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Diversity and status of avifauna from Pranhita River sub basin in Sironcha Tehsil of Maharashtra State, India

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Abstract
Pranhita River sub basin provides shelter to diverse avifauna. The documented paper deals with the avian diversity, distribution and status of Pranhita River sub basin in Sironcha, Dist. Gadchiroli, Maharashtra state, India. In this region the birds are observed in different habitats such as paddy fields, residential areas, seasonal lakes and small villages through which river flows. The avifaunal investigation was carried out from January 2016 to March 2017. Areas are visited twice in a month in morning 6.00 to 9.00 and in evening 16.30 to 18.30. A total of 73 species belonging to 14 orders and 37 families recorded during investigation. In the study Passeriformes is the dominating order and Ardeidae is dominating family. Majority of birds are distributed as resident (65.75%) and Status shows most of birds are common (69.86 %). Most of species were recorded from Nagram Lake and Nagram Ghat.

Keywords: pranhita river, sironcha, gadchiroli, avifauna, ecology, diversity

1. Introduction
Birds are unique among other animals in having feathers for flight. Insulated feathers maintain their body temperature. Their flying ability protects them from other land dwelling animal (Verma, 1972) [16], beside this they are one of main attraction for mankind because of their sonorous song, intrinsically beautiful plumage and artistic behavior (Shreshtha, 2000) [14]. Watching of bird is always educative and fascinating (Arun, 2005) [3] as their role is essential in ecosystem as pollinators, scavengers and bioindicators in nature's ecology (Gill, 1994) [7]. Apart from these for understanding key issues in ecology, animal behavior, evolutionary biology and conservation, birds are ideal organisms (Urfi, 2011) [15]. Hence it is necessary to know their diversity, percentage within order and family, their residential and migratory status and abundance.

On earth biodiversity is not evenly distributed, biogeography has great influence over it (Karr 1976) [11]. Birds are endowed by nature in having wider distribution on earth than any other class of animals (Ali, 1941) [1]. Among all other habitats water bodies support wide range of biodiversity because it is right place for birds to get variety of food, good and secure area for laying eggs (Islam & Rahmani, 2004) [10]. The recent research assesses Freshwater biodiversity as most threatened of all types of diversity (Anon, 2000) [2].

There are more than 9,000 birds in the world out of which Indian subcontinent contains about 1,300 species (Grimmett *et al*; 1998) [8]. Indian peninsular river basins of Mahanadi, Godavari, Krishna, Kaveri, etc., harbors diverse avifauna. One of sub basins of Godavari River is Pranhita River also rich in biodiversity. Sironcha Tehsil is Located in Gadchiroli District of Maharashtra State, India. Pranhita River is the chief source of water for drinking, agriculture and diverse flora and fauna of this area. It is one of major tributary of Godavari River System. It flows on the border of Gadchiroli district in Maharashtra state and Adilabad district of Telangana state. Sironcha has diverse habitats includes forest and agricultural area in northern side while seasonal lakes and paddy fields in the southern direction, in eastern side it has forest, small villages and Indravati river. And western direction is entirely bordered by Pranhita River. It lies between latitudes$18^0$50' 50" N to79^0 58' 5.5" E. Average elevation above mean sea level (MSL) is 130m. Hot and dry weather for major part of the year. Mean maximum temperature at summer is 48^0 C and mean minimum temp. is 8.9^0 C during winter. The area is pollution free as there are no any industries.

In world and in India many studies have been carried out on riverine bird diversity by various researchers includes Gache (2016) [6] studied avian diversity and habitat evolution in Romania on Jijioara river valley and recorded 129 bird species. Avifauna from Godavari river basin were studied by Chavan *et Al*., (2015) [5] in Nanded district of Maharashtra, India and reported 168 species of birds belonging to 14 orders and 53 families. Anupma Kumari *et al*., (2014) [12] documented 90 bird species under 66 genera and 29 families from Ganges and Gandak River in Bihar state of India. In Barna reservoir of Narmada basin of central India Balapure *et al.*, (2013) [4] studied the effect of physico-chemical parameters on distribution of wetland birds and recorded 64 species of birds.

