

ZOO'S PRINT

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Contents

Tidbits

A friend at 17000ft

-- Kamakshi Lekshmanan, P. 1

Wildlife: After all these years!

-- Prashant Mahajan, P. 2

REPTILE RAP

First record of erythrism in *Eutropis cf macularia* from Vadodara, Gujarat

-- Nikunj Jambu, Pp. 3-4

Bird-o-soar

Status and composition of avifauna in Kurud Dam, Raipur District - Chhattisgarh, India

-- A.M.K. Bharos, Faiz Bux, Akhilesh Bharos & Jageshwar Verma, Pp. 5-21

Birds at KFRI Campus, Thrissur, Kerala, India

-- P. Greeshma, Riju P. Nair, E.A. Jayson & P.M. Nishad, Pp. 22-28

Foraging behaviours of Baya Weaver *Ploceus philippinus*, during non-breeding seasons in northern Tamil Nadu, India

-- M. Pandian, Pp. 29-32

Bird deaths by kite *manjha* in Jammu City

-- Rahul Vikram Singh, Pp. 33-35

Vet Brief

Rediscovery of *Cyclopodia sykesii*, an ectoparasite on the Indian Flying Fox from Udayagiri Range, Odisha, India

-- Ashirwad Tripathy, Pp. 36-38

Mammal Tales

Plastic in Elephant dung

-- Ankita Das, Pp. 39-40

BOOK REVIEW

Valley of Hope: Moyar and Vultures

-- Byju, H., Pp. 41-42

Cover photo by Kamakshi Lekshmanan.

A friend at 17000ft

Cold. Gripping cold. Sleet filled landscape. A white carpet welcome at around 17,000 ft. As I immersed myself into the mountains of white, a handsome Red Fox rushed towards me. In the wild. A moment of thrill as the fox kept moving towards the vehicle.

I quickly moved to the other side of the jeep, ensuring a safe distance between both the fox and me. It was interesting to watch the curious fox that had nailed himself to the only vehicle surrounded by snow. Probably, the winter kept him hungry. He rushed for some meat. His leaps were a wonder to watch – measured, fun, and effortless.

The Himalayan Red Fox belongs to the order Carnivora. *Vulpes vulpes* has a vast distribution ranging from the Arctic to the African landscapes. Primarily this species feeds on rodents and other small-sized carnivores. It is found scavenging on birds and eggs. We also understand that foxes relish wild fruits as well.

Mostly solitary foxes are found residing in their dens, although some are found in pairs or mother and pups.

These dens are known to have more than one entrance. They co-live with other friends in the Himalayan landscape such as the Snow Leopards, Tibetan Wolves, and a wide range of antelopes! Though the lifespan of foxes is up to twelve years, in most cases they live up to five years.

Expansion of human habitat has been a cause of concern for their survival. However, since their food habits seem to be a mix of small animals and fruits, the fox community has been able to adapt to a changing environment.

<https://zoosprint.zooreach.org/public/journals/1/VIDEO-2020-06-19-17-24-56.mp4>

<https://zoosprint.zooreach.org/public/journals/1/VIDEO-2020-06-19-17-26-05.mp4>

by Kamakshi Lekshmanan, Coimbatore

WILDLIFE: *After all these Years!*



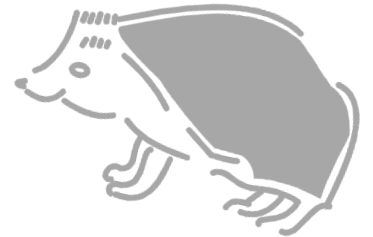
After all these years wildlife disappears
From the known noises
To the extinct voices
We try to redeem our mistakes
By revolving around the same choice
Hoping to see the beauty of nature
By bringing down the home of beautiful creatures.



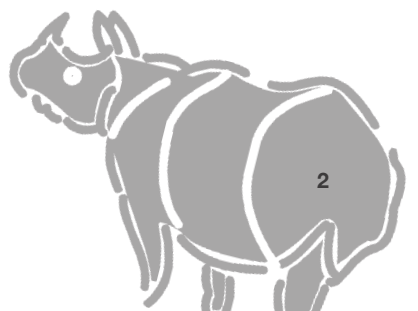
So, after all these years wildlife disappears
Fulfilling our every need
By killing animals for the greed
In the riots of reservation
We neglect wildlife conservation
And if we are done with the claws, horns, skins and scales
Let not bring it down for the future tales



And after all these years wildlife disappears
All we show them our rage
By putting them inside the cage
Shrinking the forests for our benefit
Then complain why so much of conflict
But then also world is not at rest
Trying to conserve the wildlife at its best
So that after few years wildlife can reappear.



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First record of erythrism in *Eutropis cf macularia* from Vadodara, Gujarat



Image 1. Individual of *Eutropis cf. macularia* photographed from the Maharaja Sayajirao University of Baroda showing erythrism. © Nikunj Jambu.

In reptiles, eight different types of colour aberrations have been described. The most common are albinism, leucism or melanism, and rare are amelanism, axanthism, erythrism, hypomelanism or piebaldism (Bechtel 1995), although their nomenclature is not consensual. Erythrism is defined as naturally occurring colour condition of animals with excessive production and deposition of red and orange pigments (erythrophores) with various shades and degrees of intensity (Gilhen 2010; Moore & Ouellet 2014).

During May 2010, while setting up posters during a science fair near Memorial Library of the Maharaja Sayajirao University of Baroda, I came across a skink with strange colouration. Not knowing much details about it, I just photographed the individual with Samsung marine phone (1.3 megapixel camera). The individual was not handled

and examined. The skink species was later identified to be belonging possibly to *Eutropis macularia* complex (Bronze Grass Skink) from the photograph after ruling out other *Eutropis* species occurring in the area. A typical *Eutropis macularia* individual will show deep-brown, olive or bronze-brown in colour; dorso-lateral bands light or yellow; sometimes with black spots on the base of the tail.

Breeding males have orange colour on the lateral side of the body and head. Juveniles are grey with a bronze head (Das & Das 2017) (Image 2). The photographed individual seems to be showing erythrism (Image 1) evident by extreme reddish colouration across the body and lack of other colouration belonging to any sex or age group (breeding and non-breeding) (Image 2). I have never come across any individual of *Eutropis macularia* complex over years across the

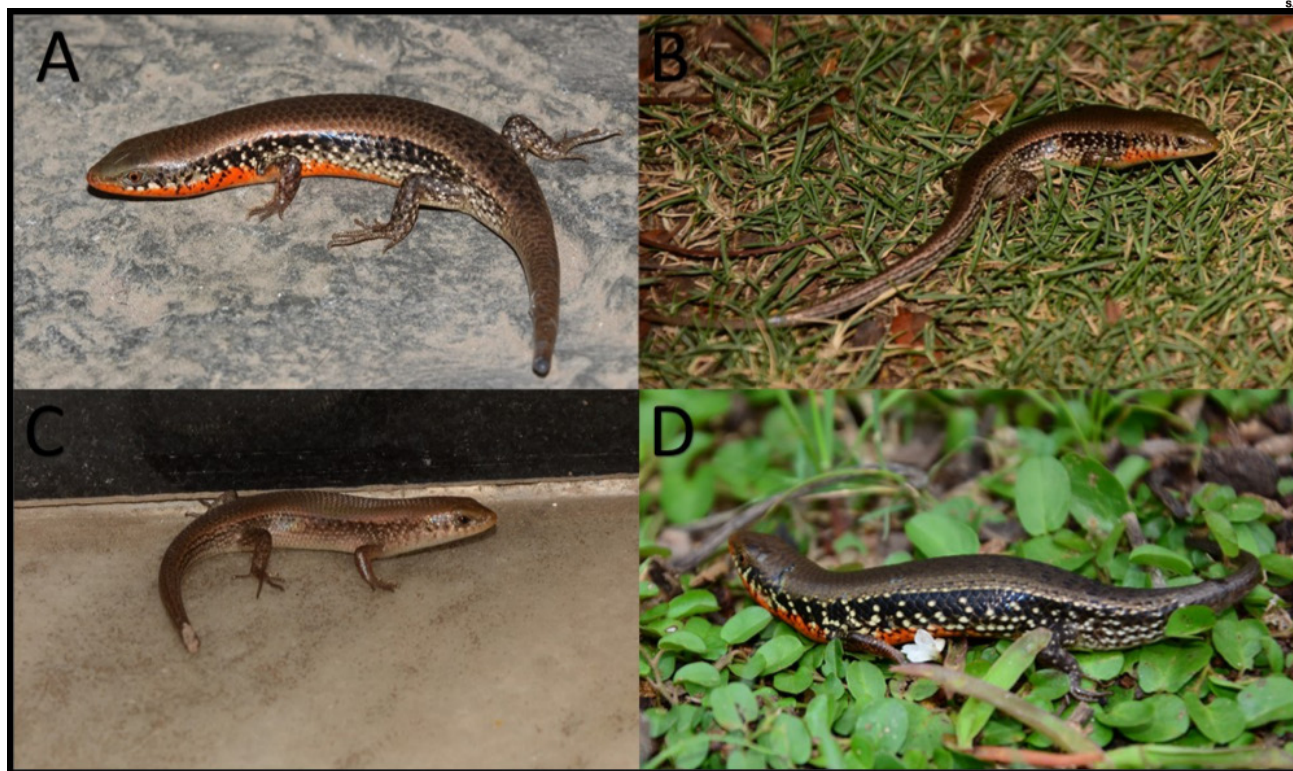


Image 2. Typical colouration shown by *Eutropis macularia* complex: A—individual from Ratanmahal Wildlife Sanctuary (© Harshil Patel) | B—individual from Bhat, Jambughoda Wildlife Sanctuary | C—individual from Halol, Panchmahals | D—individual from Kada Dam, Jambughoda Wildlife Sanctuary (© B,C,D Maitry Jani).

country showing such colour aberration. Maèát et al. (2016) describes erythrism as one of the rarest aberration in Palaearctic snakes. Although, there are handful of reports of erythrism in reptiles across world, there seems to be no published record of erythrism in reptiles from India. This forms a very important and first record of erythrism in *Eutropis cf. macularia* from India.

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Status and composition of avifauna in Kurud Dam, Raipur District - Chhattisgarh, India

Chhattisgarh state bears tropical climate with its relevant flora and fauna. This state is amply studded with numerous water bodies, tanks, and ponds, with the major river basin being *Mahanadi* for the central plains, *Hasdeo River* basin for northern hilly range, and Godavari River basin for Dandkaranya hills in south.

The available works had revealed 246 avian species in central region of Chhattisgarh, 429 species in Chhattisgarh (Bharos 2017), Bharos and Sahu (2002), (Bharos 2018), Bharos et al. (2019), Chandra & Singh (2004).

Kurud Dam has been the hunting ground for game lovers in the past, but at present, it is a prime spot for bird watchers and photographers. With commensuration to the type of available habitats, variety of aquatic and grass & arboreal bird species occur in good numbers. Despite this fact, this site and its avian species remains undocumented. To fill this gap, this study was undertaken and is the first attempt to highlight the avifauna of Kurud dam, being an important wetland in the central plains of Chhattisgarh.

Study Area

The particulars of the study area the Kurud Dam are tabulated in Table 2, Fig.1.



Kurud Dam.



Threat.

Methods

The study site was visited for amateur bird watching since 2007, the observed bird species were only listed in our field diaries. We noticed high species composition and congregation of resident as well as migratory species. This prompted us to take up serious studies.

Hence, since October 2015 more intensive study was undertaken to fill up the lacuna of avian documentation from Kurud Dam. Field

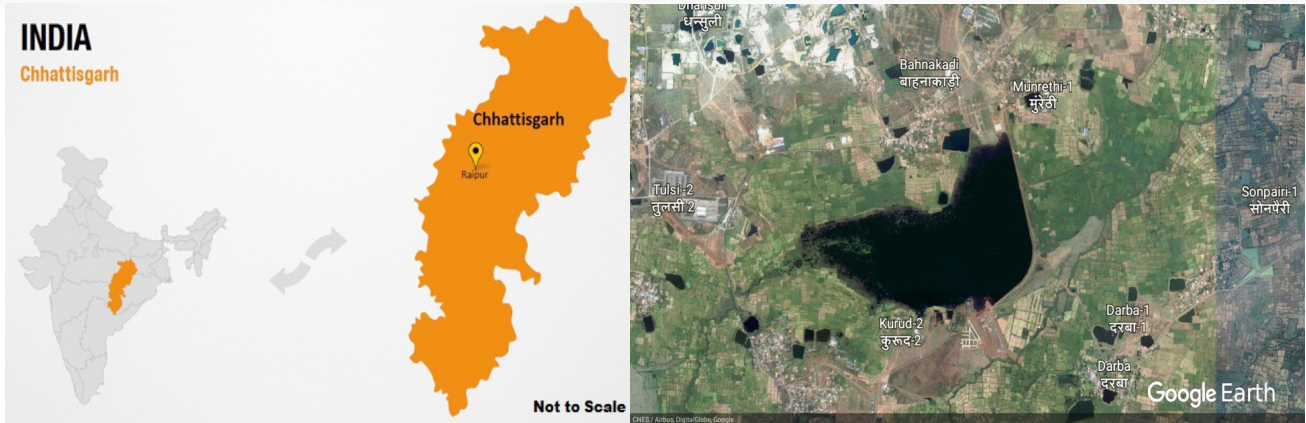


Figure 1. Location of Kurud Dam.



