

RESEARCH ARTICLE

Avifaunal diversity in and around Chargaon Dam (Warora) District Chandrapur (M.S.) India.

Bawaskar Kiran S^{1*}, Khate Dinesh² and Wazalwar Sachin³

¹Department of Chemistry Narasamma Hirayya college, kiran nagar, Amravati 444601

²Behind State Bank colony, Infront of Biyani petrol pump, Tadoba road Tukum, Chandrapur 442401

³Department of Applied chemistry, Rajiv Gandhi College of engineering Research & Technology Chandrapur 442401

*Corresponding author email: ksbbiochem@gmail.com

Manuscript details:

Received: 21.09.2016
Accepted: 05.10.2016
Published : 03.11.2016

Editor: Dr. Arvind Chavhan

Cite this article as:

Bawaskar Kiran S, Khate Dinesh and Wazalwar Sachin (2016) Avifaunal diversity in and around Chargaon Dam (Warora) District Chandrapur (M.S.) India, *International J. of Life Sciences*, 4 (3): 401-411.

Copyright: © 2016 | Author(s), This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

ABSTRACT

This paper deals with the community of birds in and around Chargaon dam Warora district Chandrapur Maharashtra state India. It is situated at coordinate 20.3944526°N 79.1757202°E district of Maharashtra India. In present no data pertaining to avifaunal diversity of this region is available, so that we were decided to prepare a checklist of birds. The observation was carried out throughout year from April 2012- April 2016 in and around Chargaon dam. The study revealed a total 196 species of birds belonging to the 64 families and 19 orders of which 139 Species were resident 17 Migratory residents 38 winter migratory 1 breeding migratory and 1 species were passage migrant.

Key Words: Avifauna, Chargaondam, Checklist, diversity, Migrant, Resident.

INTRODUCTION

India is mega-diversity centre harbor about 1301 species of birds that amount to 13% of the total birds of the world (Ali, 2012). Birds are an important in ecosystem as potential pollinators, scavengers and bio-monitors in controlling insect pest and also as excellent ecological indicators. Maharashtra is the second most populous and third largest state by area in India. Avifaunal diversity has been studied by number of workers and coworkers in Maharashtra state. 171 species of birds studied at Pohara Malkhed forest reserve and Amravati university campus (Kasambe and Wadatkar 2002), the annotated checklist of Nagpur area represented 284 species (Kasambe 2009) 165 species of birds in Osmanabad (Narwade and Fartade), 151 species at Nanded city south east of Maharashtra (Kulkarni et al; 2005), 94 species of birds from Buldhana (Kakde 2012), Chaprala wildlife sancury Gadchiroli M.S. India reported 76 species (Chawhan and Dhamani 2014), 34 species of birds documented from Muchi lake Pandharkawada district Yavatmal

M.S. India (Pawar and Wanjari, 2013), wetland are major habitat for resident and migratory birds, which provides water, food, shelter and sites for nesting and nurturing of young ones (Mitsch and Gosselink, 2000; Stewart 2001), a few notable field survey on avian diversity has been conducted in major wetlands of India (Awan et al; 2004, Bhat et al; 2009, Narayanan et al; 2011, Balkhande et al; 2012). Still information on wetland avian fauna at Maharashtra is much limited.

(Harney 2015) reported 99 species of birds Junona lake Chandrapur. Although (Harney 2011), previously reported 38 species of birds from three lakes at Bhadrawati Chandrapur. Harney 2014 also documented 49 species from Dudhala Lake, 55 species from Ghotnimbala Lake and 65 species of birds from Chalbardi (Rai) lake Bhadrawati district Chandrapur. While (Arun Chilke 2012) sighted 58 species of birds at Bamanwada lake Rajura district Chandrapur. There is a lack of information as most of the birds in many water bodies around Chandrapur district, so that the present investigation was an attempt to make comprehensive checklist, seasonal variation in the species, migratory status and threats of avifauna of the Chargaon dam Warora district Chandrapur Maharashtra India.