The aim of study is to prepare checklist of avifauna, to develop diversity and create awareness for conservation. Since there is no publish report on avifaunal diversity of Pranhita river in Sironcha, preliminary observations were made in different habitats of investigated region.

2. Study Area

The data on bird diversity for the study was taken from six diverse habitats along 10 km. different sites includes-

1. Sironcha Ghat - It is at west of Sironcha town near Vithheleshwar temple. In rainy season most of area is flooded with water.
2. Dharampuri Ghat - It is at Dharampuri village, 2 km from Sironcha town.
3. Ramkrishnapur paddy fields- It is 1 km from Dharampuri Ghat.
4. Nagram Lake- It is located in Nagram village. It gets dried in summer, but in winter and rainy season rich in avifaunal diversity.
5. Nagram Ghat - It is 1 km from Ramkrishnapur village. Pranhita River after this Station travels little and finally combines with River Godavari.
6. Medaram Village- It is 4 km from Sironcha town in north. Birds are observed mainly in paddy fields, chilli farms, Medaram Nala, and forest.

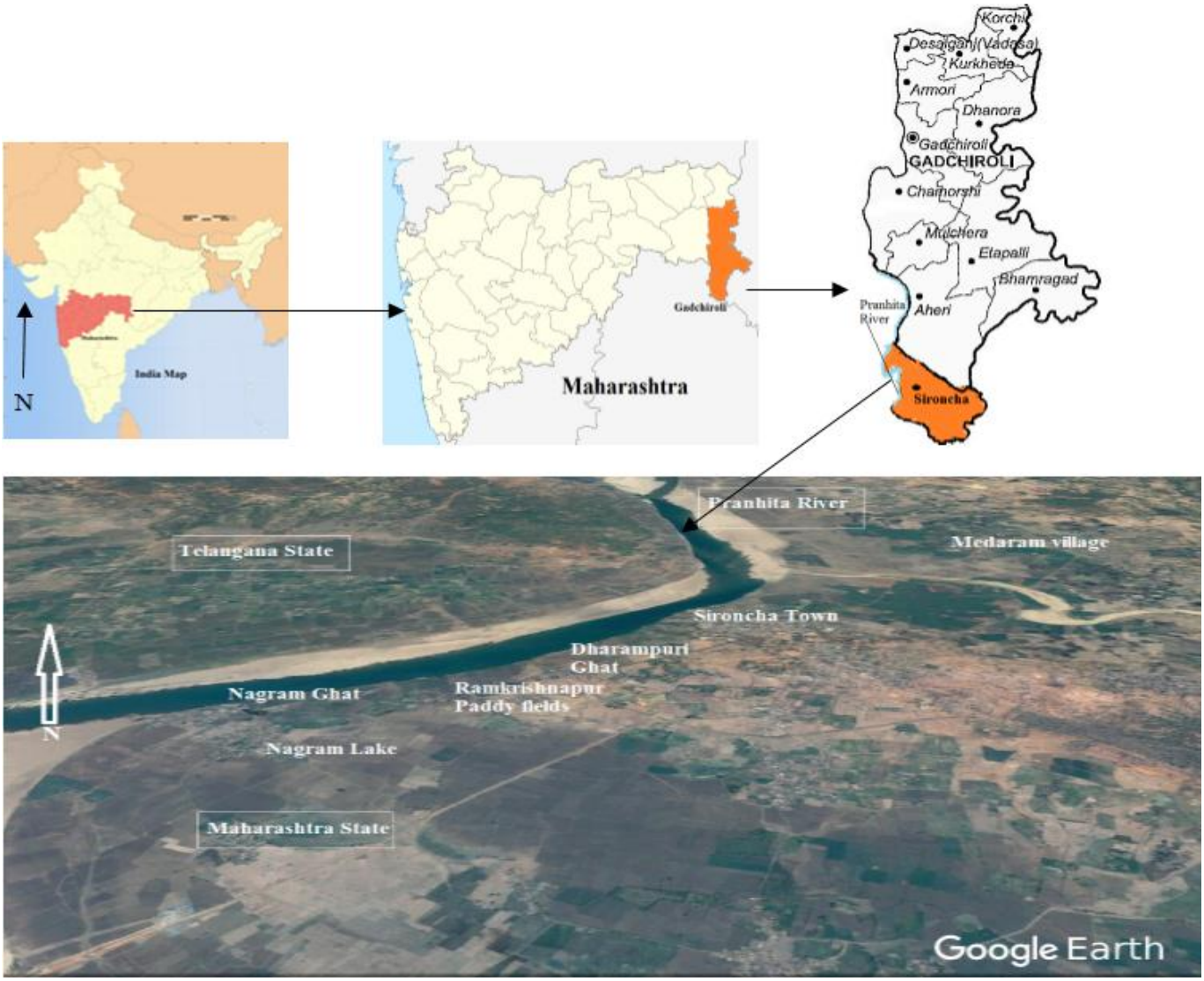

Fig 1: Location of study sites along Pranhita River (Photograph taken from www.googleearth.com)

3. Methodology

Avian observation was carried out from January 2016 to March 2017.Study areas are visited twice in a month and observation were made in morning 6.00 to 9.00 and in evening 16.30 to 18.30. Birds were sighted by using a binocular Olympus (10X50) and photographed by Canon Eos 1300d DSLR camera with 250mm zoom lens.

Systematic list of the birds of this town is lacking, hence the present investigation documented birds of this region by mainly direct sightings. The identification of birds was based on standard data as described by Ali (2002) [1], Grimmett *et al*., (2001) [9] and searching on the internet. The list of birds is arranged family and order wise with their scientific and common name following Praween J. *et Al.*, (2016) [13]. The distribution of birds as R (resident), RM (Resident migrant), BM (Breeding migrant), WV (Winter visitor). Status of birds categorized as C (Common), U (uncommon) or r (rare).

Table 1: Showing orders, families, scientific names, common names and Residential Status and abundance of the birds.