Surrounding Habitat.



Adjacent Agri field.

surveys were aptly designed and intensively conducted in all three seasons viz. winter, summer, and monsoon, from October 2015 to December 2019. The study was carried out at different hours of the day invariably between 6–10am and 3–6pm to obtain maximum prudent outcome. We collected observations by *Look and See* method (Bibby et al.1992) at pre-determined points, following Point Count method (Javed & Kaul 2002) by noting direct sightings of the birds, walking along the shoreline to collect bird observations. The study was conducted in a gap of every fortnight invariably, and observations were collected as and when possible.

Binoculars (Olympus 8-16 X 40) and cameras (CANON DSLR 7D & CANON SX60HS) were deployed for observing and obtaining the images of species encountered. The identification was confirmed following Ali & Ripley (1987), Grimmett et.al. (1998, 2014), Rahmani (2008), Rasmussen & Anderton (2012). Difficult species were identified by members of BNHS-ENVIS.

Roosting hours in the evening and early morning hours of congregation of birds were observed to determine the species and their roost, along with utilization of the habitat at and near the dam. We encountered more bird species in the roosting (evening) hours

Table 1. Birds of Kurud Dam, Chhattisgarh.

	Order	Family	English name	Scientific name	Resident Status	IUCN Status	Food Habits	Habitat	
1	Anseriformes	Anatidae	Lesser Whistling Duck	<i>Dendrocygna javanica</i>	R	LC	Omnivorous	A	
2			Bar-headed Goose	<i>Anser indicus</i>	M	LC	Omnivorous	A	
3			Red-crested Pochard	<i>Netta rufina</i>	M	LC	Omnivorous	A	
4			Common Pochard	<i>Aythya ferina</i>	M	VU	Omnivorous	A	
5			Ferruginous Duck	<i>Aythya nyroca</i>	M	NT	Omnivorous	A	
6			Tufted Duck	<i>Aythya fuligula</i>	M	LC	Omnivorous	A	
7				Garganey	<i>Spatula querquedula</i>	M	LC	Omnivorous	A
8				Northern Shoveler	<i>Spatula clypeata</i>	M	LC	Omnivorous	A
9				Gadwall	<i>Mareca strepera</i>	M	LC	Omnivorous	A
10				Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	R	LC	Omnivorous	A
11				Northern Pintail	<i>Anas acuta</i>	M	LC	Omnivorous	A
12				Common Teal	<i>Anas crecca</i>	M	LC	Omnivorous	A
13				Comb Duck	<i>Sarkidiornis melanotos</i>	R	LC	Omnivorous	A
14				Cotton Teal	<i>Nettapus coromandelianus</i>	R	LC	Omnivorous	A
15	Galliformes	Phasianidae	Common Quail	<i>Coturnix coturnix</i>	R	LC	Omnivorous	GA	
16			Rain Quail	<i>Coturnix coromandelica</i>	R	LC	Omnivorous	GA	
17			Grey Francolin	<i>Francolinus pondicerianus</i>	R	LC	Omnivorous	GA	
18	Phoenicopteriformes	Podicipedidae	Little Grebe	<i>Tachybaptus ruficollis</i>	R	LC	Carnivorous	A	
19			Great Crested Grebe	<i>Podiceps cristatus</i>	M	LC	Carnivorous	A	
20	Columbiformes	Columbidae	Rock Pigeon	<i>Columba livia</i>	R	LC	Granivorous	GA	
21			Eurasian Collared Dove	<i>Streptopelia decaocto</i>	R	LC	Granivorous	GA	
22			Laughing Dove	<i>Streptopelia senegalensis</i>	R	LC	Granivorous	GA	
23			Indian Nightjar	<i>Caprimulgus asiaticus</i>	R	LC	Insectivorous	GA	
24	Caprimulgiformes	Apodidae	Asian Palm Swift	<i>Cypsiurus balasensis</i>	R	LC	Insectivorous	GA	
25			Indian House Swift	<i>Apus affinis</i>	R	LC	Insectivorous	GA	
26	Cuculiformes	Cuculidae	Greater Coucal	<i>Centropus sinensis</i>	R	LC	Omnivorous	GA	

	Order	Family	English name	Scientific name	Resident Status	IUCN Status	Food Habits	Habitat
27			Pied Cuckoo	<i>Clamator jacobinus</i>	M	LC	Omnivorous	GA
28	Cuculiformes	Cuculidae	Asian Koel	<i>Eudynamys scolopaceus</i>	R	LC	Omnivorous	GA
29			Common Hawk Cuckoo	<i>Hierococcyx varius</i>	R	LC	Omnivorous	GA
30			Slaty-legged Crane	<i>Rallina eurizonoides</i>	R	LC	Omnivorous	NA
31			Ruddy-breasted Crane	<i>Zapornia fusca</i>	R	LC	Omnivorous	NA
32			Brown Crane	<i>Zapornia akool</i>	M	LC	Omnivorous	NA
33	Gruiformes	Rallidae	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	R	LC	Omnivorous	NA
34			Purple Swamphen	<i>Porphyrio porphyrio</i>	R	LC	Omnivorous	NA
35			Common Coot	<i>Fulica atra</i>	M	LC	Omnivorous	A
36			Painted Stork	<i>Mycteria leucocephala</i>	R	NT	Carnivorous	NA
37			Asian Openbill	<i>Anastomus oscitans</i>	R	LC	Carnivorous	NA
38		Ciconiidae	Black Stork	<i>Ciconia nigra</i>	M	LC	Carnivorous	NA
39			Woolly-necked Stork	<i>Ciconia episcopus</i>	R	LC	Carnivorous	NA
40			Yellow Bittern	<i>Ixobrychus sinensis</i>	R	LC	Carnivorous	NA
41			Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	R	LC	Carnivorous	NA
42			Black Bittern	<i>Ixobrychus flavicollis</i>	R	LC	Carnivorous	NA
43			Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	R	LC	Carnivorous	NA
44			Striated Heron	<i>Butorides striata</i>	R	LC	Carnivorous	NA
45	Pelecaniformes		Indian Pond Heron	<i>Ardeola grayii</i>	R	LC	Carnivorous	NA
46		Ardeidae	Cattle Egret	<i>Bubulcus ibis</i>	R	LC	Carnivorous	NA
47			Grey Heron	<i>Ardea cinerea</i>	R	LC	Carnivorous	NA
48			Purple Heron	<i>Ardea purpurea</i>	R	LC	Carnivorous	NA
49			Great Egret	<i>Ardea alba</i>	R	LC	Carnivorous	NA
50			Intermediate Egret	<i>Ardea intermedia</i>	R	LC	Carnivorous	NA
51			Little Egret	<i>Egretta garzetta</i>	R	LC	Carnivorous	NA
52			Black-headed Ibis	<i>Threskiornis melanocephalus</i>	R	LC	Carnivorous	NA
53		Threskiornithidae	Eurasian Spoonbill	<i>Platalea leucorodia</i>	R	LC	Omnivorous	NA

	Order	Family	English name	Scientific name	Resident Status	IUCN Status	Food Habits	Habitat	
54	Pelecaniformes	Threskiornithidae	Indian Black Ibis	<i>Pseudibis papillosa</i>	R	LC	Carnivorous	NA	
55		Phalacrocoracidae	Little Cormorant	<i>Microcarbo niger</i>	R	LC	Carnivorous	NA	
56			Great Cormorant	<i>Phalacrocorax carbo</i>	R	LC	Carnivorous	NA	
57		Anhingidae	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	R	LC	Carnivorous	NA	
58			Oriental Darter	<i>Anhinga melanogaster</i>	R	NT	Carnivorous	NA	
59		Charadriiformes	Recurvirostridae	Black-winged Stilt	<i>Himantopus himantopus</i>	R	LC	Omnivorous	NA
60			Charadriidae	Grey Plover	<i>Pluvialis squatarola</i>	M	LC	Insectivorous	NA
61				Pacific Golden Plover	<i>Pluvialis fulva</i>	M	LC	Insectivorous	NA
62	Little Ringed Plover		<i>Charadrius dubius</i>	M	LC	Omnivorous	NA		
63	Kentish Plover		<i>Charadrius alexandrinus</i>	M	LC	Omnivorous	NA		
64	Lesser Sand Plover		<i>Charadrius mongolus</i>	M	LC	Omnivorous	NA		
65	Yellow-wattled Lapwing		<i>Vanellus malarbaricus</i>	R	LC	Omnivorous	NA		
66	Red-wattled Lapwing		<i>Vanellus indicus</i>	R	LC	Omnivorous	NA		
67	Greater Painted-snipe		<i>Rostratula benghalensis</i>	R	LC	Omnivorous	NA		
68	Pheasant-tailed Jacana		<i>Hydrophasianus chirurgus</i>	R	LC	Omnivorous	NA		
69	Charadriiformes	Jacanidae	Bronze-winged Jacana	<i>Metopidius indicus</i>	R	LC	Omnivorous	NA	
70			Whimbrel	<i>Numenius phaeopus</i>	M	LC	Insectivorous	NA	
71	Scolopacidae	Jacanidae	Eurasian Curlew	<i>Numenius arquata</i>	M	NT	Omnivorous	NA	
72			Bar-tailed Godwit	<i>Limosa lapponica</i>	M	LC	Omnivorous	NA	
73		Black-tailed Godwit	<i>Limosa limosa</i>	M	NT	Omnivorous	NA		
74		Ruddy Turnstone	<i>Arenaria interpres</i>	M	LC	Omnivorous	NA		
75		Ruff	<i>Calidris pugnax</i>	M	LC	Omnivorous	NA		
76		Curlew Sandpiper	<i>Calidris ferruginea</i>	M	LC	Omnivorous	NA		
77		Temminck's Stint	<i>Calidris temminckii</i>	M	LC	Omnivorous	NA		
78		Sanderling	<i>Calidris alba</i>	M	LC	Omnivorous	NA		
79		Dunlin	<i>Calidris alpina</i>	R	LC	Omnivorous	NA		
80		Little Stint	<i>Calidris minuta</i>	M	LC	Omnivorous	NA		

Order	Family	English name	Scientific name	Resident Status	IUCN Status	Food Habits	Habitat
81	Scolopacidae	Common Snipe	<i>Gallinago gallinago</i>	M	LC	Omnivorous	NA
82		Terek Sandpiper	<i>Xenus cinereus</i>	M	LC	Omnivorous	NA
83		Common Sandpiper	<i>Actitis hypoleucos</i>	M	LC	Omnivorous	NA
84		Green Sandpiper	<i>Tringa ochropus</i>	M	LC	Omnivorous	NA
85		Spotted Redshank	<i>Tringa erythropus</i>	M	LC	Omnivorous	NA
86		Common Greenshank	<i>Tringa nebularia</i>	M	LC	Omnivorous	NA
87		Common Redshank	<i>Tringa totanus</i>	M	LC	Omnivorous	NA
88		Wood Sandpiper	<i>Tringa glareola</i>	M	LC	Omnivorous	NA
89		Marsh Sandpiper	<i>Tringa stagnatilis</i>	M	LC	Omnivorous	NA
90		Charadriiformes	Barred Buttonquail	<i>Turnix suscitator</i>	R	LC	Omnivorous
91	Glareolidae	Indian Courser	<i>Cursorius coromandelicus</i>	R	LC	Insectivorous	NA
92		Little Pratincole	<i>Glareola lactea</i>	R	LC	Insectivorous	NA
93		Brown-headed Gull	<i>Chroicocephalus brunnicephalus</i>	M	LC	Carnivorous/ Piscivorous	NA
94	Laridae	Gull-billed Tern	<i>Gelocheilidon nilotica</i>	M	LC	Carnivorous/ Piscivorous	NA
95		Whiskered Tern	<i>Chlidonias hybrida</i>	M	LC	Carnivorous/ Piscivorous	NA
96		River Tern	<i>Sterna aurantia</i>	M	NT	Carnivorous	NA
97	Pandionidae	Indian Skimmer	<i>Rynchops albicollis</i>	M	VU	Carnivorous	NA
98		Osprey	<i>Pandion haliaetus</i>	M	LC	Carnivorous	NA
99		Black-winged Kite	<i>Elanus caeruleus</i>	R	LC	Carnivorous	GA
100	Accipitriformes	Indian Spotted Eagle	<i>Clanga hastata</i>	M	VU	Carnivorous	GA
101		Eastern Marsh Harrier	<i>Circus spilonotus</i>	M	LC	Carnivorous	GA
102		Pallid Harrier	<i>Circus macrourus</i>	M	NT	Carnivorous	GA
103	Accipitridae	Pied Harrier	<i>Circus melanoleucos</i>	M	LC	Carnivorous	GA
104		Montagu's Harrier	<i>Circus pygargus</i>	M	LC	Carnivorous	GA
105		Shikra	<i>Accipiter badius</i>	R	LC	Carnivorous	GA

