

# Avifauna of Kalidarha dam and Shishupal Cliff in Mahasamund district, Chhattisgarh, India

A M K Bharos<sup>1</sup> and Faiz Bux<sup>2</sup>

<sup>1</sup>Ex- State Coordinator, IBCN (BNHS) Chhattisgarh, B-101, Gayatrinagar, Raipur- 492007, Chhattisgarh, India.

<sup>2</sup> Research Scholar, Dept. of Botany, Govt. D.B.G. P.G. College, Raipur- 492001, Chhattisgarh, India.

(Accepted November 25, 2018)

## ABSTRACT

The Shishupal Cliff (part of Shishupal Pahar) and Kalidarha Dam are little known avian site situated in Mahasamund District, Chhattisgarh. The site comprises of long extending Quartz cliff, largest in Central India and a man-made Kalidarha dam surrounded by forests. Owing to the nature of varied habitat existing it affords good avifauna as found during the study. Importantly, it is an abode of Indian Vultures and also range extension species like Mountain Hawk Eagle and Greater Flameback. The short study undertaken in the years 2015 and 2018 revealed presence of 96 Avian species which belonged to 15 Orders and 40 families and comprised of 70 Resident and 26 Migratory species. Of which 5 species were of IUCN category and 1 species under WPA(1972). This site was found rich in Raptor species, as many as 13 species were recorded which constitutes 13.54 percent of total 96 recorded species. The study of this virtually unknown site was of short term, longer study period may reveal presence of more species and matters related to ornithological interest.

**Key words:** Shishupal Cliff, Kalidarha Dam, Indian Vulture, Range Extension.

## INTRODUCTION

The Kalidarha Dam and adjacent Shishupal Cliff the Southern part of Shishupal Pahar N 21°09' 34" – 21° 17' 54" latitude and E 83°04'50" – 83° 11'36" longitude, covering an area of 218 sq. Km., situated in Saraipali Tehsil of Mahasamund District are little known birding site of Chhattisgarh. The Shishupal Pahar area is having somewhat elongated Catchment, the maximum length and width of the Catchment is 15.27 Km and 11.02 Km respectively. The elevation of the area varies from 244m to 685 m amsl. In the eastern part the area is hilly and forested. The maximum basin elevation is 685 m amsl in the Southern part of the watershed at Shishupal Pahar, north of the Kutni River while minimum elevation is present along Lath River in north of Pakin village. The Physiography of the basin is controlled by geological formations namely, sandstone, siltstone, shale and Limestone. The east-west trending linear elevated surface of the area acts as water divide (Sharma, 2009-10).

This site is 35 Km South of Saraipali town (situated on NH-6 Highway) and 20 Km from the Odisha border, surrounded by forest, which extends into Odisha. The study area comprises of *Kalidarha Dam* (21.197315° N, 83.119894° E) spread over approximately 300 Hectares, and neighboring part of Shishupal pahar (with varying elevation of from 244m to 685 m amsl) known as *Shishupal Cliff* with estimated height varying between 200 m to 250 m. The Shishupal Cliff rocks have been identified as white colour Quartz Reef

(W. Masih, Ex-Director, Geology and Mining Department, Chhattisgarh, *Pers. comm.*), almost vertical at some places and little slant elsewhere. He also opined that this reef is the largest found, in central India. The top of the reef forms an extensive, sparsely vegetated table-land. The vertical sides of cliff too are thinly vegetated due to thin layer of soil. The cliff has enough crevices and cracks providing suitable nesting and roosting site for vultures, falcons etc. An old temple of feudatory state era exists on top plateau, where annual fair is held and is well attended by locals. It has further been added (W. Masih, *Pers. comm.*) that the quartz contains precious minerals and an extensive survey of entire cliff and surroundings, to determine and quantify them, was undertaken in year 2013-2014. The forest type in surroundings of cliff and dam is *Southern Dry Mixed Deciduous* type (5A / C3) (Champion & Seth, 1968). By virtue of forest area around a big water body, promising wildlife exists in this region including variety of avifauna. This site, owing to its remote location is not visited by naturalist and no documentation of its avifauna has so far been done and is little known.