Sr. No.	Order	Family	Scientific Name	Common Name	Distribution	Status
1	Galliformes	Phasianidae	*Coturnix coturnix*	Common Quail	RM	U
2	Columbiformes	Columbidae	*Columba livia*	Blue Rock Pigeon	R	C
3			*Streptopelia decaucto*	Eurasian collared Pigeon	R	U
4			*Streptopelia chinensis*	Spotted Dove	R	C
5			*Streptopelia senegalensis*	Laughing dove	R	C
6	Caprimulgiformes	Apodidae	*Apus affinis*	House Swift	R	C
7			*Cypsiurus Balasiensis*	Asian Palm Swift	R	C
8	Cuculiformes	Cuculidae	*Centropus sinensis*	Greater Coucal	R	C
9			*Clamator jacobinus*	Jacobin Cuckoo	BM	C
10			*Eudynamis scolopacea*	Asian Koel	RM	C
11			*Hierococcyx varius*	Common Hawk Cuckoo	BM	U
12	Gruiformes	Rallidae	*Amaurornis Phoenicurus*	White Breasted Waterhen	RM	C
13			*Porphyrio porphyrio*	Purple Moorhen	RM	U
14			*Gallinula Chloropus*	Common Moorhen	RM	C
15	Pelecaniformes	Ciconiidae	*Anastomus oscitans*	Asian Open-bill	R	C
16		Ardeidae	*Ardeola grayii*	Indian Pond Heron	R	C
17			*Bubulcus ibis*	Cattle Egret	R	C
18			*Ardea purpurea*	Purple Heron	RM	U
19			*Ardea alba*	Large Egret	RM	U
20			*Ardea intermedia*	Median Egret	R	C
21			*Egretta garzetta*	Little egret	RM	C
22		Threskiornihidae	*Pseudibis papillosa*	Indian Black ibis	R	C
23		Phalacrocoracidae	*Microcarbo niger*	Little Cormorant	R	C
24	Charadriiformes	Recurvirostridae	*Himantopus himantopus*	Black Winged Stilt	RM	C
25		Charadriidae	*Vanellus malabaricus*	Yellow-wattled Lapwing	RM	U
26			*Vanellus indicus*	Red-wattled Lapwing	R	C
27			*Vanellus leucurus*	White- Tailed Lapwing	WV	U
28		Jacanidae	*Metopidius indicus*	Bronze-winged Jacana	R	C
29	Accipitriformes	Accipitridae	*Elanus caeruleus*	Black Winged Kite	R	U
30	strigiformes	Strigidae	*Athene brama*	Spotted Owlet	R	U
31	Bucerotiformes	Upupidae	*Upupa Epops*	Common Hoopoe	RM	C
32	Piciformes	Ramphastidae	*Psilopogon haemacephalus*	Coppersmith Barbet	R	C
33	Coraciiformes	Meropidae	*Merops orientalis*	Green Bee-eater	R	C
34			*Merops leschenaulti*	Chestnut Headed Bee-eater	RM	U
35			*Merops philippinus*	Blue-tailed Bee-eater	RM	U
36		Coraciidae	*Coracias benghalensis*	Indian Roller	R	C
37		Alcedinidae	*Alcedo atthis*	Common Kingfisher	RM	U
38			*Ceryle rudis*	Pied Kingfisher	R	C
39			*Halcyon smyrnensis*	White Throated Kingfisher	R	C
40	Psittaciformes	Psittaculidae	*Psittacula krameri*	Rose-ringed Parakeet	R	C
41	Passeriformes	Oriolidae	*Oriolus oriolus*	Eurasian Golden Oriole	R	r
42		Aegithinidae	*Aegithina tiphia*	Common Iora	RM	C
43		Dicruridae	*Dicrurus macrocercus*	Black Drongo	R	C
44		Laniidae	*Lanius schach*	Long-tailed Shrike	R	C
45		Corvidae	*Corvus splendens*	House Crow	R	C
46		Nectariniidae	*Leptocoma zeylonica*	Purple-rumped Sunbird	RM	C
47			*Cinnyris asiaticus*	Purple Sunbird	R	C
48		Ploceidae	*Ploceus philippinus*	Baya Weaver	RM	C
49			*Ploceus manyar*	Streaked Weaver	RM	U
50		Estrildidae	*Amandava amandava*	Red Munia	RM	U
51			*Euodice malabarica*	White -throated Munia	R	C
52			*Lonchura punchulata*	Scaly-breasted Munia	RM	U
53		Passeridae	*Passer domesticus*	House Sparrow	R	C
54		Motacillidae	*Motacilla Maderaspatensis*	White-browed Wagtail	R	U
55		Paridae	*Parus cinereus*	Cinereous Tit	R	U
56		Alaudidae	*Eremopterix griseus*	Ashy-crowned Sparrow Lark	R	U
57			*Mirafra erythroptera*	Indian Bushlark	R	U
58		Cisticolidae	*Prinia inornata*	Plain Prinia	R	C
59			*Prinia socialis*	Ashy Prinia	R	C
60			*Orthotomus sutorius*	Common Tailor Bird	R	C
61		Hirundinidae	*Hirundo rustica*	Common Swallow	WV	C