	Order	Family	English name	Scientific name	Resident Status	IUCN Status	Food Habits	Habitat
106	Accipitriformes	Accipitridae	Black Kite	<i>Milvus migrans</i>	R	LC	Omnivorous	GA
107			White-eyed Buzzard	<i>Buteo teesa</i>	R	LC	Carnivorous	GA
108	Strigiformes	Tytonidae	Common Barn Owl	<i>Tyto alba</i>	R	LC	Carnivorous	GA
109		Strigidae	Spotted Owllet	<i>Athene brama</i>	R	LC	Carnivorous	GA
110	Bucerotiformes	Bucerotidae	Indian Grey Hornbill	<i>Ocyzeros birostris</i>	R	LC	Omnivorous	GA
111		Upupidae	Common Hoopoe	<i>Upupa epops</i>	R	LC	Insectivorous	GA
112		Picidae	Northern Wryneck	<i>Jynx torquilla</i>	M	LC	Insectivorous	GA
113	Piciformes	Ramphastidae	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	R	LC	Frugivorous	GA
114		Meropidae	Green Bee-eater	<i>Merops orientalis</i>	R	LC	Insectivorous	GA
115	Coraciiformes	Coraciidae	Indian Roller	<i>Coracias benghalensis</i>	R	LC	Carnivorous	GA
116			Common Kingfisher	<i>Alcedo atthis</i>	R	LC	Carnivorous	NA
117		Alcedinidae	Pied Kingfisher	<i>Ceryle rudis</i>	R	LC	Carnivorous	NA
118	Falconiformes	Falconidae	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	R	LC	Carnivorous	NA
119			Common Kestrel	<i>Falco tinnunculus</i>	M	LC	Carnivorous	GA
120			Alexandrine Parakeet	<i>Psittacula eupatria</i>	R	LC	Frugivorous	GA
121	Psittaculidae	Psittaculidae	Rose-ringed Parakeet	<i>Psittacula krameri</i>	R	LC	Frugivorous	GA
122			Large Cuckooshrike	<i>Coracina javensis</i>	R	LC	Insectivorous	GA
123			Eurasian Golden Oriole	<i>Oriolus oriolus</i>	R	LC	Omnivorous	GA
124	Psittaciformes	Vangidae	Common Woodshrike	<i>Tephrodornis pondicerianus</i>	R	LC	Carnivorous	GA
125		Aegithinidae	Common Iora	<i>Aegithina tiphia</i>	R	LC	Insectivorous	GA
126		Dicruridae	Black Drongo	<i>Dicrurus macrocerus</i>	R	LC	Insectivorous	GA
127	Coraciiformes	Laniidae	Brown Shrike	<i>Lanius cristatus</i>	M	LC	Carnivorous	GA
128			Isabelline Shrike	<i>Lanius isabellinus</i>	M	LC	Carnivorous	GA
129			Bay-backed Shrike	<i>Lanius vittatus</i>	R	LC	Carnivorous	GA
130	Coraciiformes	Laniidae	Long-tailed Shrike	<i>Lanius schach</i>	R	LC	Carnivorous	GA
131			Great Grey Shrike	<i>Lanius excubitor</i>	R	LC	Carnivorous	GA
132			House Crow	<i>Corvus splendens</i>	R	LC	Omnivorous	GA

	Order	Family	English name	Scientific name	Resident Status	IUCN Status	Food Habits	Habitat
133		Corvidae	Large-billed Crow	<i>Corvus macrorhynchos</i>	R	LC	Omnivorous	GA
134		Monarchidae	Indian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	R	LC	Insectivorous	GA
135		Nectariniidae	Purple Sunbird	<i>Cinnyris asiaticus</i>	R	LC	Nectarivorous	GA
136		Ploceidae	Baya Weaver	<i>Ploceus philippinus</i>	R	LC	Omnivorous	GA
137			Red Munia	<i>Amandava amandava</i>	R	LC	Omnivorous	GA
138			Indian Silverbill	<i>Euodice malabarica</i>	R	LC	Omnivorous	GA
139		Estrilidae	Scaly-breasted Munia	<i>Lonchura punctulata</i>	R	LC	Omnivorous	GA
140			Black-headed Munia	<i>Lonchura malacca</i>	R	LC	Omnivorous	GA
141		Passeridae	House Sparrow	<i>Passer domesticus</i>	R	LC	Granivorous	GA
142			Richard's Pipit	<i>Anthus richardi</i>	M	LC	Insectivorous	GA
143			Paddyfield Pipit	<i>Anthus rufulus</i>	M	LC	Insectivorous	GA
144			Tawny Pipit	<i>Anthus campestris</i>	M	LC	Insectivorous	GA
145			Western Yellow Wagtail	<i>Motacilla flava</i>	M	LC	Insectivorous	NA
146	Psittaciformes	Motacillidae	Grey Wagtail	<i>Motacilla cinerea</i>	M	LC	Insectivorous	NA
147			Citrine Wagtail	<i>Motacilla citreola</i>	M	LC	Insectivorous	NA
148			White-browed Wagtail	<i>Motacilla maderaspatensis</i>	R	LC	Insectivorous	NA
149			White Wagtail	<i>Motacilla alba</i>	M	LC	Insectivorous	NA
150		Fringillidae	Common Rosefinch	<i>Erythrura erythrina</i>	M	LC	Granivorous	GA
151			Red-headed Bunting	<i>Granativora bruniceps</i>	M	LC	Granivorous	GA
152		Emberizidae	Black-headed Bunting	<i>Granativora melanocephala</i>	M	LC	Granivorous	GA
153			Grey-necked Bunting	<i>Emberiza buchanani</i>	M	LC	Granivorous	GA
154			Rufous-tailed Lark	<i>Ammomanes phoenicura</i>	R	LC	Omnivorous	GA
155			Ashy-crowned Sparrow Lark	<i>Eremopterix griseus</i>	R	LC	Omnivorous	GA
156		Alaudidae	Singing Bushlark	<i>Mirafra cantillans</i>	R	LC	Omnivorous	GA
157			Indian Bushlark	<i>Mirafra erythroptera</i>	R	LC	Omnivorous	GA
158			Greater Short-toed Lark	<i>Calandrella brachydactyla</i>	M	LC	Omnivorous	GA

	Order	Family	English name	Scientific name	Resident Status	IUCN Status	Food Habits	Habitat
159		Alaudidae	Eurasian Skylark	<i>Alauda arvensis</i>	R	LC	Omnivorous	GA
160			Zitting Cisticola	<i>Cisticola juncidis</i>	R	LC	Omnivorous	GA
161		Cisticolidae	Ashy Prinia	<i>Prinia socialis</i>	R	LC	Insectivorous	GA
162			Plain Prinia	<i>Prinia inornata</i>	R	LC	Insectivorous	GA
163			Common Tailorbird	<i>Orthotomus sutorius</i>	R	LC	Insectivorous	GA
164		Locustellidae	Bristled Grass Warbler	<i>Chaetornis striata</i>	M	VU	Insectivorous	GA
165			Booted Warbler	<i>Iduna caligata</i>	M	LC	Insectivorous	GA
166		Acrocephalidae	Blyth's Reed Warbler	<i>Acrocephalus dumetorum</i>	M	LC	Insectivorous	GA
167			Paddyfield Warbler	<i>Acrocephalus agricola</i>	R	LC	Insectivorous	GA
168			Glamorous Reed Warbler	<i>Acrocephalus stentoreus</i>	M	LC	Omnivorous	GA
169			Streak-throated Swallow	<i>Petrochelidon fluvicola</i>	M	LC	Insectivorous	GA
170			Red-rumped Swallow	<i>Cecropis daurica</i>	M	LC	Insectivorous	GA
171		Hirundinidae	Wire-tailed Swallow	<i>Hirundo smithii</i>	R	LC	Insectivorous	GA
172	Psittaciformes		Barn Swallow	<i>Hirundo rustica</i>	M	LC	Insectivorous	GA
173		Pycnonotidae	Red-vented Bulbul	<i>Pycnonotus cafer</i>	R	LC	Frugivorous	GA
174		Phylloscopidae	Common Chiffchaff	<i>Phylloscopus collybita</i>	M	LC	Insectivorous	GA
175		Sylviidae	Yellow-eyed Babbler	<i>Chrysomma sinense</i>	R	LC	Omnivorous	GA
176		Timaliidae	Tawny-bellied Babbler	<i>Dumetia hyperythra</i>	R	LC	Omnivorous	GA
177		Leiothrichidae	Large Grey Babbler	<i>Argya malcolmi</i>	R	LC	Omnivorous	GA
178			Common Babbler	<i>Argya caudata</i>	R	LC	Omnivorous	GA
179			Rosy Starling	<i>Pastor roseus</i>	M	LC	Omnivorous	GA
180		Sturnidae	Asian Pied Starling	<i>Gracupica contra</i>	R	LC	Omnivorous	GA
181			Brahminy Starling	<i>Sturnia pagodarum</i>	R	LC	Omnivorous	GA
182			Common Myna	<i>Acridotheres tristis</i>	R	LC	Omnivorous	GA
183			Indian Robin	<i>Saxicoloides fulicatus</i>	R	LC	Insectivorous	GA
184		Muscicapidae	Oriental Magpie Robin	<i>Copsychus saularis</i>	R	LC	Insectivorous	GA
185			Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	M	LC	Insectivorous	GA

Order	Family	English name	Scientific name	Resident Status	IUCN Status	Food Habits	Habitat
186	Psittaciformes	Bluethroat	<i>Luscinia svecica</i>	M	LC	Insectivorous	GA
187		Red-breasted Flycatcher	<i>Ficedula parva</i>	M	LC	Insectivorous	GA
188		Black Redstart	<i>Phoenicurus ochruros</i>	M	LC	Insectivorous	GA
189		Siberian Stonechat	<i>Saxicola maurus</i>	M	LC	Insectivorous	GA
190		Pied Bushchat	<i>Saxicola caprata</i>	R	LC	Insectivorous	GA
191		Brown Rock Chat	<i>Oenanthe fusca</i>	R	LC	Insectivorous	GA

Resident Status: R - Resident, M - Migratory. IUCN Categories: VU - Vulnerable, NT - Near Threatened, LC - Least Concern. Habitat: A - Aquatic, NA - Near Aquatic, GA - Grass and Arbooreal.



Red Avadavat.



Migratory Birds.



Montagu's Harrier.



Blue Throat.

Table 2. Description of the study area.

	Particulars	Details	Remarks
1	Location	In Arang Tehsil of Raipur dist., 20 Km east from Raipur (21.26472222°N & 81.785000° E), 304m amsl, on Kolhan nalah, a subsidiary drainage pattern of river Mahanadi.	
2	Surface area	About 200 Ha, Maximum depth 5m.	Source of water mainly rainfall
3	Weather	Summer temp. 43°-45°C, winter 8°-10°C.	
4	Purpose	Mainly irrigation but also commercial use.	
5	Environment	Open plains in south, cultivation in the east, Human settlement in west and north, Dairy farm, poultry farm and minor industrial, commercial establishments and domestic use.	
6	Attraction for birds	Effluent from dairy farm flows into shallow water area, a favourite particularly for waders, old ruins for owls. Small groove and plantation for arboreal species and open plains for ground and grass species.	Attract variety of avian species

Table 3. The IUCN categories of the species recorded at the study area (IUCN Red data list).

Category	Species recorded
Vulnerable (VU)	4 species Common Pochard <i>Aythya ferina</i> , Indian Skimmer <i>Rynchops albigollis</i> , Indian Spotted Eagle <i>Clanga hastate</i> , Bristled Grass Warbler <i>Chaetornis striata</i> .
Near Threatened (NT)	7 species namely Ferruginous Duck <i>Aythya nyroca</i> , Painted Stork <i>Mycteria leucocephala</i> , Oriental Darter <i>Anhinga melanogaster</i> , Eurasian Curlew <i>Numenius arquata</i> , Black-tailed Godwit <i>Limosa limosa</i> , River Tern <i>Sterna aurantia</i> , Pallid Harrier <i>Circus macrourus</i> .
Least Concern	180 species as in Table 1.

Table 4. List of the passerby species recorded at the study area.

