>	GL	G	LC	2001, 2004	-	-	-	WV
Emberizidae	Yellow-breasted Bunting <i>Emberiza aureola</i>	GL/WGL	G	CR	2001	-	-	-	WV

Habitat type: GL—Grassland | AGR—Agricultural grassland | WGL—Wooded grassland | ML—Marshland | SF—Sal forest | MF—Mixed forest | RF—Riverine forest | WL—Wetland | RB—Riverbank | DG—Degraded.

Numeral represents year of sightings in study areas.

IUCN Red List status: CR—Critically Endangered | EN—Endangered | NT—Near Threatened | LC—Least Concern | VU—Vulnerable.

Status in PAs: R—Resident | WV—Winter visitor | SV—Summer visitor | LM—Local migrant | PM—Passage migrant | UC—Uncertain | VA—Vagrant.

2002. An individual was also sighted in February 2016 between Naughat and the watch tower in Katerniaghat range of KWS. And another individual near Koleshwar mandir on the bank of Gandak river in VTR during March 2017.

Steppe Eagle *Aquila nipalensis*

Endangered. Steppe eagle was seen regularly during winters in the woodland of Valmiki Nagar and Ganauli ranges of VTR between 2014 and 2017 (Image 1). The species was also sighted twice near the Bhikna thori area in the Manguraha range of VTR during the later part of December 2017.

Greater Spotted Eagle *Clanga clanga*

Vulnerable. A single bird was observed twice in the winter on the banks of Gandak River in Valmikinagar range of VTR in the last week of December 2016.

Bengal Florican *Houbaropsis bengalensis*

Critically Endangered. In PTR, a male Bengal Florican was sighted in Chaugebi grassland, Mahof range during April 2014. This species is considered as one of the most endangered bustards of the world. In Uttar Pradesh, the recorded estimated population of this species was 22 individuals (Sivakumar et al. 2014). Javed & Rahmani (1998) expected the possible occurrence of this species in KWS, however, no sighting of this species occurred during the survey. The patches of short grasses and mosaic of agriculture field throughout the terai is considered potential habitats for Bengal Florican.

Swamp Francolin *Ortygornis gularis*

Vulnerable and endemic to the Indian subcontinent, a small population is distributed along the foothills of



Image 1. Steppe Eagle. © Shariq Safi

the Himalayas in tall and swampy grasslands of Terai as well as the floodplains in northern India and Nepal. During the 2001 survey, the bird was sighted frequently on Bund road in Katerniaghat range. A maximum of 12 individuals were sighted in marshy habitats around 4–5 km before Kailaspuri gate in KWS. However, no individual was sighted during 2015. Two individuals of Swamp Francolin were seen on 23 Dec 2016 in the swamp habitat of Madanpur range in VTR.

Indian Skimmer *Rynchops albicollis*

Endangered. Seven individuals of Indian Skimmer were observed flying over the Girwa River on 24 April 2015 in Katerniaghat (Image 2). Earlier studies in the KWS have not highlighted the occurrence of this species (Kalam 2005; Sethy & Chauhan 2011; Rahmani et al. 2016). No sightings were reported from PTR, Dudhwa NP, and VTR.

White-eared Night Heron *Gorsachius magnificus*

Endangered. An immature female of White-eared Night Heron was photo-captured on 24 November 2016 in a camera trap deployed near a slow-flowing perennial rivulet surrounded by moist deciduous forest type in Raghia range of VTR (Image 3). The species was recorded for the first time in Indian subcontinent (Shafi et al. 2018). The species is very rare with only 250–999 mature individuals distributed over southern and eastern China and northeastern Vietnam (BirdLife International 2017).

Woolly-necked Stork *Ciconia episcopus*

Vulnerable. Except for Udaipur WS, Woolly-necked Stork was commonly sighted in groups of one to four individuals in and around the PAs (Image 4). In PTR, a single individual was sighted on 16 February 2014 in the Mala range and on Madhotanda road on 29 March 2016. In Katerniaghat, two individuals were sighted on the bank of Girwa river near watch tower in Katerniaghat range during March 2008 and four individuals in bhainsalot phanta (grassland) in Nishangada range during April 2008. In VTR, an individual of Woolly-necked Stork was sighted in Bhasahwa and Madrahwa ghat in the Madanpur range on 17 and 22 January 2017.