62		Pycnonotidae	*Pycnonotus cafer*	Red-vented Bulbul	R	C
63			*Pycnonotus luteolus*	White-browed Bulbul	R	C
64		Leiothrichidae	*Turdoides striata*	Jungle Babbler	R	C
65			*Turdoides affinis*	Yellow-billed Babbler	R	C
66		Sturnidae	*Gracupica contra*	Asian Pied Starling	R	C
67			*Sturnia pagodarum*	Brahminy Starling	R	C
68			*Acridotheres tristis*	Common Myna	R	C
69		Muscicapidae	*Saxicoloides fulicatus*	Indian Robin	R	C
70			*Copsychus Saularis*	Oriental Magpie Robin	R	C
71			*Phoenicurus ochruros*	Black Red Start	RM	C
72			*Saxicola caprata*	Pied Bush chat	R	C
73			*Oenanthe fusca*	Indian Chat	R	r

4. Result and Discussion

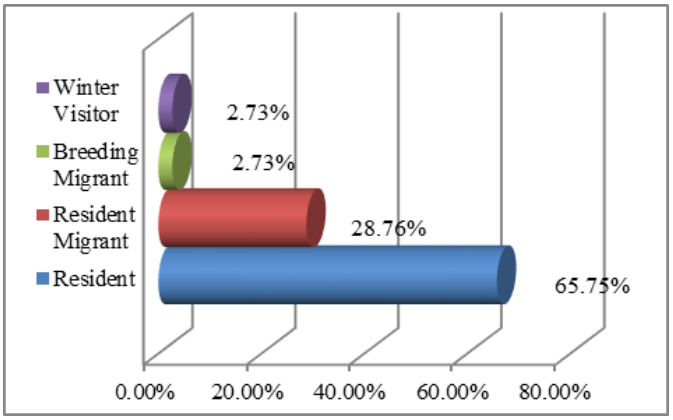

Fig 2: Distribution of Avifauna

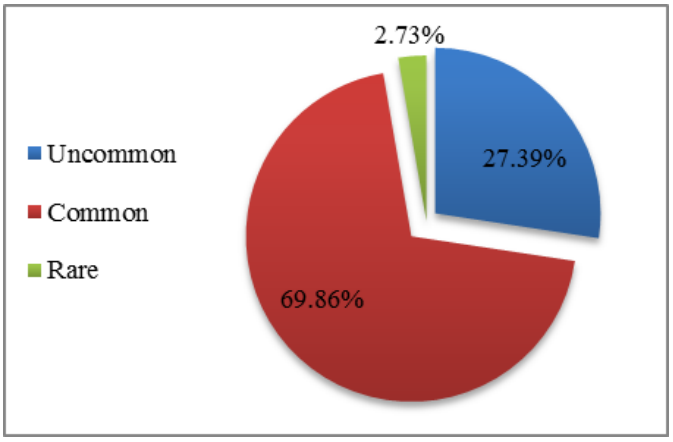

Fig 3: Status of Avifauna

In the present avifaunal diversity study in various habitats such as seasonal lakes, different Ghats of river and agricultural fields, total of 73 bird species belonging to 14 order and 36 families were recorded (Table-1) during investigation. In this region for birds sufficient amount of food and water is available without disturbances from human beings, due to which majority of birds are Permanently distributed as resident (48species) constitute 65.75% (Fig-2) of total birds population, some are resident migrant (21species) 28.76%, few are winter visitor and breeding migrant i.e., 2.73% each of total bird's species. Status of avifauna shows 69.86 % (Fig-3) birds are common (51 species), 27.39% birds are uncommon (20 species) and 2.73% birds are rare (2 species) which were observed very few times.