Category	Species
Waders	Grey Plover (Black-bellied Plover) <i>Pluvialis squatarola</i> , Lesser Sand Plover <i>Charadrius mongolus</i> , Ruff <i>Philomachus pugnax</i> , Black-tailed Godwit <i>Limosa limosa</i> , Whimbrel <i>Numenius phaeopus</i> , Eurasian Curlew <i>Numenius arquata</i> , Pacific Golden Plover <i>Pluvialis fulva</i> , Terek Sandpiper <i>Xenus cinereus</i> , Ruddy Turnstone <i>Arenaria interpres</i> , Sanderling <i>Calidris alba</i> , Curlew Sandpiper <i>Erolia ferrugines</i> , Dunlin <i>Ereunetes alpines</i> .
Gulls and Terns	Gull-billed Tern <i>Gelochelidon nilotica</i> , Caspian Gull <i>Hydroprogne caspia</i> , River Tern <i>Sterna aurantia</i> , Whiskered Tern <i>Chlidonias hybrida</i> , Heuglin's Gull <i>Larus fuscus heuglini</i> , Brown-headed Gull <i>Chroicocephalus brunnicapthalus</i> , Black-headed Gull <i>Chroicocephalus ridibundus</i> .

than in the morning hours. The birds would leave their roost at dawn in a more or less similar sequence suggested by Bharos (2018). Our aim was to determine the birds' roost and nests at and around the dam, which revealed the roosting of Greater Short-toed Lark, Green Bee-eaters, certain Harrier

species, variety of waders, kites, starlings, egrets, ducks, etc.

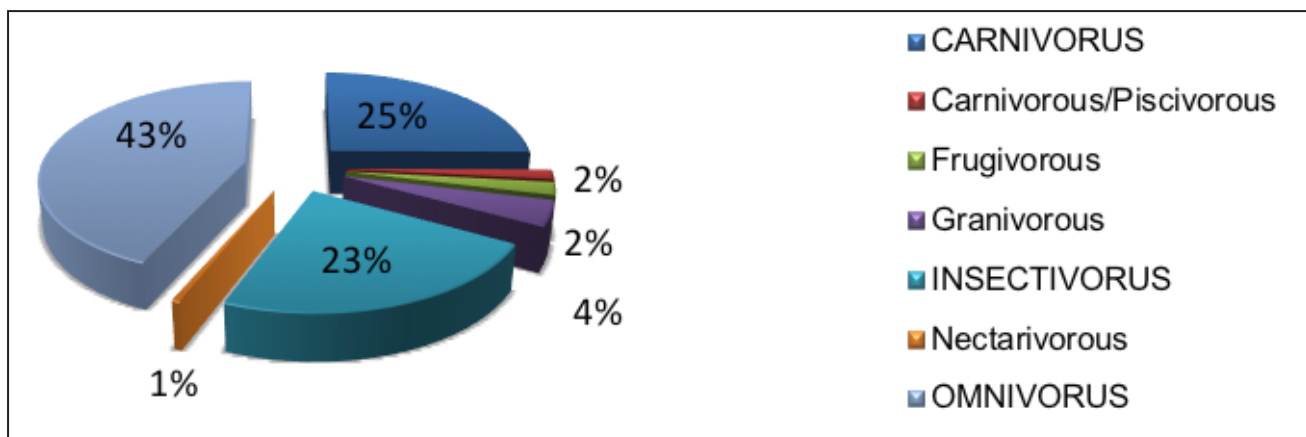
The recorded birds were grouped into Resident (R) and Migratory (M) categories. IUCN Global conservation status was worked out in the following categories only: (VU)

Table 5. The roosting species recorded at the study area.

Category	Species
Wintering ducks and waders, Aquatic	Red-crested Pochard <i>Netta rufina</i> , Common Pochard <i>Aythyaferina</i> , Garganey <i>Spatula querquedula</i> , Northern Pintail <i>Anas acuta</i> , Wood Sandpiper <i>Tringa glareola</i> , Marsh Sandpiper <i>Tringa stagnatilis</i> , Green Sandpiper <i>Tringa ochropus</i> , Common Sandpiper <i>Actitis hypoleucos</i> .
Wintering, Near Aquatic	Pallid harrier <i>Circus macrourus</i> , Marsh Harrier <i>Circus spilonotus</i> , Pied Harrier <i>Circus melanoleucos</i> , Montagau's Harrier <i>Accipiter badius</i> , Greater Short-toed Lark <i>Calandrella brachydactyla</i> .
Arboreal	Green Bee-eater <i>Merops orientalis</i> , Black Kite <i>Milvus migrans</i> .

Table 6. Species recorded nesting in the study area.

Place of nesting	Species
In plains, trees, bushes surrounding the dam	Eurasian Collared Dove <i>Streptopelia decaocto</i> , Laughing Dove <i>Streptopelia senegalensis</i> , Little ringed Plover <i>Charadrius dubius</i> (Bharos et al. 2019) being the first nesting report from Chhattisgarh), Yellow-wattled Lapwing <i>Vanellus malarbaricus</i> , Red-wattled Lapwing <i>Vanellus indicus</i> . The Indian Courser <i>Cursorius coromandelicus</i> has also been recorded nesting in winter from Chhattisgarh (Bharos & Sahu 2002), which was found nesting in January at Kurud Dam, House Crows <i>Corvus splendens</i> , Baya Weaver <i>Ploceus philippinus</i> , Red Avadavat <i>Amandava amandava</i> , Indian Silverbill <i>Euodice malabarica</i> , Scaly-breasted Munia <i>Lonchura punctulata</i> Ashy crowned Sparrow-Lark <i>Eremopterix griseus</i> in April, Ashy Prinia <i>Prinia socialis</i> , Plain Prinia <i>Prinia inornata</i> .
Old ruins	Spotted Owlet <i>Athene brama</i>



Feeding Guild of the Birds.

Vulnerable (NT) Near Threatened (LC) Least Concerned, according to the IUCN Red Data Book (Birdlife International 2014-2015), Rahmani (2012), Rahmani et al. (2018). The nomenclature of the avifauna was done following Praveen et al. (2016).

To determine the feeding guild behavior we keenly and closely observed the birds with the aid of binoculars and camera, documented observed details, identified the probable food resource at and around the feeding / foraging site of respective

Table 7. The feeding guild categorization of the birds according to the foraging behaviour.

Guild Type	Description	Remarks
Carnivorous	The birds of this category mostly feed on fishes, reptiles, frog, lizards, small rodents (Patten 1906; Ali & Ripley 1987). The birds included in this category were also found/observed feeding on mollusc, fishes, crabs, rodents, amphibians, reptiles etc. were considered in this category.	Asian Openbill <i>Anastomus oscitans</i> was observed feeding on <i>Pila globosa</i> and <i>Lamellidens marginalis</i> . We observed certain Raptors viz. Osprey feeding on fishes, Marsh Harrier preying on smaller aquatic birds, and Common Kestrel was found predated over frogs & lizards, and considered them in this category.
Frugivorous	Birds that prominently feed on fruits were considered in this category.	Which includes Yellow-footed Green Pigeon, Rose-ringed Parakeets etc. recorded at Kurud Dam. Their prime feeding selection was <i>Ficus</i> species.
Granivorous	Birds that primarily feed on grains, were considered in this category.	This includes Scaly-breasted Munia, Indian Silverbill, Red Avadavat, House Sparrows, Baya Weave were also recorded at Kurud Dam area.
Insectivorous	Birds found feeding on insects, larvae of insects, weevils, minor crabs, mollusc, etc.	Birds like Green Bee-eaters were found/observed feeding on Odonata. Flycatchers, Larks, Pipits, were observed feeding on Diptera, Hemiptera, Stoneflies, Odonata at Kurud Dam area.
Nectarivorous	Birds that fed on nectar of the flower.	Sunbirds were most commonly found feeding on the nectar of the flower.
Omnivorous	We handled the omnivorous guild behavior in a broad range the birds (including ducks) that feed on Aquatic plants / parts of plants; inclusively (some of them) also feed on shrimps, mollusc, certain aquatic insects and other aquatic minor animals.	Ducks and Geese were seen diving, dabbling, and foraging on these food resources.
Piscivorous	Birds that primarily feed on fishes.	Cormorants, Skimmer, Kingfishers, etc.

individual species, these sample specimens were compared and identified with standard literatures—Patten (1906), Mukherjee (1969-71) Ali & Ripley (1987), Perrow (1997), and Jha (2013).

Observations

This study recorded a total of 191 bird species belonging to 16 orders and 61 families (Table 1). Out of these 191 species, 111 species were Resident (R), 80 species were Migratory (M) observed mostly in winter. The total 191 species were also categorized according to their habit into—Aquatic (A) 17 species, Near aquatic (NA) 76 Species, and

Grassland & Arboreal (GA) 98 species.

Here is a breakup of the species recorded from each of the 61 families from this study: Anatidae 14 (7.33%), Phasianidae 3 (1.57%), Podicipedidae 2 (1.05%), Columbidae 3 (1.57%), Caprimulgidae 1 (0.52%), Apodidae 2 (1.05%), Cuculidae 4 (2.09%), Rallidae 6 (3.14%), Ciconiidae 4 (2.09%), Ardeidae 12 (6.28%), Threskiornithidae 3 (1.57%), Phalacrocoracidae 3 (1.57%), Anhingidae 1 (0.52%), Recurvirostridae 1 (0.52%), Charadriidae 7 (3.66%), Rostratulidae 1 (0.52%), Jacanidae 3 (1.57%), Scolopacidae 19 (9.95%), Turnicidae 1 (0.52%), Glareolidae 2 (1.05%), Laridae 5 (2.62%), Pandionidae 1 (0.52%), Accipitridae 9 (4.71%), Tytonidae 1

Table 8. Available food and habitat resources of the birds at study area.

Aquatic Plants
<i>Aponogeton natans</i>
<i>Hydrilla verticellata</i>
<i>Marselia minuta</i>
<i>Najas marina</i>
<i>Nymphaea rubra</i>
<i>Vallisneria spiralis</i>
Shrubs / stands ^
<i>Ipomoea carnea</i>
<i>Prosopis juliflora</i>
<i>Typha latifolia</i>
Trees *
<i>Aegele marmelos</i>
<i>Azadirachta indica</i>
<i>Bombax ceiba</i>
<i>Ficus benghalensis</i>
<i>Ficus religiosa</i>
<i>Mangifera indica</i>
<i>Phoenix sylvestris</i>
<i>Psidium gujava</i>
<i>Tamarindus indicus</i>
<i>Vachellia nilotica</i>
<i>Zizhyphus mauritiana</i>
Grasses ^^
<i>Cynodon dactylon</i>
<i>Cyperus iria</i>
<i>Digitaria sanguinalis</i>
Cultivation^^
Maize
Paddy
Reptiles
Chequered Keelback
Common Skink
Garden Lizard
House Gecko
Mollusc
<i>Pila globosa</i>
<i>Lamellidens marginalis</i>
<i>Bellamaya bengalensis</i>

Insects
Pond skater
Water nymph
Water beetle
Fishes
Rohu
Katla
Loaches
Amphibians
Bullfrog
Common Toad

^ Served as hide-out nesting and roosting sites for few birds.
 * These trees served for perching, roosting, nesting, and also as food resource.
 ^^ Served as good abode for grass birds.

(0.52%), Strigidae 1 (0.52%), Bucerotidae 1 (0.52%), Upupidae 1 (0.52%), Picidae 1 (0.52%), Ramphastidae 1 (0.52%), Meropidae 1 (0.52%), Coraciidae 1 (0.52%), Alcedinidae 3 (1.57%), Falconidae 1 (0.52%), Psittaculidae 2 (1.05%), Campephagidae 1 (0.52%), Oriolidae 1 (0.52%), Vangidae 1 (0.52%), Aegithinidae 1 (0.52%), Dicruridae 1 (0.52%), Laniidae 5 (2.62%), Corvidae 2 (1.05%), Monarchidae 1 (0.52%), Nectariniidae 1 (0.52%), Ploceidae 1 (0.52%), Estrildidae 4 (2.09%), Passeridae

1(0.52%), Motacillidae 8 (4.19%), Fringillidae 1 (0.52%), Emberizidae 3 (1.57%), Alaudidae 6 (3.14%), Cisticolidae 4 (2.09%), Locustellidae 1 (0.52%), Acrocephalidae 4 (2.09%), Hirundinidae 1 (2.09%), Pycnonotidae 1 (0.52%), Phylloscopidae 1 (0.52%), Sylviidae 1 (0.52%), Timaliidae 1 (0.52%), Leiothrichidae 2 (1.05%), Sturnidae 4 (2.09%), Muscicapidae 9 (4.71%).
 Out of the 61 families following 10 families found dominant were, Scolopacidae 19 species (9.95%), Anatidae 14 (7.33%), Ardeidae 12 (6.28%), Accipitridae 9 (4.71%), Muscicapidae 9 (4.71%), Motacillidae 8 (4.19%), Rallidae 6 (3.14%), Alaudidae 6 (3.14%), Laridae 5 (2.62%), Laniidae 5 (2.62%).