Lesser Adjutant *Leptoptilos javanicus*

Vulnerable. A group of 24 individuals was sighted in a crop field around 2 km from Madanpur forest rest house towards Bagaha road in VTR in February 2017. In KWS, three individuals of Lesser Adjutant were sighted on Banda road near Mantri Mod on 28 March 2006. Two individuals were recorded in Sujauli range while



Image 2. Indian Skimmer in Katarniaghat Wildlife Sanctuary. © Rohit Ravi.

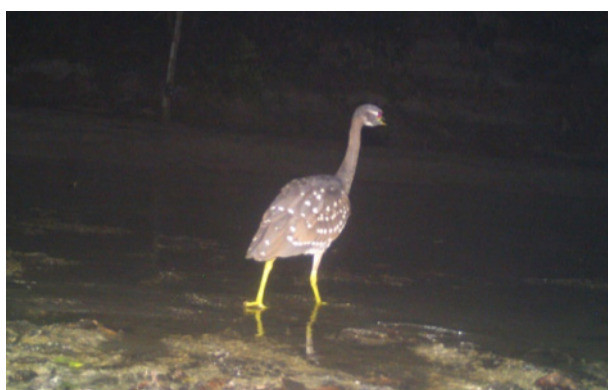


Image 3. White-eared Night Heron *Gorsachius magnificus* in VTR. © WWF-India/VTR.



Image 4. Woolly-necked Stork. © Shariq Safi.

deploying camera on 20 April 2015 and five individuals were seen perching on a tree in Mala range of PTR on 16 Feb 2014.

Spot-billed Pelican *Pelecanus philippensis*

Near Threatened. Six individuals of Spot-billed Pelican were sighted during the winters of 2001 in Girjapuri barrage in KWS. However, no individual was sighted during 2015–16 surveys in Katarniaghat.

Sarus Crane *Antigone antigone*

Vulnerable. A flock of six and four individuals was sighted in Garha corridor and near Richola chowki, Mala range respectively during 2014 in PTR. In VTR, a group of seven individuals was seen foraging in a crop field near Rampur check post in Madanpur range on 21 February 2017. Once common in Uttar Pradesh, Bihar, West Bengal, Assam, Rajasthan, Madhya Pradesh, and Gujarat, the population of this species is declining across its distribution range (BirdLife International 2016).

Great Slaty Woodpecker *Mulleripicus pulverulentus*

Vulnerable. An individual of Great Slaty Woodpecker was sighted in January 2004 near Gharial centre of Katarniaghat WS. In VTR, the species was sighted on two occasions; a group of three individuals in Gobardhana range during December 2017 and two individuals in Ganauli ranges during March 2017.

White-throated Bushchat *Saxicola insignis*

Vulnerable. Rare; two male individuals were observed on the railway track in Madanpur range of VTR in first week of February 2016.

Yellow-breasted bunting *Emberiza aureola*

Critically Endangered. This species was sighted in woody grassland patch of Katarniaghat range of KWS in December 2001. The presence of this species has also been highlighted from Dudhwa NP with uncertain status (Javed & Rahmani 1998), the migratory status of the species was doubtful in KWS too. However, it appears to be winter migrant in southeastern Asia including India