MATERIAL AND METHODS

STUDY AREA

The Chargaon dam is an irrigation project by Government of Maharashtra in year 1983. It is situated on Chargaon River at Chargaon Bk taluk Warora district Chandrapur coordinate 20.3944526°N

79.1757202°E It is an earth fill dam having 3065 m (10055.77 feet) length, this length divided into two sections by spillway. The height of dam above lowest foundation is 14.4 m (47.224 feet). The catchment area of dam is 14.83 thousand hector and maximum gross storage capacity is 21.7 MCM and live storage capacity is 19.866 MCM. All water bodies make a good wetland which attracts a number of birds, due to their high productivity. Dam provides number of aquatic weeds in floating, submergible and emerge state which thrive a large number of organisms. An Availability of food throughout year in the form of insect, crustaceans and mollusks etc.

METHODOLOGY

The present report based on an observation made from April 2012- April 2016. Randomly visits were made weekly to these area throughout year. An observation were carried out in and around dam on random pathway for which nearly full day were spend. The birds were sighted by using binocular of Olympus 12 X - 50 X magnification and spot identification were done by using field guide (Carol Inskipp, Richard Grimmett, and Tim Inskipp 1999, Krys Kazmierczak 2000) and photographic documentation were done by using camera (Nikon D90 with 70-300 mm VR lens and Canon 600D with 55-250mm lens). Only those species with confirmed identity are reported in this paper. The status of each species is categorized as Residential (R), Residential Migrant (RM), Winter Migrant (WM), Breeding Migrant (BM) and Passage Migrant (PM). While abundance of birds was categorized as Common (C), Uncommon (U), Occasional (O), Rare (Rr).



Fig. 1 Map of Study site Chargaon dam

RESULT AND DISCUSSION

During study investigation 196 Species of birds were documented belonging to 64 Different Families and 19 Different Orders of class Aves. Out of these 139 species were resident, 17 species were Residential Migratory, 38 species were Winter Migratory, 1 species were breeding migrant and 1 species were found to be Passage Migrant. It was observed that the maximum

bird species were recorded during early monsoon and late winter, while comparatively less number of birds was recorded during late summer, late rainy season and early winter. A total of 121 birds' species were found to be common, 51 species of birds found to be uncommon, 15 birds' species found to be occasional and 9 bird's species were found to be a rare. These are illustrated as in table.

Table 1: Checklist of Birds

Common name	Scientific Name	Status	Abundance
<u>Podicipediformes</u>			
Podicipedidae			
Little grebe	<i>Tachybaptus ruficollis</i>	R	C
<u>Suliformes</u>			
Anhingidae			
Oriental darter	<i>Anhinga melanogaster</i>	RM	U
Phalacrocoracidae			
Little cormorant	<i>Phalacrocorax niger</i>	R	C
Indian cormorant	<i>Phalacrocorax fuscicollis</i>	RM	C
Great cormorant	<i>Phalacrocorax carbo</i>	RM	U
<u>Pelecaniformes</u>			
Ardeidae			
Little egret	<i>Egretta garzetta</i>	R	C
Cattle egret	<i>Bubulcus ibis</i>	R	C
Great egret	<i>Casmerodius albus</i>	R	C
Intermediate egret	<i>Mesophoyx intermedia</i>	R	U
Striated heron	<i>Butorides striatus</i>	R	U
Pond heron	<i>Ardeola grayii</i>	R	C
Grey heron	<i>Ardea cinerea</i>	RM	U
Purple heron	<i>Ardea purpurae</i>	RM	U
Threskiornithidae			
Black headed ibis	<i>Threskiornis melanocephalus</i>	R	C
Red -naped ibis	<i>Pseudibis papillosa</i>	R	C
Glossy ibis	<i>Plegadis falcinellus</i>	R	U
Eurasian spoonbill	<i>Platalea leucorodia</i>	R	U
<u>Ciconiiformes</u>			
Ciconiidae			
Asian open bill	<i>Anastomus oscitans</i>	R	U
Painted stork	<i>Mycteria leucocephala</i>	R	U
Wooly necked stork	<i>Ciconia nigra</i>	R	U
<u>Anseriformes</u>			
Anatidae			
Lesser whistling duck	<i>Dendrocygna javanica</i>	R	C