Threatened Species: Out of the 191 species 11 Species were found under different threatened categories of IUCN Red List, (Table 3) Rahmani (2012), Rahmani et al. (2018).

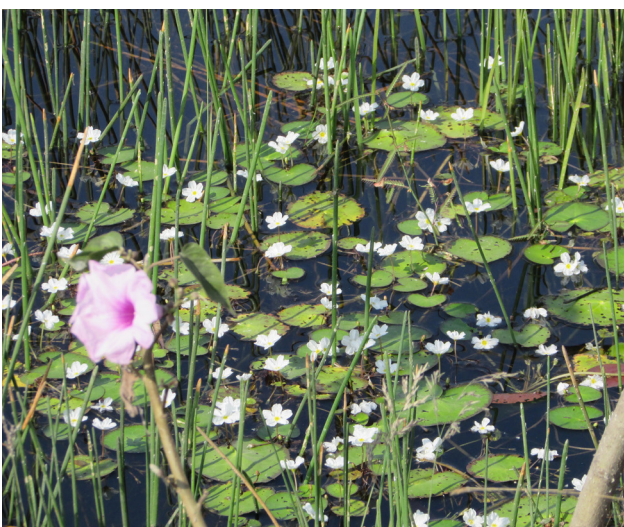
Passerby species
 Some of the passerby species observed at arrival



Wader Congregation.



Migratory Tufted Ducks.



Aquatic vegetation.

during September–November and departure in April and May were as per Table 4.

Roosting

Some of the roosting species at and around the dam as found are mentioned in Table 5.

Nesting

The species found nesting were as per Table 6.

Food base

Working with the food resource available at and around Kurud Dam utilized by 191 species, were categorized according to their feeding guild as follows:

48 carnivorous species, four frugivorous species, eight granivorous species, 44 insectivorous species, one nectarivorous species, 83 omnivorous species, 03 carnivorous / pisivorous species were recorded, following Patten (1906), Mukherji (1969–71) Subramanyam (1962), Ali & Ripley (1987), Perrow (1997), Jha (2013), Bux and Acharya (2017).

The feeding guild according to foraging behavior found:

We did see the feeding bird(s) but did not examine their gut, but presumably on later examination of their feeding grounds we concluded the guild behavior (Table 7), and the available food and habitat resource (Table 8).

Result and Discussion

The study site was visited since 2007 but more intensively from 2015 to 2019. The observed 191 bird species belonging to 16

order and 61 families were categorized into resident and migratory; and according to their habit aquatic, near aquatic, grassland & arboreal; and according to the feeding guild behavior into carnivorous, insectivorous, nectarivorous, omnivorous, piscivorous, granivorous, and frugivorous. Eleven species fall within the categories of threatened species of IUCN Red list viz. vulnerable four species, and seven near threatened. Our study documents the size and structure of the Kurud Dam avian community, which affords ample food resource. The studies on passerby, roosting, and nesting species were also undertaken to ascertain a better picture of the wetland's status and the birds it carries.

Through this study we have tried to fill the gap and expect that it will serve as the baseline data for Kurud Dam. Being a prime and potential wetland of central Chhattisgarh, this study shall also support ornithological studies and conservation issues in the near future.

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Birds at KFRI Campus, Thrissur, Kerala, India

Birds are fascinating creatures of nature and perform a variety of ecological roles like pollination, scavenging, pest control, and seed dispersal. Avifauna is one among the most studied groups of vertebrates and also is considered as an indicator species of ecosystem (Blair 1999). The Indian subcontinent has 1,340 bird species (Praveen et al. 2017) of which 1,263 bird species are in India (Praveen et al. 2016) and 500 bird species in Kerala (Praveen 2015). The campus of Kerala Forest Research Institute (KFRI) is located in central Kerala at Peechi (10.530°N & 76.346°E), about 20km east of Thrissur City, adjacent to Peechi-Vazhani Wildlife Sanctuary with average elevation of about 100m. KFRI campus lies within an area of 28ha reserve forest with a butterfly garden, medicinal garden, arboretum, palmetum, and is rich in avifaunal diversity. Studies conducted in Thrissur District by Jayson & Sivaperuman (2005) recorded 313 taxa of birds of which 103 taxa were recorded from the Peechi area (Santharam 2005) and 94 taxa from KFRI campus (Jayson et al. 2000). In this paper we document the birds recorded from June 2016 to September 2018. We observed birds alone in a team using Bushnell binocular (10 x 50) and spotting scope (10 x 45x) and birds were identified using calls and physical features with the help of standard field guides and reference books (Ali & Ripley 1987; Grimmet et al. 2011; Sashikumar et al. 2001;

Induchoodan 2017). Observations were made from 06.00–10.00 h and 16.00–17.00 h, twice every month.

A total of 78 species of birds belonging to 14 orders and 33 families are reported from Kerala Forest Research Institute campus (Table 1). In this study order Passeriformes was dominant with 18 families followed by Coraciiformes and Piciformes with two families and rest of the 11 orders with single family in each. Of all the families, Muscicapidae and Accipitridae dominated the list with five species each. Birds were classified into Common (sighted during the entire field visit), Uncommon (sighted in specific habitat on a few visits), and Occasional (sighted in suitable habitat once or twice).

As per IUCN (2018), 77 taxa of birds recorded from the campus were found to be under the Least Concern category and one taxa was under Not Evaluated category. KFRI campus is a breeding-cum-roosting area for many species, breeding of Crested Hawk-eagle *Nisaetus cirrhatus* in the campus was a remarkable observation. Praveen (2015) reported 500 species in 88 families and 22 orders from Kerala. Thus KFRI campus accounts for 15.6% species, 37.5% families, and 63.64% orders of birds of Kerala. Ten species fall under the Schedule I, one species in Schedule II, 63 species

Table 1. Checklist of birds at KFRI Campus, Peechi, Thrissur.

	Common name	Scientific name	Jayson et al. (2000)	Present study	Status
Phasianidae					
1	Red Spurfowl	<i>Galloperdix spadicea</i> Gmelin, JF, 1789	P	P	C
2	Grey Junglefowl	<i>Gallus sonneratii</i> Temminck, 1813	P	P	U
3	Indian Peafowl	<i>Pavo cristatus</i> Linnaeus, 1758	P	P	C
4	Grey Francolin	<i>Gallus sonneratii</i> Gmelin, JF, 1789	P	A	
5	Jungle Bush Quail	<i>Perdícula asiatica</i> Latham, 1790	P	A	
Columbidae					
6	Blue Rock Pigeon	<i>Columba livia</i> Gmelin, JF, 1789	P	P	C
7	Spotted Dove	<i>Streptopelia chinensis</i> Scopoli, 1786	P	P	C
8	Emerald Dove	<i>Chalcophap sindica</i> Linnaeus, 1758	P	P	U
9	Yellow-footed Green Pigeon	<i>Treron phoenicopterus</i> Latham, 1790	P	A	
10	Eurasian Collared Dove	<i>Streptopelia decaocto</i> Frivaldszky, 1838	P	A	
Caprimulgidae					
11	Grey Nightjar (Jungle Nightjar)	<i>Caprimulgus indicus</i> Latham, 1790	P	A	
12	Indian Nightjar	<i>Caprimulgus asiaticus</i> Latham, 1790	P	A	
Apodidae					
13	Indian House Swift (Little Swift)	<i>Apus affinis</i> Gray, 1830	P	P	U
14	Indian Swiftlet	<i>Aerodramus unicolor</i> Jerdon, 1840	A	P	U
15	Asian Palm Swift	<i>Cypsiurus balasiensis</i> Gray, JE, 1829	P	P	U
16	Alpine Swift	<i>Tachymarptis melba</i> Linnaeus, 1758	P	A	
Cuculidae					
17	Greater Coucal	<i>Centropus sinensis</i> Stephens, 1815	P	P	C
18	Asian Koel	<i>Eudynamis scolopaceus</i> Linnaeus, 1758	P	P	C
19	Common Hawk Cuckoo	<i>Hierococcyx varius</i> Vahl, 1797	P	P	U
20	Indian Cuckoo	<i>Cuculus micropterus</i> Gould, 1838	P	P	O
21	Pied Cuckoo	<i>Clamator jacobinus</i> Boddaert, 1783	P	A	
22	Banded Bay Cuckoo	<i>Cacomantis sonneratii</i> Latham, 1790	P	A	
Rallidae					
23	White-breasted Waterhen	<i>Amauornis phoenicurus</i> Pennant, 1769	P	P	C
Ardeidae					
24	Indian Pond Heron	<i>Ardeola grayii</i> Sykes, 1832	A	P	C
Charadriidae					
25	Red-wattled Lapwing	<i>Vanellus indicus</i> Boddaert, 1783	P	P	C
Accipitridae					
26	Oriental Honey Buzzard (Crested Honey Buzzard)	<i>Pernis ptilorhynchus</i> Temminck, 1821	A	P	O

	Common name	Scientific name	Jayson et al. (2000)	Present study	Status
Accipitridae					
27	Changeable Hawk Eagle (Crested Hawk Eagle)	<i>Nisaetus cirrhatus</i> Gmelin, 1788	A	P	C
28	Shikra	<i>Accipiter badius</i> Gmelin, 1789	P	P	U
29	Brahminy Kite	<i>Haliastur indus</i> Boddaert, 1783	P	P	C
30	Crested Serpent Eagle	<i>Spilornis cheela</i> Latham, 1790	P	P	U
31	Black Kite	<i>Milvus migrans</i> Boddaert, 1783	P	A	
32	Eurasian Sparrowhawk	<i>Accipiter nisus</i> Linnaeus, 1758	P	A	
Tytonidae					
33	Common Barn Owl	<i>Tyto alba</i> Scopoli, 1769	P	A	
Strigidae					
34	Jungle Owlet	<i>Glaucidium radiatum</i> Tickell, 1833	A	P	C
35	Mottled Wood Owl	<i>Strix ocellata</i> Lesson, 1839	A	P	C
36	Brown Fish Owl	<i>Ketupa zeylonensis</i> Gmelin, 1788	A	P	O
37	Spotted Owlet	<i>Athene brama</i> Temminck, 1821	P	A	
Bucerotidae					
38	Indian Grey Hornbill	<i>Ocyrceros birostris</i> Scopoli, 1786	P	P	U
39	Malabar Grey Hornbill	<i>Ocyrceros griseus</i> Latham, 1790	A	P	U
Upupidae					
40	Common Hoopoe (Eurasian Hoopoe)	<i>Upupa epops</i> Linnaeus, 1758	P	A	
Picidae					
41	Heart-spotted Woodpecker	<i>Hemicircus canente</i> Lesson, 1832	P	P	U
42	Common Golden-backed Woodpecker (Common Flameback)	<i>Dinopium javanense</i> Ljungh, 1797	A	P	C
43	Lesser Golden-backed Woodpecker (Black-rumped Flameback)	<i>Dinopium benghalense</i> Linnaeus, 1758	P	P	C
44	Rufous Woodpecker	<i>Micropternus brachyurus</i> Vieillot, 1818	P	A	
45	Yellow-crowned Woodpecker	<i>Dendrocopos mahrattensis</i> Latham, 1801	P	A	
46	Brown-capped Pygmy Woodpecker	<i>Dendrocopos moluccensis</i> Vigors, 1832	P	A	
Ramphastidae					
47	White-cheeked Barbet	<i>Psilopogon viridis</i> Boddaert, 1783	P	P	C
48	Coppersmith Barbet	<i>Psilopogon haemacephalus</i> Müller, 1776	P	P	C
Meropidae					
49	Blue-tailed Bee-eater	<i>Merops philippinus</i> Linnaeus, 1767	P	P	C
50	Green Bee-eater	<i>Merops orientalis</i> Latham, 1801	P	A	
51	Chestnut-headed Bee-eater	<i>Merops leschenaulti</i> Vieillot, 1817	P	A	

