

A Brief Avian Species Richness Report of Juagadh, Gujarat, India

Ravi Patel*, Gaurang Bagada

Department of Zoology, Gujarat University, Gujarat, India

ABSTRACT

The Junagadh is a rich sport of avian diversity as well as other biodiversity his region. The avian species richness, abundance and resident status were studied in Junagadh taluka, Gujarat (western India). Results revealed are around fifty present species richness out of Gujarat state diversity of found in Junagadh taluka, a total of 302 species belonging to 21 orders and 72 families were recorded wherein maximum species belonged to the order Passeriformes (32 families and 126 species) family *Accipitridae* (28 species). Among the observed, 20 species were globally threatened three were Critically Endangered, two were Endangered, three were vulnerable and twelve were Near Threatened. Abundance positions in 60 were Very Common (VC), 90 were Common (C), highest is the 112 were Uncommon and 41 were rear (r). And migratory status in 97 were Widespread Resident (WR), 56 were Resident (R), 134 were Winter Migrant (WM), 11 were Monsoon Migrant (MM) and 5 were Passage Migrant (PM). Out of 110 was evidence found the breeding ground? Based on the frequency of occurrence and the numbers of different species encountered, it was found that a large number of bird species occur with a good population.

Keywords: Birds; Checklist; Migrant; *Accipitridae*; Breeding

INTRODUCTION

The vital role-play of avian species is the mediators of pollination and seed dispersal. Biologically, avian fauna is of incredible importance because of their vital roles as pollinators and agents of seed dispersal. The highly dynamic nature of urban ecosystems means that a small effort in management can have a great effect on bird abundance and diversity. The preservation of global species diversity has emerged as one of the most important issues today. India is one of the 12-mega biodiversity countries a total of 10,000 bird species found worldwide. Around 1333 species representing 495 genera, 114 families and 26 orders reported from India and also 14 species are endemic to Indian sub-continent [1]. The Gujarat state has several habitats including dry deciduae and thorn forest, scrubland, grassland, wetland, marine coast and desert. In the Gujarat 609 Species reported in the new and updated checklist for the birds of Gujarat. Numerous ornithological studies on diversity, and its status, have been carried out in Indian wildlife protected and non-protected area, and Gujarat. Gujarat falls on the Indus or central Asian Flyway that creates it a vital habitation on the ornithological map of India.

The Junagadh lies between 22.30 to 21.30 N and 70.50 to 70.60 E in Gujarat state, India. It has various habitats and rich diversity in flora and fauna. Previous vertebrate and invertebrate diversity studies by regional related investigators. In invertebrate, the Limnology survey in Junagadh city 55 genus of was found; Out of these 43 are Phytoplankton and 12 were Zooplankton; in Lepidopterology study

36 species of small and large butterflies reported; an arachnology Junagadh district survey result out of 76 species belonging to 48 genera spread over 14 families. The vertebrate impactful current Herpetofauna study of Mount Girnar has been reported 56 species, comprising 10 species of amphibians belonging to 7 genera and 3 families and 46 species of reptiles, belonging to 31 genera and 15 families; according to Avibase-The World Bird Database are reported 428 species were reported from Junagadh and Gir-somnath district updated on June 2021. According to Vaisnav [2] avian species were reported in 2015-16 on village around 30 kilometer away from Junagadh taluka. The current examination of avian diversity carried out to understand the impact of the global urbanization has being carry out in the on habitat suitability for whole biodiversity in the coming years. Therefore, the particular focus on avian fauna of Junagadh taluka (city and surrounding villages) is for the investigation of the intention. The status of avian diversity in the Junagadh is as a result poorly unknown; In addition, the study also aims to develop a wildlife database on birds of this city area.

Study area

The Junagadh is situated in Saurashtra region, Gujarat, Western India. The Junagadh is home of Asiatic lion *Panthera leo persica* the state endemic species; conservation propose through protected area is Gir National Park and Sanctuary and Girnar Wildlife Sanctuary. Covered the total examination area is Junagadh taluka,

Correspondence to: Dr Ravi Patel, Department of Zoology, Gujarat University, Gujarat, India, E-mail: ravikpatel8980@gmail.com

Received: 02-Mar-2022, Manuscript No. JFOR-22-47476; **Editor assigned:** 07-Mar-2022, PreQC No. JFOR-22-47476(PQ); **Reviewed:** 21-Mar-2022, QC No. JFOR-22-47476; **Revised:** 28-Mar-2022, Manuscript No. JFOR-22-47476(R); **Published:** 04-Apr-2022, DOI: 10.35248/2168-9776.22.11.313.

Citation: Patel R, Bagada G (2022) A Brief Avian Species Richness Report of Juagadh, Gujarat, India. J For Res. 11: 313.