Bar headed goose	<i>Anser indicus</i>	WM	Rr
Greylag Goose	<i>Anser anser</i>	WM	Rr
Rudy shelduck	<i>Tadorna ferruginea</i>	WM	C
Knob-billed duck	<i>Sarkidiornis melanotos</i>	R	O
Common teal	<i>Anas crecca</i>	WM	U
Cotton teal	<i>Nettapus coromandelianus</i>	R	C
Gadwall	<i>Anas strepera</i>	WM	Rr
Mallard	<i>Anas platyrhynchos</i>	WM	Rr
Spot billed duck	<i>Anas poecilorhyncha</i>	R	C
Northern shoveler	<i>Anas clypeata</i>	WM	C
Northern pintail	<i>Anas acuta</i>	WM	C
Eurasian wigeon	<i>Anas Penelope</i>	WM	O
Garganey	<i>Anas querquedula</i>	WM	O
Red crested pochard	<i>Netta rufina</i>	WM	O
Tufted duck	<i>Aythya ferina</i>	WM	O
<u>Accipitriformes</u>			
Accipitridae			
Black kite	<i>Milvus migrans</i>	R	C
Black shoulder kite	<i>Elanus caeruleus</i>	R	C
Shikra	<i>Accipiter badius</i>	R	C
Oriental honey buzzard	<i>Pernis ptilorhynchus</i>	R	U
Short toed snake eagle	<i>Circaetus gallicus</i>	R	U
Crested serpent eagle	<i>Spilornis cheela</i>	R	O
White eye buzzard	<i>Butastur teesa</i>	R	U
Booted eagle	<i>Hieraaetus pennatus</i>	WM	O
Eurasian marsh harrier	<i>Circus aeruginosus</i>	WM	U
Pallid harrier	<i>Circus macrourus</i>	WM	U
Grey headed Fish Eagle	<i>Ichthyophaga ichthyaetus</i>	RM	Rr
Falconidae			
Common kestrel	<i>Falco tinnunculus</i>	RM	C
Red necked falcon	<i>Falco chicquera</i>	RM	O
Peregrine falcon	<i>Falco peregrines</i>	RM	U
Pandionidae			
Osprey	<i>Pandion haliaetus</i>	WM	O
<u>Galliformes</u>			
Phasianidae			
Common quail	<i>Coturnix coturnix</i>	R	C
Rain quail	<i>Coturnix coromandelica</i>	R	C
Jungle bush quail	<i>Perdica asiatica</i>	R	C
Grey francolin	<i>Francolinus pondicerianus</i>	R	C
Painted francolin	<i>Francolinus pintadeanus</i>	R	U
Indian peafowl	<i>Pavo cristatus</i>	R	C
<u>Turniciformes</u>			
Turnicidae			
Yellow leg button quail	<i>Turnix tanki</i>	R	U

<u>Gruiformes</u>			
Gruidae			
Common crane	<i>Grus grus</i>	WM	Rr
Demoiselle crane	<i>Grus virgo</i>	WM	Rr
Rallidae			
common coot	<i>Fulica atra</i>	R	C
commn moorhen	<i>Gallinula chloropus</i>	R	C
purple swamphen	<i>Porphyrio porphyrio</i>	R	C
white breasted water hen	<i>Amaurornis phoenicurus</i>	R	C
<u>Charadriiformes</u>			
Burhinidae			
Eurasian thick nee	<i>Burhinus oedicnemus</i>	R	O
Charadriidae			
Red wattled lapwing	<i>Vanellus indicus</i>	R	C
Yellow wattled lapwing	<i>Vanellus malabaricus</i>	R	U
Small pranticol	<i>Glareola lacteal</i>	RM	C
Oriental pranticol	<i>Glareola maldivarum</i>	RM	U
Little ring plover	<i>Charadrius dubius</i>	WM	C
Glareolidae			
Indian courser	<i>Cursorius coromandelius</i>	R	O
Rynchopidae			
Indian Skimmer	<i>Rynchops albicollis</i>	WM	Rr
Laridae			
River tern	<i>Sterna aurantia</i>	R	C
Jacanidae			
Pheasant tailed jacana	<i>Hydrophasianus chirurgus</i>	R	C
Bronze wing jacana	<i>Metopidius indicus</i>	R	U
Recurvirostridae			
Black wing stilt	<i>Himantopus himantopus</i>	R	C
Scolopaciidae			
Black tailed godwit	<i>Limosa limosa</i>	WM	Rr
Common snipe	<i>Gallinago gallinago</i>	WM	C
Painted snipe	<i>Rostratula bengalensis</i>	R	C
Wood sand piper	<i>Tringa glareola</i>	WM	C
Common green shank	<i>Tringa nebularia</i>	WM	C
Common red shank	<i>Tringa tetanus</i>	WM	C
Spotted red shank	<i>Tringa erythropus</i>	WM	C
Little stint	<i>Calidris minuta</i>	WM	C
<u>Columbiformes</u>			
Columbidae			
Blue rock pigeon	<i>Columba livia</i>	R	C
Yellow footed green pigeon	<i>Treron phoenicopterus</i>	R	C