This study was undertaken to determine status and diversity of avifauna for this unknown site, covering the cliff partially (difficult to climb) and forest area of 2 Km on the periphery of dam and cliff.

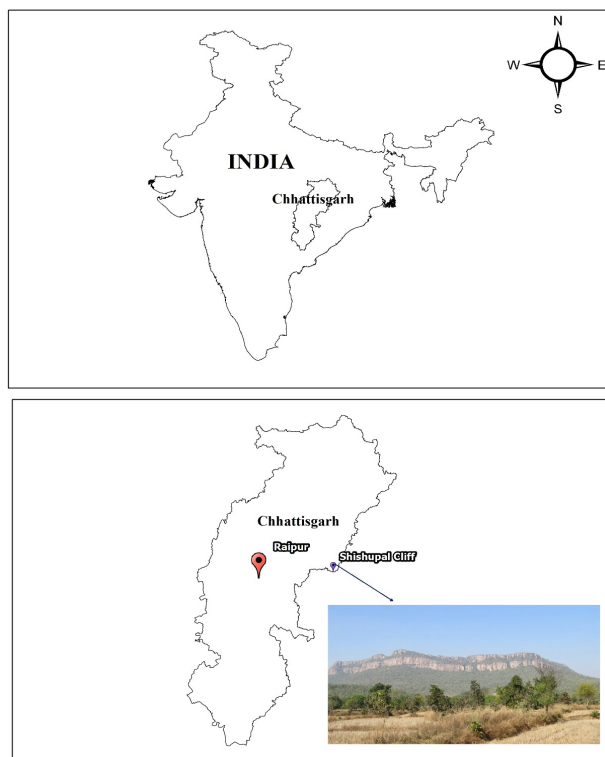
## MATERIALS AND METHOD

During our survey (2013, 2015 and 2018) to determine status of different species of Vultures in Chhattisgarh

\*Corresponding Author's E-mail: faizbux@gmail.com

(Figure 1), these cliffs came to our notice, reportedly the home of vultures. Site was visited on 10<sup>th</sup> January 2015, 7<sup>th</sup> June 2015 and 11<sup>th</sup> February 2018, almost whole day was spent at site to locate the vultures. Local community (only selected knowledgeable and conversant individuals) were intensively interacted to obtain information. The survey was carried out using methods like *Visual* method, *Look and See* method (Bibby *et. al.*, 2000) and *Point count* method and *Random* trails were also traversed to obtain best results. Aid of binoculars and DSLR cameras were deployed to examine the avian species. Identification of species was done referring literature, Ali and Ripley (*Ed.*-1989) and Grimmett *et. al.* (2004, 2014) Rahmani (2008). Difficult species were got identified from BNHS-ENVIS. The bird list (Table 1) was prepared following the nomenclature by Praveen *et.al.* (2016).

During the available short period study 96 avian species were recorded in dam, surrounding forest and cliffs (Table 1). During second visit on 7<sup>th</sup> June 2015, three Vultures were seen returning to cliffs to roost, which by their plumage, size were identified as Indian Vultures (*Gyps indicus*) (Figure 2).



**Figure 1.** Location map of the study area (Shishupal Cliff)

To determine the range extension status, the avian species observed were examined with various earlier studies pertaining to Eastern Ghats, Odisha, Andhra Pradesh and available information of Chhattisgarh Price (1978-79), Ripley *et.al.* (1987-88), Ali & Ripley (1989), Chandra *et. al.* (2015), Madhya Pradesh including Chhattisgarh and Bastar Plateau (2015), were referred. The recorded birds were grouped into Resident (R) and Migratory (M) categories. Global conservation status was worked out according to the IUCN Red

Data Book (*Birdlife International* 2014-2015) (Rahmani, 2012).