Copyright: © 2022 Patel R, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

public place and Non-protected area also some observation patches are periphery of Wildlife Sanctuary. In this study area seven different habitat likewise Mountain, Woodland, Shrub land, water bodies or wetland, Agriculture land, Barren land and some small patch of Grassland. The two big mountains are in the midpoint, namely Girnar and Datar. Mount Girnar, with a height of 1031 m, is the highest peak in Gujarat state. The nine water body situated in this zone, namely Bela Dam, Ravatsagar Dam, Baliyavad Dam, Malida dam, Khadiya Check-dam, Narshinh Mehta Lake, Vadla Lake, Machhariya Lake and Sudarsan Lake [3].

The climate of in this region is tropical with three distinct seasons, viz., the monsoon is June to October; winter is October to February and summer is March to June. The southwest monsoon is irregular, erratic and maximum rain is experienced in the month of July with occasional showers during November to January and March to May. The annual rainfall in the area is 820–900 mm average. May is the hottest and December is the coldest month around the year. The maximum temperature reaching above 40°C to 27°C in May and in December is maximum temperature of about 26°C to minimum reaching below 14°C. The average humidity is high in this area; peck level especially in monsoon season.

MATERIALS AND METHODS

Field surveys were conducted for a period of four years starting from February 2017 to March 2021 covering all the seasons i.e. summer (March–June), monsoon (July–October) and winter (November–February). Avian Data collection by Random sampling method and Observations were made by conducting field visits covering whole study area at regular intervals. Also searched the old data collect by literature and eBird India ten years 2011 to 2021. The observations and confirmation evidence collection were carried out with two binoculars 10-22 x 50 and 8 x 42 and one DSLR with lens 300 mm 2.8 for clean inspection and confirmation [4]. The species were identified by using recognized field guides such as those and updated common and scientific name. The IUCN status of each species taken from ver. 2 (IUCN 2021) and WPA (1972). The status of birds categorises into Widespread Resident (WR), Resident (R), Winter Visitor (WV), Monsoon Visitor (MV) and Passage Migrant (PM). The abundance status VC-Very Common species which are encountered frequently every different habitat. C-Common species which are encountered 13 to 20 times observed; UC-Uncommon species which are encountered four to twelve times sighted but specific habitat; r-Rare species which are encountered up to three times only during four-year survey. As also to check the breeding status presents or not by direct nest with bird otherwise indirect signage like collecting nesting material, mating, juvenile plumage, parental care and feeding to clutch. The breeding status two categories mad about present (P) and not found (NF) Bird species richness was estimated by recording the number of birds' species observed (Table 1).

Table 1: Tree parameters indices from the study sites.

Sr. No	No. of Species	Family	Rdi
1	7	Phisianidae	2.31
2	15	Anatidae	4.95
3	1	Phoenicopteridae	0.33
4	1	Podicipedidae	0.33
5	7	Columbidae	2.31
6	2	Pteroclididae	0.66
7	9	Cuculidae	2.97
8	3	Podargidae	0.99

9	3	Apodidae	0.99
10	1	Hemiprocridae	0.33
11	9	Rallidae	2.97
12	2	Gruidae	0.66
13	2	Burhinidae	0.66
14	2	Recurvirostridae	0.66
15	6	Charadriidae	1.98
16	1	Rostratulidae	0.33
17	2	Jacaniidae	0.66
18	11	Scolopaciidae	3.63
19	2	Turnicidae	0.66
20	2	Glareolidae	0.66

Field surveys were conducted for a period of four years starting from February 2017 to March 2021 covering all the seasons i.e. summer (March–June), monsoon (July–October) and winter (November–February). Avian Data collection by Random sampling method and Observations were made by conducting field visits covering whole study area at regular intervals. Also searched the old data collect by literature and eBird India ten years 2011 to 2021. The observations and confirmation evidence collection were carried out with two binoculars 10-22 x 50 and 8 x 42 and one DSLR with lens 300 mm 2.8 for clean inspection and confirmation. The species were identified using recognized field guides and updated common and scientific name [5]. The IUCN status of each species taken from ver. 2 (IUCN 2021) and WPA (1972). The status of birds categorises into Widespread Resident (WR), Resident (R), Winter Visitor (WV), Monsoon Visitor (MV) and Passage Migrant (PM). The abundance status VC-Very Common species which are encountered frequently every different habitat. C-Common species which are encountered 13 to 20 times observed; UC-Uncommon species which are encountered four to twelve times sighted but specific habitat; r-Rare species which are encountered up to three times only during four-year survey. As also to check the breeding status presents or not by direct nest with bird otherwise indirect signage like collecting nesting material, mating, juvenile plumage, parental care and feeding to clutch. The breeding status two categories mad about present and not found Bird species richness was estimated by recording the number of birds' species observed. The Relative Diversity (RDi) of family was calculated using following formula [6].