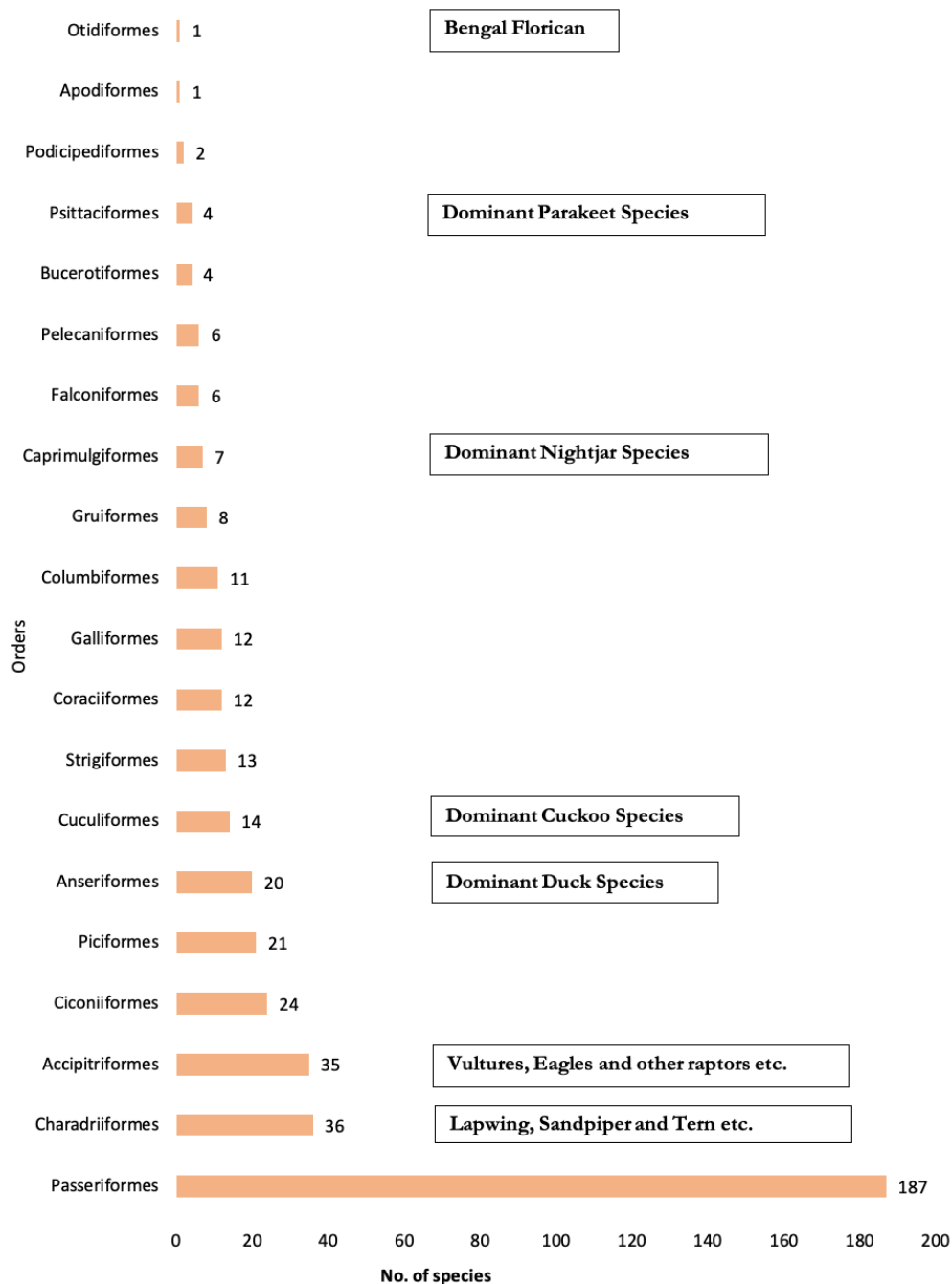


Figure 2. Order-wise richness of avian species observed in protected areas of Terai-Arc landscape, India.

(Grimmett et al. 2011).

An analysis of avian species composition between the PAs indicated KWS had a high similarity index value with PTR ($S = 0.77$) and VTR ($S = 0.74$, Table 3). PTR shared a high proportion of similar species with VTR ($S = 0.69$, Table 3). Avian community composition of UWS differ from rest of PAs; PTR ($S = 0.58$), KWS ($S = 0.50$), and VTR ($S = 0.50$). This might be related to the prevalence of similar habitat, i.e., woodland in Valmiki, Pilibhit and

Katerniaghat (Chanchani et al. 2014). Since majority of area of UWS is under wetland, hence different bird community structure could be expected.