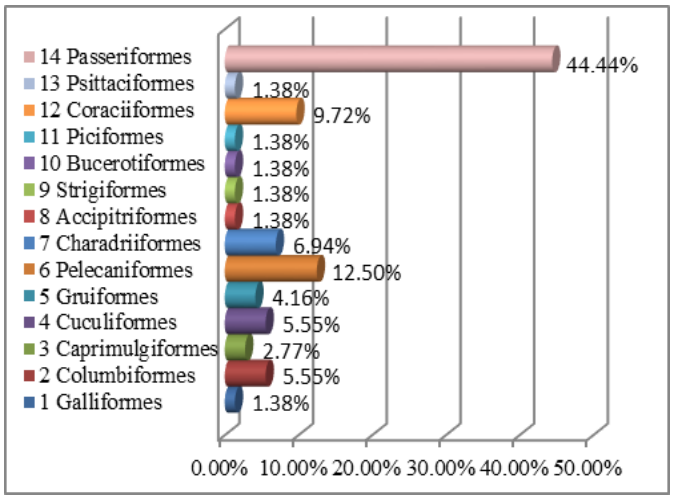

Fig 4: Order wise % of Avifauna

Maximum species of birds were recorded from order Passeriformes (33 species) which constitute 44.44% (Fig-4) of total avifauna followed by order pelecaniformes which consist of 12.50%. Coraciiformes constitute 9.72%, Charadriiformes 6.94%, Gruiformes 4.16%, Caprimulgiformes Constitute 2.77% avifauna. Columbiformes and Cuculiformes consist of 5.55% of orders each. Orders such as Galliformes, Accipitriformes, Strigiformes, Bucerotiformes, Piciformes and psittasiformes constitute 1.36% each of the total bird's species.

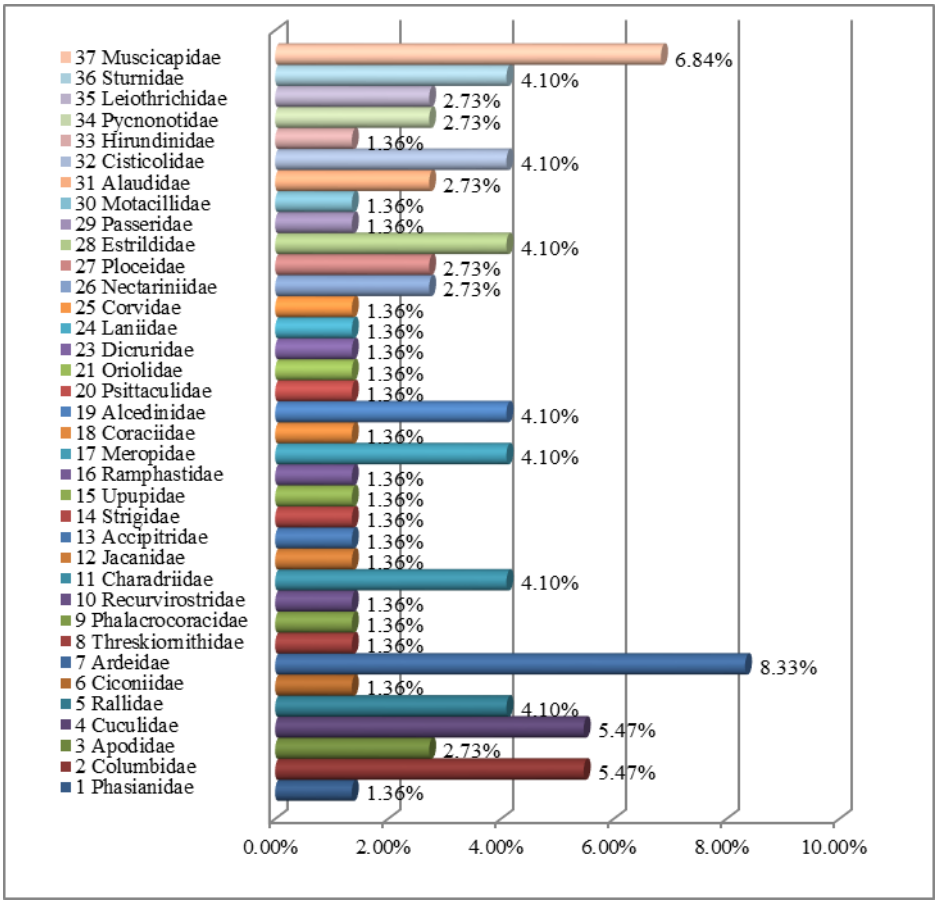

Fig 5: Family wise % of Avifauna

Fig 6: Blue Rock Pigeon (*Columba livia*)