$$RDi = \frac{\text{Number of bird species in a family}}{\text{Total number of species}} \times 100$$

RESULTS AND DISCUSSION

We compiled a list of 302 bird species after combining recent and past records. The study revealed that a total of 302 were of birds belonging to 72 families and 21 orders were present in the study area (Table 2). Out of which 289 were observed during four-year examination and 10 were reported by other sources. Collect the majority photographic record short for confirmation as special preference uncommon to rare abundant species. The Junagadh supports an excessive number of avian diversity and hold almost 23% bird species of Indian (reported 1333 sp.) and around 50% bird species of Gujarat (reported 609 sp.) It was found that 109 species were breeding ground in this area [7].

Table 2: The numbers of nesting and birth count of Painted Stork *Mycteria leucocephala* in 2017-2021 of Junagadh.

Years	2017-18	2018-19	2019-20	2020-21
No. of success nest	28	32	36	35
No. of juvenile bird	54	71	78	79

The 20 globally threatened species including species are categorized three Critically Endangered Were Indian Vulture (*Sarcogyps calvus*), White-rumped Vulture (*Gyps bengalensis*) and Red-headed Vulture (*Gyps indicus*), two Endangered Egyptian Vulture (*Neophron percnopterus*) and Steppe Eagle (*Aquila nipalensis*), three Vulnerable Common Pochard (*Aythya farina*), River Tern (*Sterna aurantia*) and Greater Spotted Eagle (*Clanga clanga*) and twelve Near threatened Ferruginous Duck (*Aythya nyroca*), Lesser Flamingo (*Phoeniconaias minor*), Great Thick-knee (*Esacus recurvirostris*), Black-tailed Godwit (*Limosa limosa*), Woolly-necked Stork (*Ciconia episcopus*), Painted Stork (*Mycteria leucocephala*), Oriental Darter (*Anhinga melanogaster*), Dalmatian Pelican (*Pelecanus crispus*), Black-headed Ibis (*Threskiornis melanocephalus*), Bearded Vulture (*Gypaetus barbatus*), Cinereous Vulture (*Aegypius monachus*) and Pallid Harrier (*Circus macrourus*) [8].

The present examination also revealed that the *Accipitridae* family (28 species) and *Muscicapidae* family (24 species), dominated the avifauna in this area, followed by *Anatidae* (15 species), *Ardeidae* (12 species), *Motacillidae*, *Scolopacidae* (11 species), *Rallidae*, *Cuculidae* and *Strigidae* (9 species), *Phasianidae*, *Columbidae*, *Cisticolidae* (7 species each), *Charadriidae*, *Alaudidae*, *Hirundinidae*, *Emberizidae* (6 species each), *Laniidae*, *Acrocephalidae*, *Phylloscopidae*, *Certhiidae* (5 species each), *Laridae*, *Ciconiidae*, *Threskiornithidae*, *Falconidae*, *Alcedinidae*, *Picidae*, *Campephagidae*, *Dicruridae*, *Leiothrichidae*, *Turdidae* (4 species each), *Podargidae*, *Apodidae*, *Phalacrocoracidae*, *Meropidae*, *Corvidae*, *Estrildidae* (3 species each), *Pteroclididae*, *Gruidae*, *Burhinidae*, *Recurvirostridae*, *Jacaniidae*, *Turnicidae*, *Pelecanidae*, *Glareolidae*, *Coraciidae*, *Oriolidae*, *Monarchidae*, *Sylviidae*, *Dicaeidae*, *Ploceidae*, *Passeridae* (2 species each). Moreover, 21 families *Phoenicopteridae*, *Podicipedidae*, *Hemiprocidae*, *Rostratulidae*, *Anhingidae*, *Pandionidae*, *Tytonidae*, *Upupidae*, *Megalamiidae*, *Pittidae*, *Vangidae*, *Aegithinidae*, *Rhipiduridae*, *Paridae*, *Locustellidae*, *Pycnonotidae*, *Paradoxornithidae*, *Zosteropidae*, *Stenostiridae*, *Nectariniidae* and *Fringillidae* poorly represented in the study area with a single species each. The highest RDi value was also recorded for *Accipitridae* family and second highest is *Muscicapidae*. The highest RDi value was also recorded for *Accipitridae* family and second highest is *Muscicapidae*. In addition, the species of *Accipitridae* family is the peak in Gujarat state avian diversity; and the *Muscicapidae* family is the maximum species of birds in India [9] (Table 3).