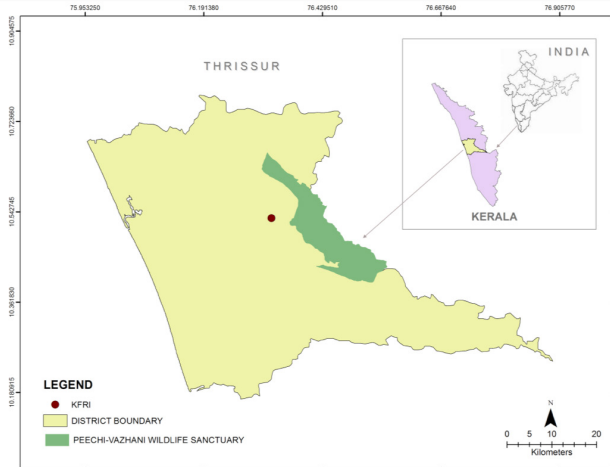
	Common name	Scientific name	Jayson et al. (2000)	Present study	Status
Coraciidae					
52	Indian Roller	<i>Coracias benghalensis</i> Linnaeus, 1758	P	A	
Alcedinidae					
53	Common Kingfisher	<i>Alcedo atthis</i> Linnaeus, 1758	P	P	C
54	Stork-billed Kingfisher	<i>Pelargopsis capensis</i> Linnaeus, 1766	P	P	C
55	White-throated Kingfisher	<i>Halcyon smyrnensis</i> Linnaeus, 1758	P	P	C
56	Pied Kingfisher	<i>Ceryle rudis</i> Linnaeus, 1758	P	A	
Psittaculidae					
57	Plum-headed Parakeet	<i>Psittacula cyanocephala</i> Linnaeus, 1766	P	P	C
58	Rose-ringed Parakeet	<i>Psittacula kramera</i> Scopoli, 1769	P	P	C
59	Vernal Hanging Parrot	<i>Loriculus vernalis</i> Sparman, 1787	P	P	U
60	Malabar Parakeet	<i>Psittacula columboides</i> Vigors, 1830	P	A	
Pittidae					
61	Indian Pitta	<i>Pitta brachyura</i> Linnaeus, 1766	P	P	O
Campephagidae					
62	Scarlet Minivet (Orange Minivet)	<i>Pericrocotus flammeus</i> Forster, JR, 1781	P	P	U
Oriolidae					
63	Black-hooded Oriole	<i>Oriolus xanthornus</i> Linnaeus, 1758	P	P	C
64	Indian Golden Oriole	<i>Oriolus kundoo</i> Sykes, 1832	P	P	U
65	Black-naped Oriole	<i>Oriolus chinensis</i> Linnaeus, 1766	A	P	C
Artamidae					
66	Ashy Woodswallow	<i>Artamus fuscus</i> Vieillot, 1817	P	A	
Vangidae					
67	Bar-winged Flycatcher-shrike	<i>Hemipus picatus</i> Sykes, 1832	A	P	O
68	Large Woodshrike (Malabar Woodshrike)	<i>Tephrodornis virgatus</i> Raffles, 1822	A	P	O
Aegithinidae					
69	Common Iora	<i>Aegithina tiphia</i> Linnaeus, 1758	P	P	C
Dicruridae					
70	Black Drongo	<i>Dicrurus macrocercus</i> Vieillot, 1817	P	P	U
71	Bronzed Drongo	<i>Dicrurus aeneus</i> Vieillot, 1817	A	P	C
72	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i> Linnaeus, 1766	A	P	C
73	Ashy Drongo	<i>Dicrurus leucophaeus</i> Vieillot, 1817	P	A	
74	White-bellied Drongo	<i>Dicrurus caerulescens</i> Linnaeus, 1758	P	A	
Corvidae					
75	Rufous Treepie	<i>Dendrocitta vagabunda</i> Latham, 1790	P	P	C
76	House Crow	<i>Corvus splendens</i> Vieillot, 1817	P	P	C
77	Large-billed Crow	<i>Corvus macrorhynchos</i> Wagler, 1827	P	P	C

	Common name	Scientific name	Jayson et al. (2000)	Present study	Status
Monarchidae					
78	Indian Paradise-flycatcher	<i>Terpsiphone paradise</i> Linnaeus, 1758	P	P	U
Dicaeidae					
79	Thick-billed Flowerpecker	<i>Dicaeum agile</i> Tickell, 1833	P	A	
80	Pale-billed Flowerpecker	<i>Dicaeum erythrorhynchos</i> Latham, 1790	P	A	
Nectariniidae					
81	Purple-rumped Sunbird	<i>Leptocoma zeylonica</i> Linnaeus, 1766	P	P	C
82	Crimson-backed Sunbird	<i>Leptocoma minima</i> Sykes, 1832	A	P	U
83	Purple Sunbird	<i>Cinnyris asiaticus</i> Latham, 1790	P	P	C
84	Loten's Sunbird (Long-billed Sunbird)	<i>Cinnyris lotenius</i> Linnaeus, 1766	P	P	C
Irenidae					
85	Asian Fairy-bluebird	<i>Irena puella</i> Latham, 1790	A	P	O
86	Golden-fronted Leafbird	<i>Chloropsis aurifrons</i> Temminck, 1829	A	P	C
87	Jerdon's Leafbird	<i>Chloropsis jerdoni</i> Blyth, 1844	P	P	U
Ploceidae					
88	Streaked Weaver	<i>Ploceus manyar</i> Horsfield, 1821	P	A	
89	Baya Weaver	<i>Ploceus philippinus</i> Linnaeus, 1766	P	A	
Estrildidae					
90	White-rumped Munia	<i>Lonchura striata</i> (Linnaeus, 1766)	A	P	U
Passeridae					
91	Yellow-throated Sparrow (Chestnutshouldered Petronia)	<i>Gymnoris xanthocolis</i> Burton, 1838	P	A	
Motacillidae					
92	Grey Wagtail	<i>Motacilla cinerea</i> Tunstall, 1771	P	A	
93	White-browed Wagtail	<i>Motacilla maderaspatensis</i> Gmelin, JF, 1789	P	A	
94	Western Yellow Wagtail	<i>Motacilla flava</i> Linnaeus, 1758	P	A	
Paridae					
95	Cinereous Tit (Indian Great Tit)	<i>Parus cinereus</i> Vieillot, 1818	P	A	
Alaudidae					
96	Rufous-tailed Lark	<i>Ammomanes phoenicura</i> Franklin, 1831	P	A	
Cisticolidae					
97	Common Tailorbird	<i>Orthoto mussutorius</i> Pennant, 1769	P	P	C
Acrocephalidae					
98	Blyth's Reed Warbler	<i>Acrocephalus dumetorum</i> Blyth, 1849	P	P	C
99	Clamorous Reed Warbler	<i>Acrocephalus stentoreus</i> Hemprich & Ehrenberg, 1833	P	P	C
Hirundinidae					
100	Red-rumped Swallow	<i>Cecropis daurica</i> Laxmann, 1769	P	A	
101	Barn Swallow	<i>Hirundo rustica</i> Linnaeus, 1758	P	A	

	Common name	Scientific name	Jayson et al. (2000)	Present study	Status
Pycnonotidae					
102	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i> Linnaeus, 1758	P	P	C
103	Red-vented Bulbul	<i>Pycnonotus cafer</i> Linnaeus, 1766	P	P	C
Zosteropidae					
104	Oriental White-eye	<i>Zosterops palpebrosus</i> Temminck, 1824	P	A	
Leiothrichidae					
105	Jungle Babbler	<i>Turdoides striata</i> Dumont, 1823	P	P	C
106	Yellow-billed Babbler	<i>Turdoides affinis</i> Jerdon, 1845	P	P	C
Sittidae					
107	Velvet-fronted Nuthatch	<i>Sitta frontalis</i> Swainson, 1820	P	A	
Sturnidae					
108	Common Myna	<i>Acridotheres tristis</i> Linnaeus, 1766	P	P	C
109	Jungle Myna	<i>Acridotheres fuscus</i> Wagler, 1827	P	P	C
110	Hill Myna	<i>Gracula religiosa</i> Linnaeus, 1758	A	P	U
Muscicapidae					
111	Oriental Magpie Robin	<i>Copsychus saularis</i> Linnaeus, 1758	P	P	C
112	Asian Brown Flycatcher	<i>Muscica padaurica</i> Raffles, 1822	A	P	C
113	Brown-breasted Flycatcher	<i>Muscica pamuttui</i> Layard, EL, 1854	A	P	U
114	Tickell's Blue Flycatcher	<i>Cyornis tickelliae</i> Blyth, 1843	A	P	U
115	Malabar Whistling Thrush	<i>Myophonus horsfieldii</i> Vigors, 1831	A	P	C
116	Indian Robin	<i>Saxicoloides fulicatus</i> Linnaeus, 1766	P	A	
117	Pied Bushchat	<i>Saxicola caprata</i> Linnaeus, 1766	P	A	
Turdidae					
118	Orange-headed Thrush	<i>Geokichla citrina</i> Latham, 1790	A	P	C
119	Indian Blackbird	<i>Turdus simillimus</i> Jerdon, 1839	A	P	O

under Schedule IV, and one species under the Schedule V category of the Wildlife (Protection) Act; 10 species fall under the Appendix II of CITES. Two endemic species Malabar Grey Hornbill *Ocyroceros griseus* and Crimson-backed Sunbird *Leptocoma minima* to Western Ghats was also recorded from the campus. Earlier studies conducted in KFRI campus (Jayson et al. 2000) recorded 94 taxa of birds belonging to 13 orders and 35 families. While comparing with the past

data, 41 taxa of birds reported earlier were not found during the present study and 23 taxa of birds are newly reported. This may be due to the habitat fragmentation between the Peechi-Vazhani Wildlife Sanctuary and the KFRI campus due to urbanization. Nearness to the Peechi-Vazhani Wildlife Sanctuary had a great influence in the avifaunal diversity of the campus. Also, the floristic diversity of the campus itself has changed slightly due to the small scale construction activities as



KFR I Campus at Peechi, Thrissur, Kerala.

well as the establishment of peculiar plots for conservation like arboretum, palmetum, butterfly garden, forest nursery, among other things. Even though KFR I campus is a small area and located amid human habitations, the high species diversity in the campus could be due to the presence of different type of habitats.

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Foraging behaviours of Baya Weaver *Ploceus philippinus*, during non-breeding seasons in northern Tamil Nadu, India

Baya Weaver *Ploceus philippinus* (Linnaeus 1766) (Aves: Passeriformes: Ploceidae) is distributed throughout India and most of Southeast Asia (Ali et al. 1957). The IUCN Red List of Threatened Species classifies *Ploceus philippinus* under organisms of 'Least Concern' (Birdlife International 2016). They are social, gregarious, polygamous, colonial nesters with an architectural genius for building intricate and pendant nests. In India, the breeding season is from May to November (Ali & Ripley 1987; Rasmussen & Anderton 2005). In general, *P. philippinus* select a variety of trees for nesting, but prefer tall, unbranched trunks and long-swaying foliage of palm trees that keeps away predators and provide convenient leaf strips for building nests (Davis 1974). During breeding season, the males moult into a yellow and brown nuptial plumage, but females remain pale brown. During non-breeding seasons both male and female are pale brown in colour (Ali & Ripley 1987). They are granivorous (Avery 1979) forming communal roosts on crops and hence considered agricultural pests (Gadgil & Ali 1975; Hamid Ali et al. 1976). Studies in various parts of the country have shown that they cause immense damage to paddy and other crops (Dhindsa & Toor 1980; Shyama 1997). All the above studies have come from states other than Tamil Nadu. Hence, I decided to take up a study on foraging behaviours of Baya Weaver during their non-

breeding season from five villages; two from Arakonam Taluk and three from Nemeli Taluk of Ranipet District.

Study Area and Methodology

Arakonam (13.077°N & 79.666°E) and Nemili (12.598°N & 78.515°E) taluks are situated in the eastern part of Ranipet district and 71km from Chennai. Ranipet District covers an extent of 2,234km² with a population of c. 1,210,000 (2011 census). The main occupations of the people are agriculture followed by weaving and employment as labourers in unorganized sectors. The major crops are paddy, jowar, bajra, ragi, pulses, groundnut, and vegetables. The minimum monthly mean temperature is 22.4°C and maximum is 34.1°C. The average annual rainfall in the district is 1000mm. (Figure 1).