## RESULT AND DISCUSSION

Study revealed presence of 96 species, and were classified into categories--- Resident (R)- 70 species and Migratory (M) - 26 species.

Recorded species belonged to 15 Orders and 40 families (Table 1). The numerical numbers shown against each order and family are the species sighted.

### ORDER = 15

Accipitriformes -14, Anseriformes -11, Caprimulgiformes -1, Charadriiformes -6, Columbiformes- 5, Coraciiformes - 4, Cuculiformes- 3, Falconiformes -1, Galliformes -1, Gruiformes -1, Passeriformes-31, Pelecaniformes -10, Piciformes -4, Psittaciformes -3 and Strigiformes -1.

### FAMILY = 40

To determine the status for each family, against the total 96 species recorded. The number of species recorded in each family, with percentage (in brackets) was worked out as below-

Accipitridae- 13 (13.54), Acrocephalidae- 1(1.04), Aegithinidae- 1(1.04), Alaudidae- 1(1.04), Alcedinidae -2 (2.08), Anatidae- 11(11.45), Apodida- 1(1.04), Ardeidae -7(7.29), Campephagidae - 2(2.08), Charadriidae -2 (2.08), Ciconiidae- 1(1.04), Columbidae- 5 (5.21), Coraciidae- 1(1.04), Corvidae- 3(3.12), Cuculidae -3(3.12), Dicruridae -1(1.04), Estrildidae -1(1.04), Falconidae- 1(1.04), Hirundinidae -3(3.12), Irenidae -1 (1.04), Laniidae -1(1.04), Laridae- 2(2.08), Leiothrichidae- 1(1.04), Meropidae- 1(1.04), Motacillidae- 4 (4.16), Muscicapidae- 4(4.16), Nectariniidae- 1(1.04), Oriolidae-1(1.04), Pandionidae- 1(1.04), Passeridae-1(1.04), Phalacrocoracidae- 2(2.08), Phasianidae -1(1.04), Picidae- 2 ( 2.08), Psittaculidae- 3(3.12), Pycnonotidae- 1(1.04), Rallidae- 1(1.04), Ramphastidae- 2(2.08), Scolopacidae-2(2.08), Strigidae- 1(1.04) and Sturnidae- 3(3.12).

Owing to the type of habitat comprising of high and extensive cliff, forest, and good wetland, the family *Accipitridae* was found dominant and as many as following 13 species of the family were recorded, which constituted 13.54 % of the total 40 families recorded, and included both resident (R)- 7 species and migratory (M) -6 species. Their activities as observed are mentioned against each. At a place occurrence of 13 raptor species was interesting and rather unusual.

Osprey (*Pandion haliaetus*) (M) a winter visitor, solitary bird was observed picking prey from water and returning to same roost where it was observed devouring the prey. Black-winged Kite (*Elanus caeruleus*) (R) observed perched and also in flight, Oriental Honey Buzard (*Pernis ptilorhynchus*) (R) - observed soaring, Crested Serpent Eagle (*Spilornis cheela*) (R)- perched on a tree, Indian Vulture (*Gyps indicus*) (R)- in flight and in process of settling on cliffs, Mountain Hawk Eagle (*Nisaetus nipalensis*) (M)- was observed soaring, Greater Spotted Eagle (*Clanga clanga*) (M)- in flight and soaring, Tawny Eagle (*Aquila rapax*) (R) - observed