Table 3: Other historical and other sightings of Junagadh Taluka, Gujarat, India.

No.	Name of species	Sighting on	Source
1	White-tailed Lapwing <i>Vanellus leucurus</i>	January 2017	[1]
2	Great Bittern <i>Botaurus stellaris</i>	November 2014	[2]
3	Bearded Vulture <i>Gypaetus barbatus</i>	January 2019	[3]
4	Besra <i>Accipiter virgatus</i>	June 2019	[4]
5	Amur Falcon <i>Falco amurensis</i>	April 2015 and April 2021	[5]
6	Eurasian Scops Owl <i>Otus scops</i>	January 2018	[8]
7	Oriental Scops owl <i>Otus sunia</i>	January 2017	[7]
8	Brown Hawk-owl <i>Ninox scutulata</i>	December 2016	Personal observation

9	Black-capped Kingfisher <i>Halcyon pileata</i>	December 2018	[6]
10	Hair-crested Drongo <i>Dicrurus hottentottus</i>	January 2018	[9]
11	Common Grasshopper-Warbler <i>Locustella naevia</i>	November 2020	[11]
12	Red-backed Shrike <i>Lanius collurio</i>	October 2016	[13]
13	White-capped Bunting <i>Emberiza stewarti</i>	January 2021	[15]
14	Chestnut-bellied Rock-Thrush <i>Monticola rufiventris</i>	January 2021	[14]

Out of 302 bird species, 60 were very common, 90 were common, 112 were uncommon and 41 were rare. Out of 302 of recorded fauna curious point are the uncommon species maximum count reported. In this survey, cover the dissimilar and favorable habitats for maximum uncommon species.

Observed details out of twenty globally threatened species in Junagadh Taluka, Gujarat, India.

Three species were critically endangered (CR)

Red-headed vulture: The *S. calvus* is considered rare in Girnar Wildlife Sanctuary with scattered sightings and records. It is a resident bird and scattered breeding records are present in Gujarat. It is usually seen flying or soaring overhead and rarely on the ground unless there is a carcass nearby. In January 2019, a single individual was seen soaring over Machhariya Lake by the author, which is situated in the periphery of the Girnar Wildlife Sanctuary (Figure 1).

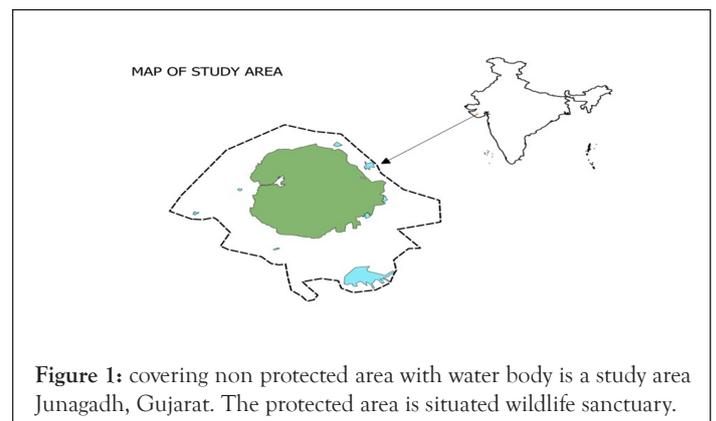


Figure 1: covering non protected area with water body is a study area Junagadh, Gujarat. The protected area is situated wildlife sanctuary.

White-rumped vulture: *G. bengalensis* is a resident species and its population has observed a steep decline. There are no recent records or sightings of the same but in 2005 the 21 individuals were sighted by [10].

Indian vulture: The *G. indicus* is a resident species. The Girnar Hill in Junagadh is a stronghold for the population of *G. indicus*. During field visits, this species was regularly observed in the Hills of Girnar and Datar. Throughout the study, we observed a total of 34 individuals in the year 2019. The Girnar Hill also acts as a nesting site for these vultures. They were seen collecting nesting materials like dry grass, tree twigs and small branches. Sub-adults have been sighted and reported from the same place so the nesting success is evident.

Two species were endangered (EN)

Egyptian vulture: The *N. percnopterus* is probably a winter visitor in this area. In December 2018, an adult individual was sighted at Lal Dhori in flight. The second sighting was on January 2019 and was seen with *Gyps indicus* near Patthar Chatti, Girnar.

Steppe eagle: The species is a winter visitor and widely distributed in Gujarat state and can be commonly found in open areas, plains and grasslands. Two individuals were sighted at Khadiya, Girnar Hills on consecutive years 2018 and 2019.