With the assistance of informants (2) and land owners (2), I visited 30 villages covering the two taluks, identified five villages where flocks with sizeable number of Baya Weaverbirds occur and also where paddy is intensively cultivated. I visited each of these five village for three days consecutively, and counted the number of birds in each flock, number of visits to paddy crop, duration of foraging in each visit, roosting patterns and plants used for roosting. The observations were carried out from 06.00 to 18.00 hrs between December 2019 and March 2020. Number of birds in each flocks was counted

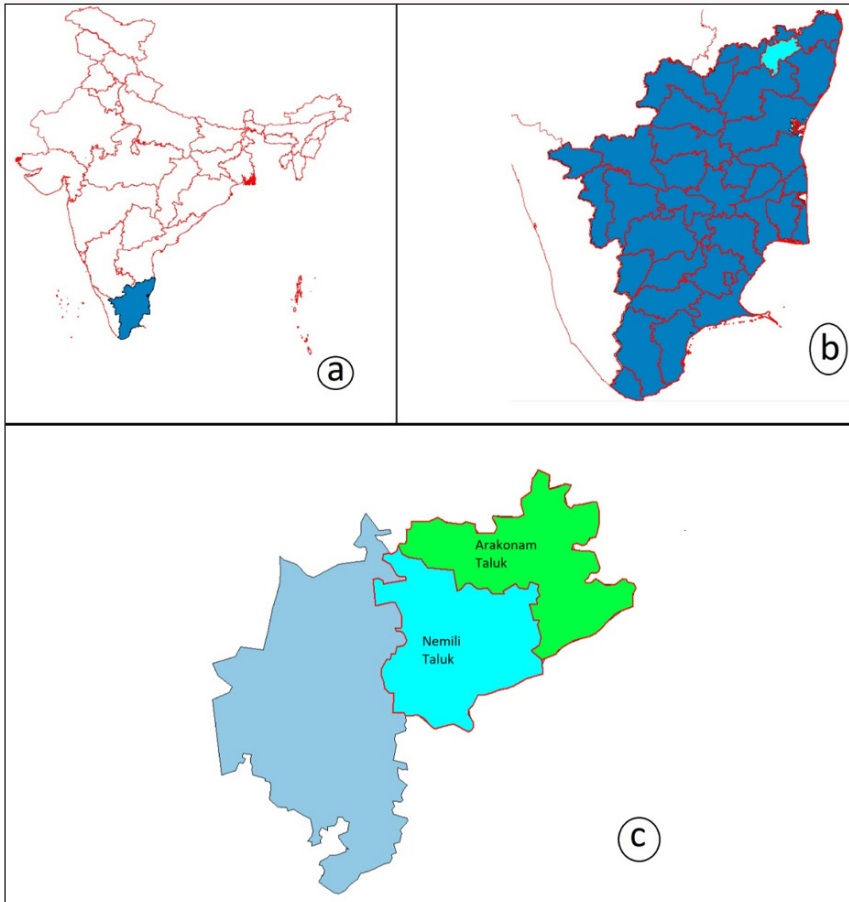


Figure 1. Study area map. a—India map showing Tamil Nadu | b—Tamil Nadu map showing Ranipet District, and | c—Ranipet District showing Arakonam and Nemili Taluks.

when they roosted on shrubs or herbs or power cables. Duration of foraging on paddy crop was observed using stop clock in smart phones. Photographs and videos were taken using Nikon P1000 digital camera.

Results and Discussion

A total of five flocks of Baya Weaverbirds consisting of 2130 individuals were counted in the study areas (Table1). As stated by Ali & Ripley (1987), there

exists no differentiation in plumage between male and female during the non-breeding season. They strictly followed communal roosting and foraging. The minimum flock size was 255 birds, while the maximum was 800. They moved as flocks from morning to evening and maintained the flock size throughout the day. On the contrary, during the breeding season (May–November) the males would moult into yellow plumage,

separate from the flock and move to nest-supporting plants for construction of nests followed by mating with selected counterparts. Pandian & Ahimaz (2018) have enumerated 4,476 Baya Weaverbirds on 270 nest-supporting plants i.e., an average of 16 birds per nest-supporting plant in rural Tamil Nadu.

It was observed that the flocks fly in close formations by performing different manoeuvres (Fig. 2a). The flocking behavior varies and the birds took various complicated formations to reach foraging as well as roosting sites. They commence their daily foraging between 06.00hr and 06.15hr in the morning and conclude their foraging before 18.00hr in the evening. Between 12.00hr and 15.00hr no foraging activities were observed and the flocks roost on nearby vegetations. Mean number of visits to paddy fields in the forenoon was 12 and 7 in the afternoon. The number of visits per day varies from a minimum of 18 to a maximum of 22. In each foraging visit, the flock stays on paddy crop only for a short span of time even when

there were no disturbances to them. They stay on the crop from 15 seconds to 25 seconds, glean paddy grains speedily and take sudden flight to adjacent places for temporary roosting. While, they stay on the crops for shorter duration, they roost on shrubs/herbs/power cables for longer duration. The duration of stay of these birds on paddy crops is shorter as compared to the duration spent roosting on shrubs/herbs/power cables. The reason could be disturbance caused by people by banging utensils or other means to chase them away from crops and the birds prefer to stay on the crops only for brief spells while foraging. The birds use five plant species such as *Lantana camara* L., *Prosopis juliflora* (Sw.) DC., *Canthium coromandelicum* L., *Pithecellobium dulce* (Roxb.) Benth., and *Abutilon indicum* (Link) Sweet. for roosting (Fig. 2b,e, f). They also roost on power cables forming a close pile. A maximum of 320 birds was observed on power cables in a single roost (Fig. 2c,d). As stated by Gadgil



Figure 2. Foraging behavior of Baya Weaverbirds. a—A flock moving to paddy field | b—Roosting on *Prosopis juliflora* | c—and | d—Roosting on power lines | e—and | f—Roosting on *Lantana camara* | g—and | h—Birds foraging on paddy crop. © M. Pandian.

Table 1. Details of flocks of Baya Weaverbirds foraging on paddy crop in Arakonam and Nemili Taluks.

	Name of the village	No. of flocks	No. of birds counted	No. of visits to crop per day	Average duration of foraging in each visit (seconds)
1	Guruvarajapet (13.128°N & 79.575°E)	1	800	20	20
2	Salai-Minnal (13.077°N & 79.558°E)	1	320	16	20
3	Melandurai (13.039°N & 79.642°E)	1	370	22	15
4	Palayapalayam (13.045°N & 79.504°E)	1	255	18	20
5	Melakadu (13.042°N & 79.615°E)	1	385	19	25
	Total	5	2130	95	20

& Ali (1975) the habit of communal roosting may helps them to communicate about source of food and protection from predators.

The present study reveals that a large flock containing few hundred individuals continuously visiting paddy crops before harvest and gleaning grains from the spikes cause considerable loss to the farmers and hence it matches with the observations of Dhindsa & Toor (1980) and Shyama (1997). Further quantitative study is required to estimate the exact damage caused to grain production per hectare by this bird.

Conclusion

The present investigation confined to a small geographical region (five villages) containing 2,130 birds reveals that the area has an enormous potential to support significantly high populations of *P. philippinus* during the non-breeding period and also cause considerable damages to paddy crops. Based on my observations the following measures have been proposed for securing the habitat for these birds.

- (a) A special management plan could be devised for the area, considering the anthropogenic and natural stresses that the habitat is currently subjected to.
- (b) Local community, particularly land holders, and agricultural workers, should be sensitized to understand the need to preserve the precious populations of Baya weaverbirds.
- (c) A detailed systematic survey on the population status, flocking behaviours and impact of this bird on the paddy crops covering the entire Ranipet District may be

carried out to help in drafting an action plan to conserve the populations of *P. philippinus*.

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Bird deaths by kite *manjha* in Jammu City



Clockwise from top left: Greater Coucal, Spotted Owlet, Blue Rock Pigeon, glass-coated nylon 'manjha'. © Rahul V. Singh.

As a unique tradition, people from all age groups engage in flying kites (from dawn to dusk) to mark the arrival of spring season in the country during the festival of Uttarayan (Makar Sankranti). Kites flown these days are known to use a powerful string that is made by applying glass powder on it (manjha) to provide it with a cutting edge. This practice of using a sharp thread has imposed a huge risk of life to birds, fruit-bats, macaques, and even humans (Bareth 2003; Prakash 2003).

Earlier white thread 'sadda' was used without glass powder coating that caused no harm. The glass coated nylon thread, imported from China has a much larger impact on birds and bats as compared to terrestrial life forms (<https://milaap.org/stories/save-the-birds>). When in flight, they fail to notice the fine thread, which often entangles their bodies and injures them very badly, causing fractures, mutilation of wings, and nerve injuries. These strings unlike their cotton

counterparts used earlier, do not lose the strength even after getting wet but also stay for a long time in the environment creating potential threat for the birds, both local and migratory. These festivals on one hand bring joy for humans and on the other hand threat of life for the birds. With more kites competing for space with birds, the number of injuries has risen over the years (<https://www.globalgiving.org/projects/save-birds-from-kite-string-injuries/reports/>).

In Ahmedabad alone, over 2,000 birds including rare and endangered species are injured annually (<https://milaap.org/stories/save-the-birds>). Every year, all over India, several rescue missions are conducted by birders in which large numbers of birds are liberated from deadly thread traps; e.g., Babu et al. (2015) rescued 10–13 bird species in Bangalore, India. In 2018 alone, 4,000 birds were rescued in Gujarat by the State Forest Department after Makar Sankranti festival (Verchot 2019). In 2014, over 300 birds were severely injured during Uttarayan in Gujarat and Rajasthan (<https://www.wti.org.in/news/hundreds-of-birds-injured-during-kite-flying-festival/>).

The present study deals with the area of Jammu City which is located on the banks of the river Tawi. This city sees kite flying in festive season as well as on regular days. These observations were made twice a day, from 09.00–11.00 h and from 15.30–18.00 h. The evidence was collected with photographs and identification of birds was done based on Salim & Daniel (2002). Observations were recorded from

September 2014 to September 2015. A few avian species like *Psittacula krameri*, *Milvus migrans*, *Turdoides striata*, *Corvus macrorhynchos*, *Corvus splendens*, *Acridotheres fuscus*, and *Acridotheres ginginianus* were observed dominant in the study area. In the city areas, few house sparrows were also spotted. It was observed that anthropogenic activities (traffic, sound pollution, radiation) were high in the field due to which lesser number of birds resided in these areas.

Thousands of flying kites were recorded in the sky and after Uttarayan, a high number of dead bird species were also found hung on those kite strings. Only one black kite was found alive during rescue and other birds like Greater Coucal, two pigeons, and one Spotted Owl were dead. There may be thousands of other species also in threat or danger, which go out of record every year. In the last four to five years, awareness has increased among the people about wildlife/bird protection because the number of bird watchers is increasing day by day (Singh 2016). It has become an interesting affair amongst tourists in the areas where different bird species are present including rare, endangered and migratory birds. Ornithologists (professionals studying birds) are quite excited about the exploration of new places for birding especially in protected areas.

In October 2018, the government of Jammu & Kashmir organized a wildlife awareness program cum symposium to create awareness about the importance

of preserving wildlife. A wildlife week was celebrated in Jammu region at Shachera Conservation Reserve with active participation from the staff of Rajouri-Poonch Wildlife Division, students of Gujjar Hostel Rajouri, nature lovers, environmental activists, and locals. Another awareness program was conducted by the Department of Wildlife Protection on World Migratory Bird Day in Srinagar on 12 May 2019 with an aim to impart the importance of the migratory birds among the masses and the school going children (<https://www.greaterkashmir.com/news/kashmir/department-of-wildlife-protection-celebrates-world-migratory-bird-day/>).

Few measures have been suggested below to avoid the unnatural deaths of flying birds due to laxity by humans; some precautions can save their lives.

- (i) Banning or avoiding the glass-coated nylon 'manjha'.
- (ii) Exploring other states and advertising bird watching among people. Government must inquire and survey for other spots in the outskirts of Jammu City to develop a novel bird watching centre in the area to know more about these beautiful creatures and importance of their lives, and
- (iii) Training/ awareness camps should be conducted every year so that people can learn how to protect/save injured birds that are seen hung with 'manjha'. The ones alive can be saved if people have the proper knowledge to disentangle them.

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Rediscovery of *Cyclopodia sykesii*, an ectoparasite on the Indian Flying Fox from Udayagiri Range, Odisha, India

Cyclopodia sykesii

Westwood (1834)

distributed in most of the Indian peninsula in the area of distribution of *Pteropus medius* except in northwestern India (Theodor 1959). *Cyclopodia sykesii* parasites on *Pteropus medius*, *P. arial*, *P. intermedius*, *Cynopterus sphinx*, *Pipistrellus ceylonicus*, *Tupaia* sp. and its distribution in India ranges from Kerala, Karnataka, Tamil Nadu, Maharashtra, Dadra & Nagar Haveli, Gujarat, Rajasthan, Uttar Pradesh, Bihar, Assam, West Bengal, and Odisha; and Maldives (Advani & Vazirani, 1981).

Cyclopodia sykesii

Westwood (1834) is a dipteran insect in the family Nycteribiidae. These are blood sucking ectoparasite of fruit bats. The head is highly reduced to form a pin like structure for blood sucking. The legs are enlarged as compared to other dipterans with claws present to hold the hairs



Pteropus medius hanging from the Eucalyptus tree. © Ashirwad Tripathy.

of the host bat. Here, the host is *Pteropus medius* (Pteropodidae).

Pteropus medius is commonly called as Indian Flying Fox and the greater Indian Fruit Bat found in south Asia. It is the second largest bat in the world. It is nocturnal and feeds mainly on ripe fruits and nectar.

This species is often regarded as vermin due to its destructive tendencies towards fruit farms, but it helps in pollination and seed propagation.