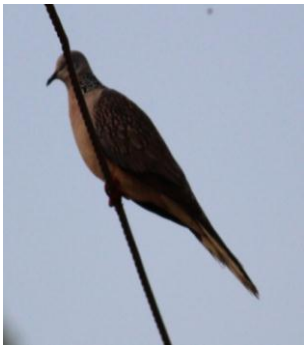

Fig 7: Spotted Dove (*Streptopelia chinensis*)

Fig 8: Laughing Dove (*Streptopelia senegalensis*)

Fig 9: Greater Coucal (*Centropus sinensis*)

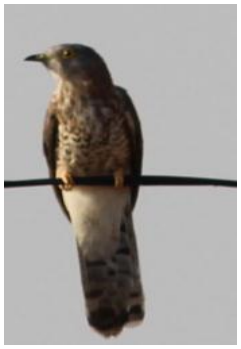

Fig 10: Common Hawk Cuckoo (*Hierococcyx varius*)

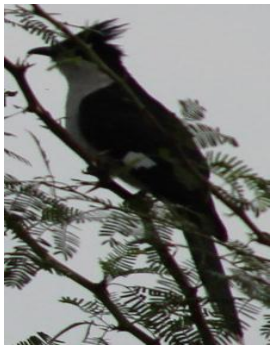

Fig 11: Jacobin Cuckoo (*Clamator jacobinus*)

Fig 12: White Breasted Waterhen (*Amaurornis Phoenicurus*)

Fig 13: Purple Moorhen (*Porphyrio porphyria*)

Fig 14: Asian Open-bill (*Anastomus oscitans*)

Fig 15: Indian Pond Heron (*Ardeola grayii*)

Fig 16: Cattle Egret (Bubulcus *ibis*)

Fig 17: Purple Heron (*Ardea purpurea*)

Fig 18: Large Egret (*Ardea alba*)

Fig 19: Median Egret (*Ardea intermedia*)

Fig 20: Little Egret (*Egretta garzetta*)

Fig 21: Black Ibis (*Pseudibis papillosa*)

Fig 22: Little Cormorant (*Microcarbo niger*)

Fig 23: Black-winged Stilt (*Himantopus himantopu*)

Fig 24: Yellow-wattle Lapwing (*Vanellus malabaricus*)

Fig 25: Red-wattle Lapwing (*Vanellus indicus*)

Fig 26: Bronze Winged Jacana (*Metopidius indicus*)

Fig 27: Black Winged Kite (*Elanus caeruleus*)

Fig 28: Coppersmith Barbet (*Psilopogon haemacephalus*)

Fig 29: Green Bee- eater (*Merops orientalis*)

Fig 30: Indian Roller (*Coracias benghalensis*)

Fig 31: White-throated Kingfisher (*Halcyon smyrnensis*)

Fig 32: Common Kingfisher (*Alcedo atthis*)

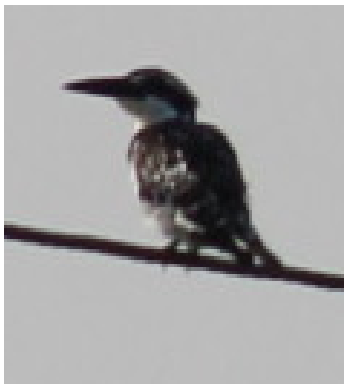

Fig 33: Pied Kingfisher (*Ceryle rudis*)

Fig 34: Rose Ringed Parakeet (*Psittacula krameri*)

Fig 35: Common Iora (*Aegithina tiphia*)

Fig 36: Black Drongo (*Dicrurus macrocercus*)

Fig 37: Long-tailed Shrike (*Lanius schach*)

Fig 38: House Crow (*Corvus splendens*)