Three species were vulnerable (VU)

Common pochard: *A. ferina* are uncommon or rare for this region. In January 2019, we sighted twelve individuals at Narshih Mehta Lake and in January 2021 have seen four individual at Baliyavad Dam. In September 2018, more than hundred individuals were present in the Baliyavad Dam and it was reported by Narvade and Rahmani [11].

River tern: The species is a common resident and can be found near water bodies, wetland, riverine areas and lakes. In Junagadh, it is fairly common among all the water bodies but maximum number of individuals was sighted Narshih Mehta Lake and Bela Dam.

Greater spotted eagle: *C. clanga* are winter visitors and very uncommon for this region. We observed a single individual they are perching on electric pole in December 2020 near Mendapara Village (Figure 2).



Figure 2: *Sarcogyps calvus* (A) and *Gyps indicus* (B), Photo by Gaurang Bagada.

Twelve species were near threatened (NT)

Ferruginous duck: *A. nyroca* is a winter migrating bird that is very uncommon for this region. In February 2018, we observed two individuals in Bela Dam, foraging with the group of Northern Shoveler *Spatula clypeata*.

Lesser flamingo: *P. minor* is uncommon for this region. We observed 6 individuals in Baliyavad Dam on March 2019 foraging in shallow waters along with Asian Openbill *Anastomus oscitans*, Black-tailed Godwit *Limosa limosa* and Black-headed Ibis *Threskiornis melanocephalus*.

Great thick-knee: Its sighting is occasional though one can find it in the water body especially in dams more frequently. Maximum three individuals have observed in Baliyavad Dam. Also other reported one pair in Luvasar Village, Malida dam, Ravatsagar Dam, Anandpar Dam and Bela Dam. Probably sighted October to April and during summer low reservoirs of water level [12].

Black-tailed godwit: *L. limosa* are winter migrating birds which are found in good numbers in and around wetlands. Some individuals have reported to stay behind and are present throughout the year. Maximum strength has been observed regular in summer in Bela

Dam. Also reported in Vadla Lake, Baliyavad Dam, Malida Dam, Ravatsagar Dam, Machhariya Lake and Dhandhusar Village.

Woolly-necked stork: *C. episcopus* is a resident species found singly or in pair near waterbodies. In December 2018, we observed five individual scavenging on an animal carcass along with Cattle Egrets *Bubulcus ibis* and House Crows *Corvus splendens* near Khadiya. In March 2019 and December 2020, we sighted two individuals at Malida Dam and Khadiya Lake, which is near Girnar Hill.

Painted stork: It is a fairly common bird in and around Girnar Hill. They are Piscivorous feeder, group roosting birds usually roosting and nesting on large trees. There is a regular breeding site inside the Sakkrbaug Zoological Garden, which was monitored from 2017 to 2021. Yearly data of nesting success and the no. of juvenile given below.

Oriental darter: *A. melanogaster* is commonly found in this region and can be seen along large waterbodies, river streams and lakes. It is present throughout the year and widely distributed across the region. We observed always found in Narshih Mehta Lake, Bela Dam, Daliyavad Dam, Bela Dam and Machhariya Lake; major sighting numbers and no. of individual are found throughout year mega water stream.

Dalmatian pelican: *P. crispus* is a migratory bird which arrives in winter and can be found in is Lake which is near the Girnar Hill. This species is regularly reported from that lake with an average of 3 birds every year. reported during study in January 2021 have single report, January and February 2019 report three no. of individual in lake and march 2019 two birds found at Machhariya Lake. Previously ten no. of individual reported at February 2015.

Black-headed ibis: The species is fairly common and can be seen throughout the year in this region. The *T. melanocephalus* is a wader which can be easily seen near the wetlands or water streams. It is listed as NT as per IUCN. Usually 10–25 was seen evening they roosting as well as flight they way to roosting. This species also breeding report two site the Sakkarbaug Zoological Garden and behind railway station area in Junagadh city (Figures 3A-3F).