In Odisha *C. sykesii* was first observed on *Pteropus medius* in Balugaon, Puri District (Now Khordha District) by Annandale (1913)



Spine like reduced head of *Cyclopodia sykesii*. © Ashirwad Tripathy.



Abdomen with hair tuft. © Ashirwad Tripathy.



Ventral portion of body. © Ashirwad Tripathy.

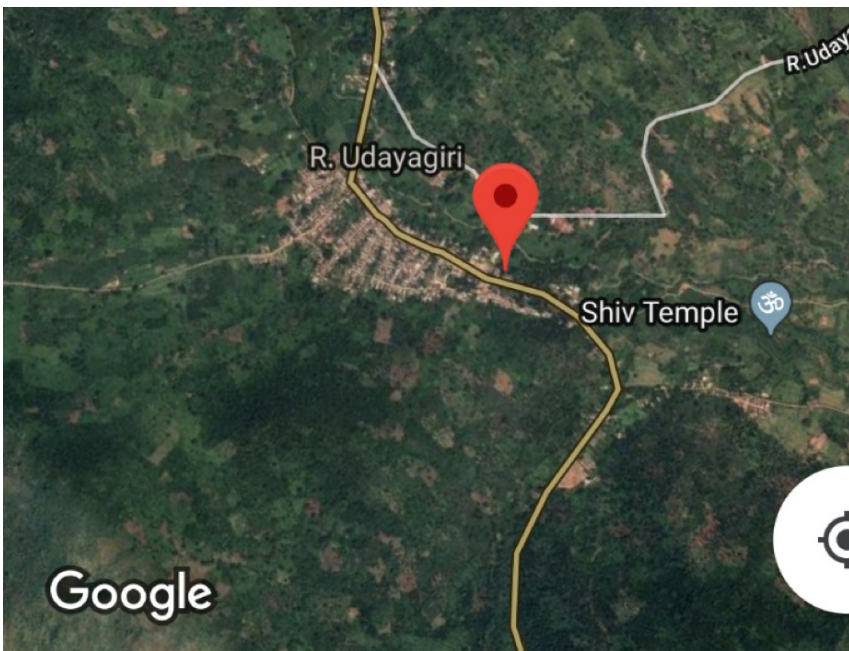
and from *Pteropus medius* from Satpada, Puri District by Caunter, (1908) (Scott, H., 1925). Till now no records about this insect has been found from Udayagiri Range, southern Odisha, India since 1913. Therefore, this is a rediscovery of *Cyclopodia sykesii* Westwood (1834) from southern Odisha after 107 years.

During a field survey in the mountain ranges of Udayagiri, Parlakhemundi Division, Gajapati District, Odisha (19.156° N & 84.144°E) on 8 September 2018 an accidental catch was made. *Cyclopodia sykesii* fell from the body of the *P. giganteus* during their flight and resting condition under a Eucalyptus tree roost. The samples were collected in 70% ethyl alcohol and identified as *Cyclopodia sykesii*.

Diagnosis: Palps laterally compressed, broad, with short terminal setae. Sclerite connecting the thoracic ctenidium with coxa two more or less narrowly triangular and covered with several rows of setae. Tergites of the male abdomen with either



Dorsal portion of the body. © Ashirwad Tripathy.



Sample collection location. © Ashirwad Tripathy.

continuous or interrupted marginal rows of setae or short spines. Fifth and sixth tergite always much shorter than the preceding tergites. Anal segment of the male broadly conical, less than twice as long as wide at the base. A row of short thick spines at the hind-margin of sternite 5 of

the male. Male genitalia: aedeagus membranous, without apodeme, completely invaginated inside the abdomen in the resting position. There is a connecting tube which bears a field of spines. Segmentation of the abdomen of the female much reduced. No sclerites

between the basal sclerites and the anal segment, except sternite 7 which is transformed into a genital plate with spines at the posterior margin. Anal sclerite is absent (Theodor 1959).

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Plastic in Elephant dung



Plastic sack in Asian Elephant dung.

Plastic pollution is one of the burning environmental issues. Many studies have been done on the occurrence of plastics in aquatic wildlife (Kurobe et al. 2013; Sigler 2014; Wilcox et al. 2015) but very few literature are available on the occurrence of plastics in terrestrial wildlife. Plastics are consumed by terrestrial animals like cattle, camels, hyenas, zebras, tigers, elephants and others. In many cases the tiny ingested plastics pass out through the digestive tract of animals without causing any harm, but there have also been cases when the plastics have blocked the digestive tract and caused death (Parker 2019).

On 18 April 2018 at 18.16h, a dung pile of Asian Elephant *Elephas maximus* with pieces of plastic sack in it was seen in the Anaikatti Reserve Forest area (11.093°N, 76.784°E). It seemed as if the elephant had eaten something kept in that plastic sack.

The Anaikatti Reserve Forest comes under the Coimbatore Forest Division, a part of Nilgiri Biosphere Reserve. It is a tropical thorn and deciduous forest. It lies in an Attapadi-Boluvampatti Elephant Corridor. As elephants have large home ranges, this wildlife corridor is important as it helps them for their movement and interbreeding, thus

helping in gene flow. There are lot of human settlements nearby. These settlements are surrounded by solar fence, thus restricting the free movement of elephants. Moreover, there is Coimbatore-Anaikatti State Highway which hinders their movement. Lots of banana plantations are also seen in this area and this attracts many elephants to come close to human habitation. According to the report of WTI (2017), increase in construction activities has led to the increase in human-wildlife interactions. Thus, there should be strict regulations as with more developmental activities comes more encroachment which then accelerates the issues of negative human-wildlife interactions and plastic pollution.

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BOOK REVIEW

Valley of Hope: Moyar and Vultures

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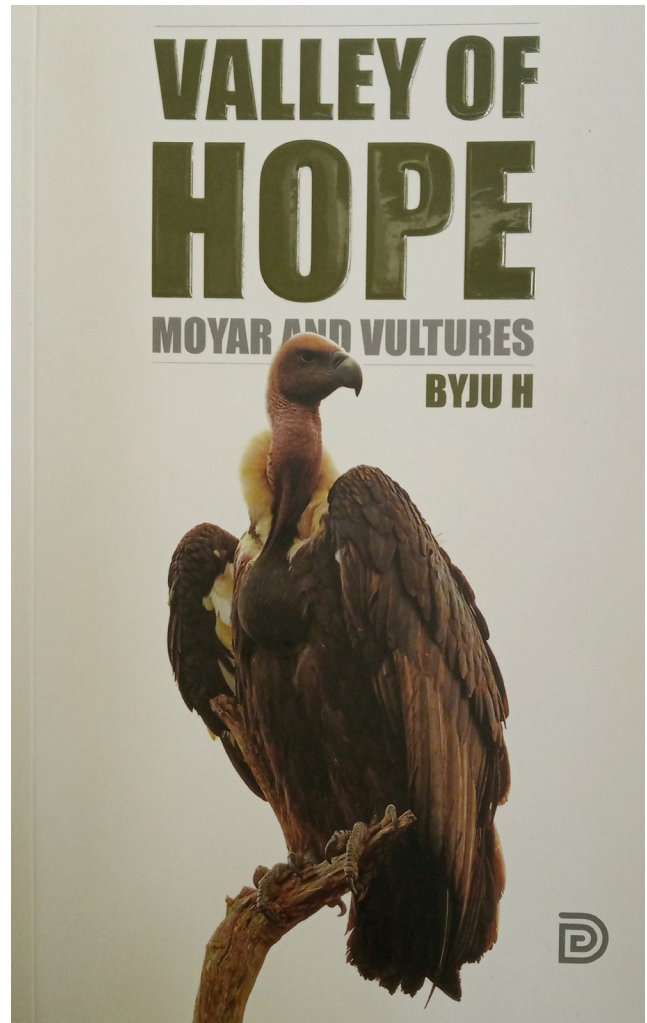
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The author has rightly warned us in his introduction that this is neither a book on vultures nor one on Moyar Valley. However, we find the entire narration is woven around these two basic threads.

Mysore Ditch or Moyar Ditch. How shocking to hear such a phrase for Moyar Gorge of the Nilgiri Biosphere. The British believed that this was responsible for the malarial infection (Hockings 1980). The 20-km Moyar Gorge and the surrounding valley is a unique landscape and terrain which every naturalist dreams to visit. The valley is also providing one breathing space for the magnificent vultures to hide, breed, and soar, especially in southern India.

The author narrates his experience in this 204-page, beautifully laid out, designed, and well-worded book. The black and white pictures placed at the start of every chapter blends well with the mood of the book; colour pictures instead would have spoiled it. It is an easy read, especially if you have been to this terrain as many of the names are familiar. For those who have not been there, the names and terrain may appear from a dreamy scape and eventually when they go, they will be happy to validate.

The author has taken the thread from the time he was introduced into the study project



until its meaningful completion. Although we may not find the results of the study in this book, we can easily infer the purpose of the study and the dedication the team has shown in their quest, in not so easy and welcome terrain, from the author's narrations. For an outsider, the field trips and studies inside a core forest may appear glamorous and charming, as they only see the end results, a mesmerising landscape, portraits of rare

BOOK REVIEW

species and calibrated and filtered out stories; but the reality is different, as is evident in the author's narration of tough trekking paths, dark evenings, unknown mammal calls amidst familiar bird calls, unexpected (but always prepared) collision with mammals, heat and dust, leeches and reptiles on the floor and what not! One need to be careful with resources on hand and be alert physically and mentally. All these are evident as the author unfolds one story after another, in a way not instilling fear in the minds of the readers, as otherwise, many naturalists will stay away from real conservation efforts in the core area along with the forest managers.

Any narration about the Western Ghats is incomplete without referring to the megafauna, Asian Elephant. Whatever be the purpose for which we step into the forest, the gentle giant is omni present, and the valley is no different as we could notice from numerous references the author mentions, along with the poster boy, the Tiger. The author's excitement of seeing not just one, but as many as four in a frame would equally excite us.

The author has divided the book into 18 chapters, each focusing on a specific experience. But a reader need not go through in a sequence; one can randomly pick any chapter and it still makes a good independent read without getting disconnected from the previous chapter.

On an overall perspective, it is a good read about a naturalist's experience in a jungle. It sure indicates the author's passion for the

wildlife experience and some great memories with minute details. The author must be maintaining a well-chronicled diary of the events regularly. It is quite natural that we miss out many names we walk along, but he has a good account of many of these people.

The author has shared many interesting experiences throughout the book. These include a cattle herd standing against an elephant, failing to photograph a panther cub sighting, a forest officer trying to prove that vultures did exist when it was declared that there were none of them in the south of India, and many more.

The book also rightly touches upon issues related to ground level forest management, conservation needs, local people involvement, tribal role in the conservation and natural anger of a conservative-minded naturalist.

The author, H. Byju, deserves full appreciation in bringing out this book, which will be an interesting read, and will inspire many to write such books. Conservation does not confine itself to the ground level actions that are taken, but also taking and talking to the wider audience to understand the same. From that perspective, this book is a welcome addition.

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ZOO'S PRINT

Communicating science for conservation

ZOO'S PRINT Publication Guidelines

We welcome articles from the conservation community of all SAARC countries, including Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and other tropical countries if relevant to SAARC countries' problems and potential.

Type — Articles of semi-scientific or technical nature. News, notes, announcements of interest to conservation community and personal opinion pieces.

Feature articles — articles of a conjectural nature — opinions, theoretical, subjective.

Case reports: case studies or notes, short factual reports and descriptions.

News and announcements — short items of news or announcements of interest to zoo and wildlife community

Cartoons, puzzles, crossword and stories

Subject matter: Captive breeding, (wild) animal husbandry and management, wildlife management, field notes, conservation biology, population dynamics, population genetics, conservation education and interpretation, wild animal welfare, conservation of flora, natural history and history of zoos. Articles on rare breeds of domestic animals are also considered.

Source: Zoos, breeding facilities, holding facilities, rescue centres, research institutes, wildlife departments, wildlife protected areas, bioparks, conservation centres, botanic gardens, museums, universities, etc. Individuals interested in conservation with information and opinions to share can submit articles ZOOS' PRINT magazine.

Manuscript requirements

Articles should be typed into a Word format and emailed to zooreach@zooreach.org. Avoid indents, all caps or any other fancy typesetting. You may send photos, illustrations, tables.

Articles which should contain citations should follow this guideline: a bibliography organized alphabetically and containing all details referred in the following style: surname, initial(s), year, title of the article, name of journal, volume, number, pages.

Editorial details

Articles will be edited without consultation unless previously requested by the authors in writing. Authors should inform editors if the article has been published or submitted elsewhere for publication.

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ZOO'S PRINT magazine is informal and newsy as opposed to a scientific publication. ZOO'S PRINT magazine sometimes includes semi-scientific and technical articles which are reviewed only for factual errors, not peer-reviewed.

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