Table 1. Kalidhara bird list

Order	Family	Species	Resident Status	IUCN Status
Anseriformes	Anatidae	Lesser Whistling Duck <i>Dendrocygna javanica</i>	R	LC
Anseriformes	Anatidae	Greylag Goose <i>Anser anser</i>	M	LC
Anseriformes	Anatidae	Red-crested Pochard <i>Netta rufina</i>	M	LC
Anseriformes	Anatidae	Tufted Duck <i>Aythya fuligula</i>	M	LC
Anseriformes	Anatidae	Garganey <i>Spatula querquedula</i>	M	LC
Anseriformes	Anatidae	Northern Shoveler <i>Spatula clypeata</i>	R	LC
Anseriformes	Anatidae	Gadwall <i>Mareca strepera</i>	M	LC
Anseriformes	Anatidae	Eurasian Wigeon <i>Mareca penelope</i>	M	LC
Anseriformes	Anatidae	Indian Spot-billed Duck <i>Anas poecilorhyncha</i>	M	LC
Anseriformes	Anatidae	Northern Pintail <i>Anas acuta</i>	M	LC
Anseriformes	Anatidae	Common Teal <i>Anas crecca</i>	M	LC
Galliformes	Phasianidae	Grey Francolin <i>Francolinus pondicerianus</i>	R	LC
Columbiformes	Columbidae	Rock Pigeon <i>Columba livia</i>	R	LC
Columbiformes	Columbidae	Eurasian Collared Dove <i>Streptopelia decaocto</i>	R	LC
Columbiformes	Columbidae	Spotted Dove <i>Streptopelia chinensis</i>	R	LC
Columbiformes	Columbidae	Laughing Dove <i>Streptopelia senegalensis</i>	R	LC
Columbiformes	Columbidae	Yellow-legged Green Pigeon <i>Treron phoenicopterus</i>	R	LC
Caprimulgiformes	Apodidae	Crested Treeswift <i>Hemiprocne coronata</i>	R	LC
Cuculiformes	Cuculidae	Greater Coucal <i>Centropus sinensis</i>	R	LC
Cuculiformes	Cuculidae	Asian Koel <i>Eudynamis scolopaceus</i>	R	LC
Cuculiformes	Cuculidae	Common Hawk Cuckoo <i>Hierococcyx varius</i>	R	LC
Gruiformes	Rallidae	Brown Crake <i>Zapornia akool</i>	R	LC
Pelecaniformes	Ciconiidae	Asian Openbill <i>Anastomus oscitans</i>	R	LC
Pelecaniformes	Ardeidae	Indian Pond Heron <i>Ardeola grayii</i>	R	LC
Pelecaniformes	Ardeidae	Cattle Egret <i>Bubulcus ibis</i>	R	LC
Pelecaniformes	Ardeidae	Grey Heron <i>Ardea cinerea</i>	R	LC
Pelecaniformes	Ardeidae	Purple Heron <i>Ardea purpurea</i>	R	LC
Pelecaniformes	Ardeidae	Great Egret <i>Ardea alba</i>	R	LC
Pelecaniformes	Ardeidae	Intermediate Egret <i>Ardea intermedia</i>	R	LC
Pelecaniformes	Ardeidae	Little Egret <i>Egretta garzetta</i>	R	LC
Pelecaniformes	Phalacrocoracidae	Little Cormorant <i>Microcarbo niger</i>	R	LC
Pelecaniformes	Phalacrocoracidae	Indian Cormorant <i>Phalacrocorax fuscicollis</i>	R	LC
Charadriiformes	Charadriidae	Little Ringed Plover <i>Charadrius dubius</i>	R	LC
Charadriiformes	Charadriidae	Red-wattled Lapwing <i>Vanellus indicus</i>	R	LC
Charadriiformes	Scolopacidae	Common Sandpiper <i>Actitis hypoleucos</i>	M	LC
Charadriiformes	Scolopacidae	Common Greenshank <i>Tringa nebularia</i>	M	LC
Charadriiformes	Laridae	Whiskered Tern <i>Chlidonias hybrida</i>	M	LC
Charadriiformes	Laridae	River Tern <i>Sterna aurantia</i>	M	LC
Accipitriformes	Pandionidae	Osprey <i>Pandion haliaetus</i>	R	LC
Accipitriformes	Accipitridae	Black-winged Kite <i>Elanus caeruleus</i>	R	LC
Accipitriformes	Accipitridae	Oriental Honey Buzzard <i>Pernis ptilorhynchus</i>	R	LC
Accipitriformes	Accipitridae	Crested Serpent Eagle <i>Spilornis cheela</i>	M	CR
Accipitriformes	Accipitridae	Indian Vulture <i>Gyps indicus</i>	M	LC
Accipitriformes	Accipitridae	Mountain Hawk Eagle <i>Nisaetus nipalensis</i>	R	VU
Accipitriformes	Accipitridae	Greater Spotted Eagle <i>Clanga clanga</i>	R	LC
Accipitriformes	Accipitridae	Tawny Eagle <i>Aquila rapax</i>	R	LC
Accipitriformes	Accipitridae	Bonelli's Eagle <i>Aquila fasciata</i>	M	LC
Accipitriformes	Accipitridae	Booted Eagle <i>Hieraetus pennatus</i>	M	LC
Accipitriformes	Accipitridae	Western Marsh Harrier <i>Circus aeruginosus</i>	R	LC
Accipitriformes	Accipitridae	Shikra <i>Accipiter badius</i>	M	NT
Accipitriformes	Accipitridae	Grey-headed Fish Eagle <i>Ichthyophaga ichthyaetus</i>	R	LC
Accipitriformes	Accipitridae	Black Kite <i>Milvus migrans</i>	R	LC
Strigiformes	Strigidae	Brown Fish Owl <i>Ketupa zeylonensis</i>	M	LC
Piciformes	Picidae	Northern Wryneck <i>Jynx torquilla</i>	R	LC
Piciformes	Picidae	Greater Golden-backed Woodpecker <i>Chrysocolaptes lucidus</i>	R	LC