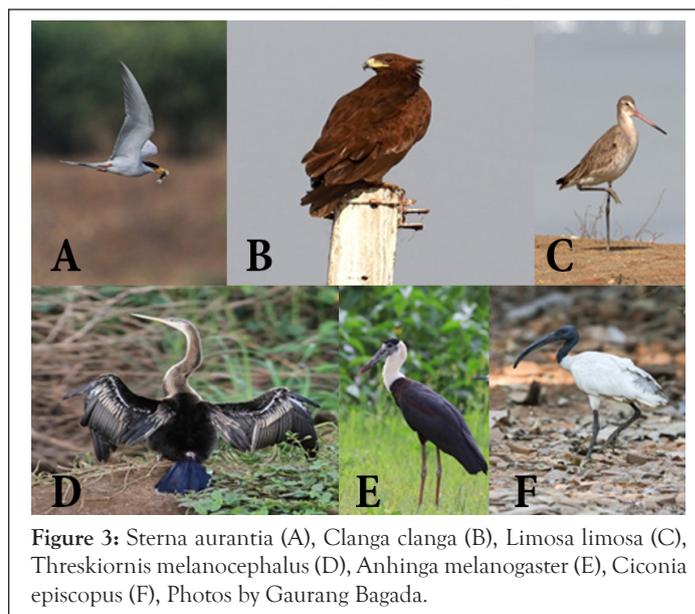


Figure 3: *Sterna aurantia* (A), *Clanga clanga* (B), *Limosa limosa* (C), *Threskiornis melanocephalus* (D), *Aninga melanogaster* (E), *Ciconia episcopus* (F), Photos by Gaurang Bagada.

Bearded vulture: *G. barbatus* is a winter visitor or a rare vagrant to this landscape. It is under NT category of IUCN status. A single individual was sighted on January, 2019 soaring along with oriental honey buzzard *Pernis ptilorhynchus* near Girnar Hill (2019) [13].

Cinereous vulture: *A. monachus* is listed as near threatened in the IUCN red list category. In January 2019, one adult individual was sighted roosting on a cleft at Girnar Hill. After a while it took off, started gaining height, and was soaring along with two black storks and a black eagle. It has also been reported in the past by AS in 2015 in January at Girnar Hill.

Pallid harrier: Gujarat state and especially Saurashtra landscapes are quite suitable for the wintering harriers. They are present in good numbers across a variety of habitats such as wetlands, agricultural land, grasslands and open wooded counties. Pallid Harrier is one of the species, which is found in fairly good numbers in and around Girnar Hill (Figure 4A).

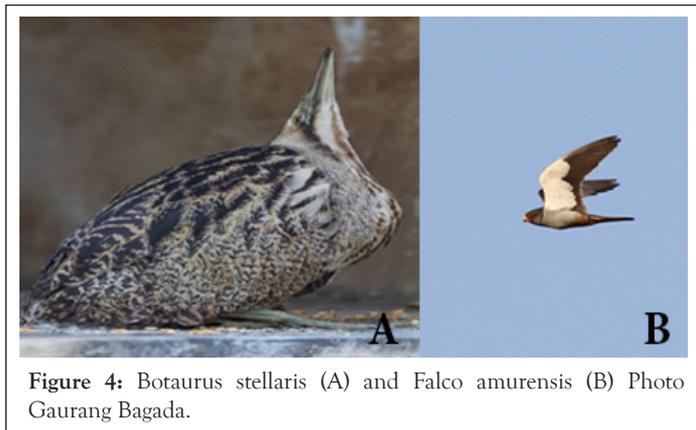


Figure 4: *Botaurus stellaris* (A) and *Falco amurensis* (B) Photo Gaurang Bagada.

Significant records: rare species and other interesting records

One single individual, Amur Falcon *Falco amurensis* was sighted by the authors in April 2015 near Girnar Hills. There is a recent report of one pair of *F. amurensis* in Junagadh city in April 2021 (Figure 4B). A first winter Red-backed Shrike *Lanius collurio* was seen and photographed in October 2016. One Black-capped Kingfisher *Halcyon pileata* was reported in Girnar Hills in December 2018. One Common Grasshopper-Warbler *Locustella naevia* was reported in November 2020 at Bordevi Temple.

One Spangled Drongo *Dicrurus hottentottus* has been reported in Agriculture University Campus, Junagadh in January 2018. In November 2014, the authors reported a Great Bittern *Botaurus stellaris* which was rescued near Dhandusar village and released in the suitable habitat after three days and the sighting has been submitted on ebird (Figure 4A). The Besra *Accipiter virgatus* was record in June 2019 near Girnar Hills. There has been a recent sighting of the same location. Six individuals of White-tailed Lapwing *Vanellus leucurus* were sighted at Vadla Lake in January 2017. A total four individuals of White-capped Bunting *Emberiza stewarti*, two males and two females were observe in Girnar Hills in January 2021 (. The Chestnut-bellied Rock-Thrush *Monticola rufiventris* has reported in January 2021 near Girnar Hills. The call of Oriental Scops, Owl *Otus sunia*, Brown Hawk Owl *Ninox scutuluta* and Eurasian Scops Owl *Otus scops* have been heard during late evenings in winter near Bhavnath Taleti by Ankit Shukla.

Comment submitted the Brown Hawk Owl *Ninox scutuluta* and was headed for three weeks during, few calls report of Oriental Scops Owl *Otus sunia* in December- January 2017. Moreover, 3 days reporting of Eurasian Scops Owl *Otus scops* in January 2018 (personal comments) [14].