Majority of the species in the region (187 species; 44.1%) belong to the order Passeriformes (Figure 2). The higher prevalence of Passeriformes in the Terai-Arc landscape is consistent with many other studies conducted in the other part of Terai-Arc landscape and elsewhere in India (Singh et al. 2013; Ahmed et al. 2015,

Table 2. IUCN Red List status of avian species recorded in four different protected areas of Terai-Arc landscape, India.

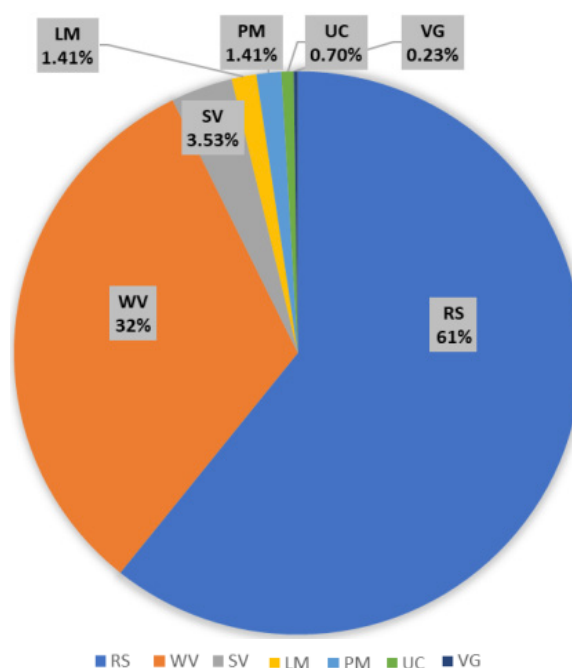
Protected area	Critically Endangered	Endangered	Vulnerable	Near Threatened	Least Concern	Total
Katerniaghat WS	5	4	6	18	325	358
Pilibhit TR	4	1	4	11	216	236
Valmiki TR	3	4	7	13	279	306
Udaipur WS	2	1	0	2	123	128
Overall	6	5	8	19	386	424

Table 3. Similarity in avian species between four protected areas of Terai-Arc landscape, India.

Protected area	Pilibhit TR	Valmiki TR	Udaipur WS
Katerniaghat WS	0.77	0.74	0.50
Pilibhit TR		0.69	0.58
Valmiki TR			0.50

2019). Family Accipitridae (34 species) dominated the region and it was followed by Muscicapidae (28 species) and Anatidae (20 species). Majority of the species such as Black Francolin, Red Spurfowl *Gallus padicea*, Oriental Darter *Anhinga melanogaster*, Crested Serpent Eagle *Spilornis cheela*, Shikra *Accipiter badius*, and Common Hawk Cuckoo *Hierococcyx varius* were residents (n = 258, 60.8%) followed by winter visitors such as Bar-headed Goose *Anser indicus*, Ruddy Shelduck *Tadorna ferruginea*, Red-crested Pochard *Netta rufina*, and Osprey *Pandion haliaetus* (n = 135, 31.8%), summer visitors such as Pied Cuckoo *Clamator jacobinus*, Indian Cuckoo *Cuculus micropterus*, Large Cuckooshrike *Coracina macei*, and Indian Paradise-flycatcher *Terpsiphone paradisi* (n = 15, 3.53%) and local migrant such as Painted Stork *Mycteria leucocephala* and Black-headed Ibis *Threskiornis melanocephalus* (n = 6, 1.41%) and passage migrant like Indian Skimmer *Rynchops albicollis* and Rosy Starling *Pastor roseus* (n = 6, 1.41%). Three species with uncertain status, viz., Pale-chinned Blue Flycatcher *Cyornis poliogenys*, Little Spiderhunter *Arachnothera longirostra*, and Little Forktail *Enicurus scouleri* was recorded. One vagrant species viz. Great Grey Shrike *Lanius excubitor* was also recorded in the area (Figure 3).