Table 1 Continued..

Table 1 Continued..

Piciformes	Ramphastidae	Brown-headed Barbet <i>Psilopogon zeylanicus</i>	R	LC
Piciformes	Ramphastidae	Coppersmith Barbet <i>Psilopogon haemacephalus</i>	R	LC
Coraciiformes	Meropidae	Green Bee-eater <i>Merops orientalis</i>	R	LC
Coraciiformes	Coraciidae	Indian Roller <i>Coracias benghalensis</i>	R	LC
Coraciiformes	Alcedinidae	Pied Kingfisher <i>Ceryle rudis</i>	R	LC
Coraciiformes	Alcedinidae	White-throated Kingfisher <i>Halcyon smyrnensis</i>	M	LC
Falconiformes	Falconidae	Common Kestrel <i>Falco tinnunculus</i>	R	NT
Psittaciformes	Psittaculidae	Plum-headed Parakeet <i>Psittacula cyanocephala</i>	R	NT
Psittaciformes	Psittaculidae	Alexandrine Parakeet <i>Psittacula eupatria</i>	R	LC
Psittaciformes	Psittaculidae	Rose-ringed Parakeet <i>Psittacula krameri</i>	R	LC
Passeriformes	Campephagidae	Large Cuckooshrike <i>Coracina javensis</i>	R	LC
Passeriformes	Campephagidae	Black-headed Cuckooshrike <i>Lalage melanoptera</i>	R	LC
Passeriformes	Oriolidae	Black-hooded Oriole <i>Oriolus xanthornus</i>	R	LC
Passeriformes	Aegithinidae	Common Iora <i>Aegithina tiphia</i>	R	LC
Passeriformes	Dicruridae	Black Drongo <i>Dicrurus macrocercus</i>	R	LC
Passeriformes	Laniidae	Long-tailed Shrike <i>Lanius schach</i>	R	LC
Passeriformes	Corvidae	Rufous Treepie <i>Dendrocitta vagabunda</i>	R	LC
Passeriformes	Corvidae	House Crow <i>Corvus splendens</i>	R	LC
Passeriformes	Corvidae	Large-billed Crow <i>Corvus macrorhynchos</i>	R	LC
Passeriformes	Nectariniidae	Purple Sunbird <i>Cinnyris asiaticus</i>	R	LC
Passeriformes	Irenidae	Jerdon's Leafbird <i>Chloropsis jerdoni</i>	R	LC
Passeriformes	Estrildidae	Scaly-breasted Munia <i>Lonchura punctulata</i>	R	LC
Passeriformes	Passeridae	House Sparrow <i>Passer domesticus</i>	R	LC
Passeriformes	Motacillidae	Paddyfield Pipit <i>Anthus rufulus</i>	M	LC
Passeriformes	Motacillidae	Grey Wagtail <i>Motacilla cinerea</i>	R	LC
Passeriformes	Motacillidae	White-browed Wagtail <i>Motacilla maderaspatensis</i>	M	LC
Passeriformes	Motacillidae	White Wagtail <i>Motacilla alba</i>	R	LC
Passeriformes	Alaudidae	Ashy-crowned Sparrow Lark <i>Eremopterix griseus</i>	M	LC
Passeriformes	Acrocephalidae	Clamorous Reed Warbler <i>Acrocephalus stentoreus</i>	R	LC
Passeriformes	Hirundinidae	Wire-tailed Swallow <i>Hirundo smithii</i>	M	LC
Passeriformes	Hirundinidae	Barn Swallow <i>Hirundo rustica</i>	R	LC
Passeriformes	Hirundinidae	Plain Martin <i>Riparia paludicola</i>	R	LC
Passeriformes	Pycnonotidae	Red-vented Bulbul <i>Pycnonotus cafer</i>	R	LC
Passeriformes	Leiothrichidae	Jungle Babbler <i>Turdoides striata</i>	R	LC
Passeriformes	Sturnidae	Asian Pied Starling <i>Gracupica contra</i>	R	LC
Passeriformes	Sturnidae	Brahminy Starling <i>Sturnia pagodarum</i>	R	LC
Passeriformes	Sturnidae	Common Myna <i>Acrideros tristis</i>	R	LC
Passeriformes	Muscicapidae	Indian Robin <i>Saxicoloides fulicatus</i>	R	LC
Passeriformes	Muscicapidae	Oriental Magpie Robin <i>Copsychus saularis</i>	M	LC
Passeriformes	Muscicapidae	Asian Brown Flycatcher <i>Muscicapa dauurica</i>	M	LC
Passeriformes	Muscicapidae	Siberian Rubythroat <i>Calliope calliope</i>	M	LC