Tickell's thrush: The *T. unicolor*, although considered rare

elsewhere has sighted regularly in winter season in Bhavnath Taleti. It was first seen and reported at January 2015. They tend to prefer moist habitat or around water with surrounded woodland, which is seen at Bhavnath Taleti. Also in winter regular have seen the single *T. unicolor* is the member of seven Indian Blackbird *Turdus simillimus* of group. According to [13], the species does not occur in Gujarat or considered rare. It reported in Ratanmhal Wildlife Sanctuary in winter for the first time in 2010, 2011 and 2013. There are very few records of in Gujarat, hence according [15] it seems to be a rare winter migrant in Gujarat with scattered records from different regions in the state.

Brown-breasted flycatcher: According to Ganpule is a rare winter visitor in Gujarat. They are commonly found in winter season in Bhavnath Taleti. During the field visits, we have observed good number of individuals in winter in and around Girnar Hills. They prefer moist habits perched on overhanging branches to water.

Black eagle: During the study, we observed one pair of *I. malayensis* soaring. The species is said to be a rare winter visitor with some isolated records from Saurashtra and South Gujarat. The maximum number of individuals was sighted in Gir National Park and Sanctuary.

Other sightings were reported from Narmada, Dang and Navsari district. Looking at the scattered sightings and its status in Gujarat it probably is an uncommon winter visitor in the state and distribution status is uncommon to rare.

Forest wagtail: The *D. indicus* is uncommon to rare winter visitor in the state. Although it is regularly sighted in Girnar Hills in winter. The species observed in good strength in February; usually two or three individuals are present foraging in the leaf litter at water bodies in Bhavnath Taleti.

Olive-backed pipit: The species is an uncommon winter migrant in South Gujarat and rare in Saurashtra region. They are uncommon wintering birds in Girnar Hills. Maximum no. of individuals has reported in the months of February and March.

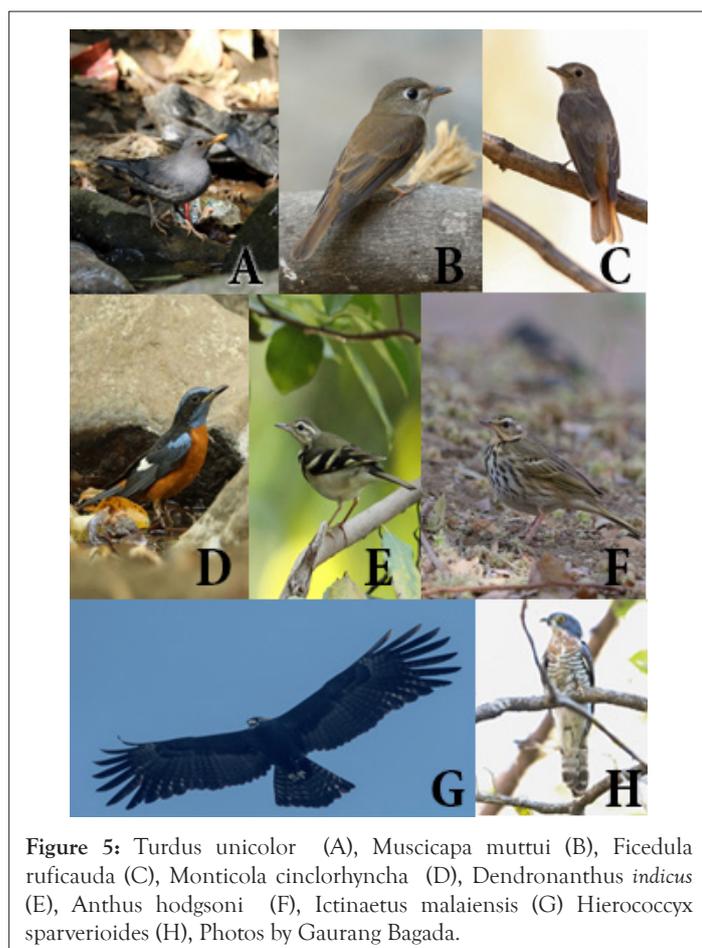
Rusty-tailed flycatcher: It is a winter migrant in South Western part of India and was historically, single individual sighted in Gujarat. First confirmed record was in Morbi, Surendranagar dist.. In Junagadh, we sighted two individuals in winter December 2017 and February 2019 in Bhavnath Taleti. It could occur in Gir National Park, Girnar Hills and elsewhere in the state in the winter season.

Blue-capped rock thrush: It is uncommon winter migrant in South Gujarat and Gir National Park and Sanctuary. In Girnar Hills, literature survey is from 2014 to 2016 revealed eight sightings from the region either single or that pairs. During the study, we encountered them very frequently especially in winters from December until March in Bhavnath Taleti and Girnar Hills.