Based on their food preferences, a majority of bird species (190 species, 44.8%) belonged to the insectivorous guild, followed by carnivores (88 species, 20.7%) and omnivores (70 species, 16.5%) (Figure 4). Nectivorous guild was the least represented guild in the region (10 species, 2.35%). The dominance of insectivores has been observed in various regions of India (Sultana

**Figure 3.** Residential status of avian species recorded from protected areas of Terai-Arc landscape, India. (RS—Resident | WV—Winter Visitor | SV—Summer Visitor | LM—Local Migrant | PM—Passage Migrant | UC—Uncertain | VG—Vagrant).

& Khan 2000; Sultana et al. 2007; Aggarwal et al. 2008; Acharya et al. 2010; Joshi & Bhatt 2011; Ahmed et al. 2015). High tree density along with moist conditions favour richness and abundance of insects (Erwin 1982; Chettri et al. 2005). Since the study was carried out in PAs with high tree density (FSI 2019), hence dominance of insectivorous species in Terai-Arc landscape could be expected.

Terai-Arc landscape is a biologically diverse eco-region and has been listed among the conservation landscapes of global importance for its unique Terai-Duar Savanna and Grassland habitats, which support more than 600 species of birds (Chanchani et al. 2014). Many Critically Endangered species were observed here during the study, showing the potential of the landscape as a good habitat for avifauna. The study will serve as

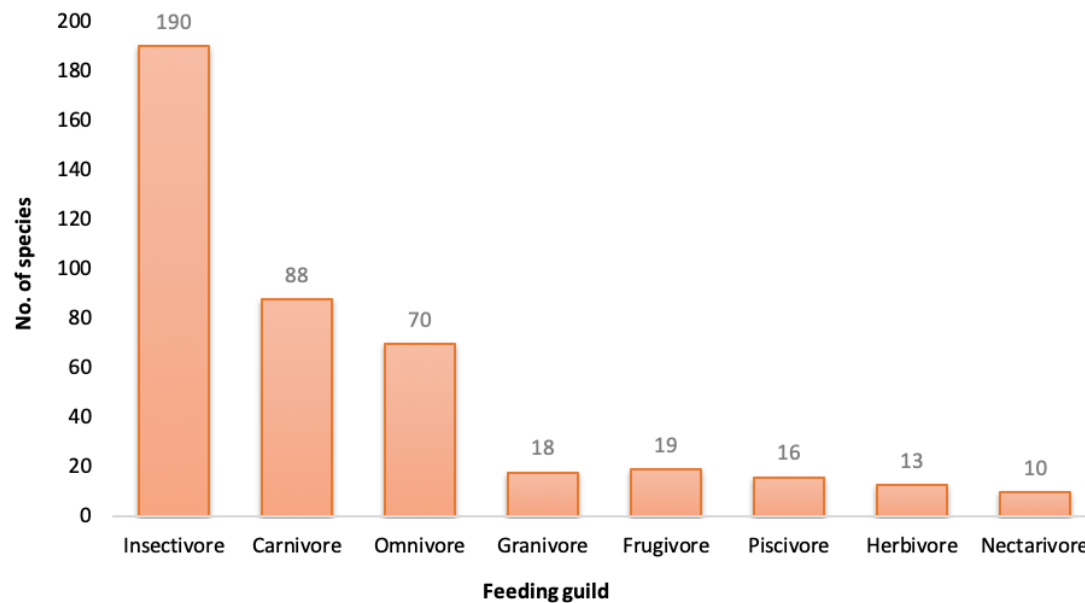


Figure 4. Avifaunal species in different feeding guilds recorded in protected areas of the Terai-Arc landscape, India.