**Abbreviation:** R – Resident; M – Migratory; R = 70; M = 26

**Note:** IUCN Status: CR - Critically Endangered = 1; VU - Vulnerable = 01; NT - Near Threatened=03; LC = 86

**Table 2.** Highly Threatened IUCN Redlist species and Indian WPA (1972) scheduled species of the present study

Name of species	Scientific name	IUCN Category/ Indian WPA (1972) schedule
Indian Vulture	<i>Gyps indicus</i>	Critically Endangered
Greater Spotted Eagle	<i>Aquila clanga</i>	Vulnerable
Grey-headed Fish Eagle	<i>Ichthyophaga icthyaetus</i>	Near Threatened
River Tern	<i>Sterna aurantia</i>	Near Threatened
Alexandrine Parakeet	<i>Psittacula eupatria</i>	Near Threatened
Osprey	<i>Pandion haliaetus</i>	Schedule I (Part-III)

soaring, Bonelli's Eagle (*Aquila fasciata*) (R) - observed soaring and in flight, Booted Eagle (*Hieraaetus pennatus*) (M)- observed soaring, Western Marsh Harrier (*Circus aeruginosus*) (M)-in flight, Shikra (*Accipiter badius*) (R)- perched, Grey-headed Fish Eagle (*Ichthyophaga ichthyaetus*) (M)- perched and Black Kite (*Milvus migrans*) (R) was found soaring.

Out of 96 species *Gyps indicus* is listed as Critically Endangered in the IUCN Redlist (2015) and *Pandion haliaetus* is listed in Schedule I (Part-III) of Wildlife (Protection) Act, 1972, India (Rahmani,2012) (Table 2).