Large hawk cuckoo: The *H. sparverioides* breeds in the Himalayas; it winters along the base of the Himalayas and in the Eastern and Western Ghats. We sighted two individuals in March 2018 and January 2019 in Girnar Hills. After literature review of status and distribution, we found out that the species is never reported in the state before. Some isolated records of the *H. sparverioides* are from the Western Ghats in the winter.

There are recent winter records of this species from Maharashtra, and a record from Mumbai has known. The *H. sparverioides* has not

listed in the recent checklist of the birds of Gujarat. These sightings from Girnar Hills are thus important and the *H. sparverioides* is an addition to the avifauna of the state [16] (Figure 5).



CONCLUSION

In conclusion, it can be said that the Junagadh taluka, which is situated in a vital zone of the ecosystem, supports an excellence number of avifauna. This is the first investigation study report on the avifauna of this place. Found the 28 sp. were Family *Accipitridae* they are prey bird chief starring role of food chain control; And 126 sp. and 32 Family Were Order *Passeriformes*. Furthermore, more fieldwork and scientific studies on birds are necessary to prepare a suitable outline of the conservation plans for the area. Might be the general Human activities within the avian habitat area should be not disturbing point, the resident and migratory diversity has been adapted to survival in this area. Continuous monitoring of avian fauna is an excellent means of monitoring forest health, and it will help to ecosystem a sustainable improvement of the habitat. In the

upcoming years, with the improvement of the forest cover, proper management programs and strategies in the break whole habitat loss then will not only increase the number of resident bird species but will also attract migratory and vagrant species.

REFERENCES

1. Acharya C. Zooplankton diversity in fresh water bodies of Junagadh, Gujarat, India. *International Journal of Engineering Science and Computing*. 2016;6(8):2474-2476.
2. Bagada G. Sighting of tickell's thrush in Girnar Wildlife Sanctuary. *Flamingo*. 2016;14(1):11.
3. Bagada G, Vachhani A, Patel R. Sightings of large hawk cuckoo *Hierococcyx sparverioides* near Girnar: an addition to the avifauna of Gujarat. *Flamingo*. 2020;18(2-3):7-8.
4. Baidya P, Bhagat M. A checklist of the birds of Goa, Indian. *Indian birds*. 2018;14(1):1-13.
5. Bibi F, Ali Z. Measurement of diversity indices of avian communities at Taunsa Barrage Wildlife Sanctuary, Pakistan. *Journal of Animal and Plant Sciences*. 2013;23:469-474.
6. Bhatt N, Ganpule P, Solanki J. Study of eurasian hooby in Gujarat. *Flamingo*. 2015;13(4):3-6.
7. Gohel V, Rava J. Butterfly diversity, seasonality and status at Junagadh, Gujarat, India. *International Journal of Environment, Ecology, Family and Urban Studies (IJEEFUS)*. 2019;9(2):15-28.
8. Hu J, Jiang Z, Zhang C. Bird diversity and the conservation value of a new Ramsar site: guandong aifeng wetlands, China. *Integrative Zoology*. 2011;6:266-278.
9. Koli V. Diversity and status of avifauna in Todgarh-Ruoli Wildlife sanctuary, Rajasthan, India. *Journal of asia-pacific biodiversity*. 2014;7: 401-407.
10. Munjpara SB, Gadhvi IR. Avian diversity in the naliya grassland, abdasa taluka, Kachchh, India. *Journal of Threatened Taxa*. 2012;3(4):2454-2463.
11. Narvade S, Rahmani A. Birds of the south-western deccan plateau region of Maharashtra, India, with special reference to the great Indian bustard *Ardeotis nigriceps*. *Indian Birds*. 2020;16(3):71-88.
12. Parasharya B. Black eagle *Ictinaetus malayensis* at narmada dam, Gujarat. *Indian Birds*. 2010;6(4-5):95-96.
13. Patel H. Preliminary report on herpetofauna of mount girnar, Gujarat, India. *Journal of Animal Diversity*. 2019;1(2):9-35.
14. Vaisnav C, Dodia P. Avian diversity of dhrafad water reservoir and surrounding area in Sarsai village, Dist. junagadh (Gujarat) India. *Flora and Fauna*. 2016;22(2):171-185.
15. Patel R, Raval J. Avian diversity at prashnavada wetland, gir-somnath, Gujarat, India. *International Journal of environment, ecology, family and urban studies*. 2019;9(2):95-104.
16. Praveen J, Jayapal R, Pitti A. Taxonomic updated to the checklist of birds of India and South Asia region-2021. *Indian birds*. 2021;17(1):1-3.