baseline data for better management and conservation of the existing species. Further long-term studies in the landscape in different seasons are required to prepare a holistic checklist of birds found here as our study had limitations of being not continuous in all the mentioned PAs. Since the forest area in the landscape is surrounded by the rapidly increasing human population, which traditionally depends upon forest resources such as fuelwood, fodder, non-timber forest products and grazing, posing a serious threat to the habitats of the PAs (Wikramanayake et al. 2010). The presence of an all-weather road and railway track inside the KWS and VTR is leading to a high level of disturbance (Maurya & Borah 2013; Chanchani et al. 2014). Water bodies in KWS and UWLS are very important for water birds including waders, many winter visitors and local migrant species recorded here. Illegal fishing is one of the threats to water birds observed here (Chanchani et al. 2014). The infestation of grassland by *Lantana* spp. due to over-grazing and other human-induced disturbances, including fire as management practice, are among the major threats to the grassland ecosystems (Javed & Rahmani 1998). The present study reports nearly 19% species (n = 80) are dependent on grassland and grassland-associated habitats, therefore conservation of grassland with adequate scientific knowledge with proper monitoring plan is needed.

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Author details: SHARIQ SAFI is presently employed as a technical assistant for field program at the Dept. of Wildlife Sciences, AMU. He has been actively engaged in the tiger conservation program and his research interests extend to studying lesser carnivores and bird populations both within and outside protected areas. TANVEER AHMED, PhD in landscape ecology from Aligarh Muslim University, is currently working as project coordinator at the Wildlife Institute of India, Dehradun. Dr Ahmed possesses extensive experience in studying aquatic and terrestrial birds and mammals of the Indian Trans-Himalaya and Terai-Arc landscape, and impact assessment of developmental projects, and river biodiversity assessment. JUNID NAZEER SHAH, PhD in wildlife sciences, specializes in biodiversity conservation in terrestrial and marine ecosystems. He is currently heading Ajaz Environment Consultants, carrying out projects across the Middle East. With over 20 years of experience, he has led projects across the Middle East, focusing on ecological compliance, EIA, and Coastal Zone Management. His expertise includes long-term monitoring of breeding bird species of global significance. MERAJ ANWAR, PhD in wildlife science from Wildlife Institute of India, Dehradun. His research focused extensively on wildlife corridors and population estimation of tigers and associated species, human-wildlife mitigation, radio-telemetry on tigers and avifaunal assemblage in the Terai Arc landscape. Currently, he is working as Coordinator for Species Conservation at WWF-India and based out in Haldwani, Uttarakhand. KAMLESH K. MAURYA, PhD, is landscape coordinator at WWF-India, and involved in field research on carnivores in India since 2005. His research interest includes population dynamic of carnivores and human-wildlife conflict in human dominated landscapes.

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Dr. Justus Joshua, Green Future Foundation, Tiruchirappalli, Tamil Nadu, India
Dr. H. Raghuram, The American College, Madurai, Tamil Nadu, India
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Dr. Brian L. Cypher, California State University-Stanislaus, Bakersfield, CA
Dr. S.S. Talmale, Zoological Survey of India, Pune, Maharashtra, India
Prof. Karan Bahadur Shah, Budhanilakantha Municipality, Kathmandu, Nepal
Dr. Susan Cheyne, Borneo Nature Foundation International, Palangkaraja, Indonesia
Dr. Hemanta Kafley, Wildlife Sciences, Tarleton State University, Texas, USA

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– Ruchika R. Sangale & Priya Gawande, Pp. 24804–24806

***Plagiochila javanica* (Sw.) Nees & Mont. (Marchantiophyta: Plagiochilaceae) rediscovered from the Western Ghats after 180 years**

– M.S. Sajitha, C.N. Manju, B. Mufeed, K.P. Rajesh & K.K. Rawat, Pp. 24807–24811

A new record of genus *Synedrus* Graham, 1956 with description of male of *Synedrus kasparyani* Tselikh, 2013 from India

– Mubashir Rashid & Arvind Kumar, Pp. 24812–24815

Note

***Hunteria zeylanica* (Retz.) Gardner ex Thwaites (Magnoliopsida: Gentianales: Apocyanaceae)—new addition and first genus record to the flora of Karnataka**

– G. Ramachandra Rao, Pp. 24816–24818

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