Indian Vulture was the find of the visit on 7<sup>th</sup> June, 2015. Information about occurrence of vultures in this pocket was available but the species was unidentified. During first visit no vulture was seen but adequate information was collected through interaction with locals, who mentioned the presence of about 10 to 12 birds in cliffs. It was also learnt that because of a month long aerial helicopter survey conducted (W. Masih, *Pers. comm.*), few months back, the vultures have left the place and moved elsewhere. However in second visit, three vultures arrived in our presence and settled on the cliffs, where they roost. Locals confirmed present population to this extent only. The species was identified as *Gyps indicus* (Figure 2). With this sighting, the Shishupal cliff was identified as hereto unknown, but now a confirmed vulture site. The whereabouts of remaining birds is unknown. This site is unprotected and has been proposed for creation of a Conservation Reserve.

Apart from casualties caused by *diclofenac*, local major threat to the species is it's killing and use of organs for medicinal purpose by quacks, as was learnt during interaction with the locals.

**RANGE EXTENSION SPECIES**

On examination of earlier studies by Ali and Ripley, (1989), Grimmett *et. al.* (2000), Chandra *et. al.* (2015) and Price (1979) following species were found extending their distribution range beyond the present known range.

**The Mountain Hawk Eagle (*Nisaetus nipalensis*)**

The Mountain Hawk Eagle (*Nisaetus nipalensis*) is a winter migrant, which is an uncommon species in Chhattisgarh and was found on 10<sup>th</sup> January 2015. It is described as resident in Himalayas between 600 and 2400 m. altitude from North-West Pakistan and Kashmir to Eastern Assam, North and South of Brahmaputra



**Figure 2.** Indian Vulture (*Gyps indicus*)



(C) Ameet Mandavia

**Figure 3.** Greater Flameback (*Chrysocolaptes lucidus*)

river. In winters it wanders into the Gangetic Plain and has been recorded as far south as Pachmarhi (in Madhya Pradesh), it affects hill forest ( Ali and Ripley, 1989), where as Grimmett ( 2000) describes its distribution in Pachmarhi, Madhya Pradesh, Central India. Chandra *et. al.* (2015) do not mention it from Bastar. The species has not been recorded by Price (1979) from Eastern Ghats. Since no document mentions its occurrence in Chhattisgarh and it has been recorded in winter here, beyond its known distribution range about 600 Km

eastward, it suggests that the species extends its distribution range into the hills of Chhattisgarh, though sparingly.

#### Greater Flameback (*Chrysocolaptes lucidus*)

Greater Flameback (*Chrysocolaptes lucidus*) is resident and occurs in Himalayas from North Uttar Pradesh, East to Arunachal, hills of South-West, East and North-East India, frequents below 915 m (Grimmett *et. al.*, 2000). Ali and Ripley (1989) mentions its distribution in Odisha, Eastern Andhra Pradesh, south to Bastar District in Eastern Madhya Pradesh (now in Chhattisgarh). This species has been recorded in Bastar (Chandra *et. al.*, 2015) and several sightings in last three years (2014 to 2018) by Ameet Mandavia (*pers. Comm.*) at Kanger Valley National Park (KVNP) and Machkote Range in Bastar district (Jagdapur). We have recorded it on 3<sup>rd</sup> January 2016 in KVNP. Chandra *et. al.* (2015) recorded it from Bastar region in southern parts of Chhattisgarh. Price (1979) mentions its occurrence in Eastern Ghats as regular sighting of two pairs and heard through the year and nesting found on 26<sup>th</sup> May. The sighting of a bird in forest around Kalidarha Dam- Shishupal Cliff by the authors, much beyond its known distribution range suggests its distribution range extension into the Central region of Chhattisgarh which is adjacent to Odisha and more than 300 Km north from KVNP. This becomes the first documentation record from central region of Chhattisgarh (Figure 3).