Fig 39: Purple Sunbird(female) (*Cinnyris asiaticus*)

Fig 40: Baya Weaver (*Ploceus philippinus*)

Fig 41: Streaked Weaver (*Ploceus manyar*)

Fig 42: Red Munia (*Amandava amandava*)

Fig 43: White Throated Munia (*Euodice malabarica*)

Fig 44: Scaly-breasted Munia (*Lonchura punchulata*)

Fig 45: House Sparrow (*Passer domesticus*)

Fig 46: White Browed Wagtail (*Motacilla Maderaspatensis*)

Fig 47: Ashy Prinia (*Prinia socialis*)

Fig 48: Plain Prinia (*Prinia inornat*)

Fig 49: Common Tailor Bird (*Orthotomus sutorius*)

Fig 50: Indian Bush Lark (*Mirafra erythroptera*)

Fig 51: Red-vented Bulbul (*Pycnonotus cafer*)

Fig 52: White-browed Bulbul (*Pycnonotus luteolus*)

Fig 53: Yellow-billed Babbler (*Turdoides affinis*)

Fig 54: Asian Pied Starling (*Gracupica contra*)

Fig 55: Brahminy Starling (*Sturnia pagodarum*)

Fig 56: Common Myna (*Acridotheres tristis*)

Fig 57: Indian Robin(Male) (*Saxicoloides fulicatus*)

Fig 58: Oriental Magpie Robin (*Copsychus Saularis*)

Fig 59: Black Redstart (*Phoenicurus ochruros*)

Fig 60: Pied Bush Chat (*Saxicola caprata*)

Avifauna belongs to family Ardeidae was dominant and consist of 8.82% (Fig-5) out of total 37 families of birds species followed by Cuculidae, Muscicapidae and Columbidae constitute 5.88% of families each. Rallidae, Alcedinidae, Sturnidae, Cisticolidae and Charadriidae consist of 4.41%, Apodidae, Threskiornithidae, Meropidae, Ploceidae, Alaudidae, Pycnonotidae, Nectariniidae and Leiothrichidae constitute 2.94% each of total species of birds. Families like Phasianidae, Ciconiidae, Phalacrocoracidae, Recurvirostridae, Hirundinidae Jacanidae, Accipitridae, Strigidae, Upupidae, Psittaculidae, Oriolidae, Dicruridae, Laniidae, Corvidae, Estrildidae, Passeridae and Motacillidae consist of 1.47% of families each.

Species like Indian Robin (Saxicoloides fulicatus), Brahminy Starling (*Sturnia pagodarum*), Common Myna (*Acridotheres tristis*), White Throated Kingfisher (*Halcyon smyrnensis*), Green Bee-eater (*Merops orientalis*), Red-wattled Lapwing (*Vanellus indicus*), Cattle Egret (*Bubulcus ibis*) and Yellow-billed Babbler (*Turdoides affinis*) are most common which were observed throughout the year in large numbers. Jacobin Cuckoo (*Clamator jacobinus*), Red Munia (*Amandava amandava*), Scaly-breasted Munia (*Lonchura punchulata*) and Common Iora (*Aegithina tiphia*) were exclusively seen only in monsoon. Winter common birds are Common Hoopoe (*Upupa Epops*) and Common Swallow (*Hirundo rustica*). In summer Common Hawk Cuckoo (*Hierococcyx varius*) and Asian Koel (*Eudynamis scolopacea*) were observed in large numbers. Out of six sites studied two sites (Nagram Lake and Nagram Ghat) were rich in avifauna; maximum species were recorded from these two sites. 55 photographs (Fig: 6-60) of sighted birds are documented through this research paper.

The present investigation shows the abundance of avian species in Pranhita river sub basin at Sironcha which is very good indicator from ecological point of view. There are no threats to birds since absence of industrialization in this town but increased uses of pesticides in higher concentration in agricultural field and hunting of birds by villagers may create future danger to birds.

5. Acknowledgment

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