#### CONCLUSION

The Shishupal Quartz reef (part of Shishupal Pahar) is a unique natural structure and largest of the kind in Central India (W. Masih, *Pers. comm.*). It also affords roosting and nesting site to Critically Endangered Indian Vultures and may be to several other raptors. Out of 96 species recorded, five species belonged to IUCN categories namely, Critically Endangered- Indian Vulture (*Gyps indicus*), Vulnerable- Greater Spotted Eagle (*Aquila clanga*), Near Threatened - Grey-headed Fish Eagle (*Ichthyophaga ichthyaeus*), River Tern (*Sterna aurantia*), Alexandrine Parakeet (*Psittacula eupatria*) and under Wildlife (Protection) Act 1972, Osprey (*Pandion haliaetus*) in Schedule I-III were recorded. This site was found rich in Raptor species, as many as 13 species were recorded which constitutes 13.54 percent of total 96 recorded species.

Mountain Hawk Eagle (*Nisaetus nipalensis*) and Greater Flameback (*Chrysocolaptes lucidus*) were found extending their distribution range beyond the known range. The study of this virtually unknown site was of short term, longer study period may reveal presence of more species and matters related to ornithological interest. The site is located in unprotected area and is subjected to threats like extensive fishing, and other anthropogenic disturbances, which need to be controlled to conserve the wetland and its avian.

#### ACKNOWLEDGEMENT

Sincere thanks to Rishi Sen, Arvind Bharos, N.D. Agrawal, Sushil Mutha, for field assistance and photographs. Sincere thanks to Ameet Mandavia for photograph of Greater Flameback, and Akhilesh Bharos for Photograph of Indian Vulture. Rajaram a local resident, who acted as our guide and provided valuable information. Thanks to Nitin Tamboli for typing of manuscript and Aminuddin for making the map.

#### REFERENCES

- Ali S & S.D. Ripley (Ed -1989): *Handbook of Birds of India and Pakistan Compact Edition Oxford University Press, New Delhi.*
- Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S. (2000). *Bird Census Techniques*. Second Edition. Academic Press, London.
- Champion, H.G. & S.K. Seth (1968): *A revised Survey of Forest types of India, Govt. Of India, New Delhi.*
- Chandra K, Dutta S K, Gupta R K, Raha A. (2015) Diversity and Conservational Status of Avifauna in Bastar Plateau of Chhattisgarh, India, *Ambient Science Vol.02(1)*; 31-43
- Grimmett, R, Inskipp, C & Inskipp, T (1998). *Birds of the India Sub-Continent*, Oxford University Press.
- Grimmett, R, Inskipp, C & Inskipp, T (2014). *Field Guide- Birds of the Indian Subcontinent*, Oxford University Press.
- Manakadan Ranjit & Aasheesh Pittie (2001): Standardised Common and scientific names of the birds of the Indian Subcontinent. *Bombay Natural History Society, Mumbai Buceros 6(1)*: 1-37
- Praveen, J., Jayapal, R. and Pittie, A. (2016) A Checklist of the Birds of India, *Indian Birds*; 11(5) and (6).
- Price T.D. (1979): The Seasonality and Occurrence of Birds in the Eastern Ghats of Andhra Pradesh, *JNBHS Vol 76, No.3 Page 408-420*
- Rahmani, A. R. (2008). *Ducks, Geese and Swans of India Their Status and Distribution*, IBCN: Bombay Natural History Society.
- Rahmani, A.R. (2012). *Threatened Birds of India, Their Conservation Requirements*, IBCN: Bombay Natural History Society. Royal Society for Protection of Birds, Birdlife International. Pp. xvi+ 864.
- Ripley, S.D. (1982). A synopsis of the Birds of India and Pakistan, BNHS/ Oxford Univ. Press.
- Sharma, A (2009-10). *Detailed Project Report for Zero Discharge Based Watershed Management Shishupal Pahar of Forest Division: Mahasamund, District- Mahasamund, Chhattisgarh. LNC, MDCO D-8, Sector-2, Avanti Vihar Raipur, C.G.*