Eurasian collared dove	<i>Streptopelia decaocto</i>	R	C
Spotted dove	<i>Stigmatopelia chinensis</i>	R	C
Laughing dove	<i>Stigmstopelia senegalensis</i>	R	C
Oriental turtle dove	<i>Streptopelia orientalis</i>	R	U
Red collard dove	<i>Streptopelia tranquebarica</i>	R	U
Pteroclididae			
Chestnut tailed sandgrouse	<i>Pterocles exustus</i>	R	U
painted sandgrouse	<i>Pterocles indicus</i>	R	U
<u>Psittaciformes</u>			
Psittacidae			
Rose ringed parakeet	<i>Psittacula krameri</i>	R	C
Plum headed parakeet	<i>Psittacula cyanocephala</i>	R	C
Alexandrine parakeet	<i>Psittacula eupatria</i>	R	U
<u>Cuculiformes</u>			
Cuculidae			
Indian cuckoo	<i>Cuculus micropterus</i>	R	O
Asian koel	<i>Eudynamys scolopaceus</i>	R	C
Common hawk cuckoo	<i>Hierococcyx varius</i>	R	C
Southern coucal	<i>Centropus sinensis</i>	R	C
Jacobin cuckoo	<i>Clamator jacobinus</i>	BM	U
<u>Caprimulgiformes</u>			
Caprimulgidae			
Indian nightjar	<i>Caprimulgus asiaticus</i>	R	C
Jungle nightjar	<i>Caprimulgus indicus</i>	R	U
Strigidae			
Spotted owl	<i>Athene brama</i>	R	C
Indian scops owl	<i>Otus bakkamoena</i>	R	U
Eurasian eagle owl	<i>Bubo bubo</i>	R	U
Tytonidae			
Barn owl	<i>Tyto alba</i>	R	C
<u>Apodiformes</u>			
Apodidae			
Little swift	<i>Apus affinis</i>	R	C
Asian palm swift	<i>Cypsiurus balasiensis</i>	R	C
Crested tree swift	<i>Hemiprocne coronate</i>	R	U
<u>Coraciiformes</u>			
Alcedinidae			
Common kingfisher	<i>Alcedo atthis</i>	R	C
White throated kingfisher	<i>Halcyon smyrnensis</i>	R	C
Pied kingfisher	<i>Ceryle rudis</i>	R	U
Coraciidae			
Indian roller	<i>Coracias benghalensis</i>	R	C

Meropidae Green bee eater	<i>Merops orientalis</i>	R	C
<u>Bucerotiformes</u>			
Bucerotidae Indian grey hornbill	<i>Ocyrceros birostris</i>	R	C
Upupidae Common hoopoe	<i>Upupa epops</i>	R	C
<u>Piciformes</u>			
Megalaimidae Copper smith barbet	<i>Megalaima zeylanica</i>	R	C
Picidae Black rumped flameback Yellow crowned woodpecker	<i>Dinopium benghalense</i> <i>Dendrocopos mahrattensis</i>	R R	C U
<u>Passeriformes</u>			
Alaudidae Indian bush lark Ashy crowned sparrow lark Sykes's lark Rufous tailed lark Oriental skylark	<i>Mirafra erythroptera</i> <i>Eremopterix griseus</i> <i>Galerida deva</i> <i>Ammomanes phoenicura</i> <i>Alauda gulgula</i>	R R R R R	C C C C C
Hirundinidae Dusky crag martin Barn swallow Red rumped swallow Wire tailed swallow Streak throated swallow	<i>Ptyonoprogne concolor</i> <i>Hirundo rustica</i> <i>Cecropis daurica</i> <i>Hirundo smithii</i> <i>Petrochelidon fluvicola</i>	R WM R R R	C U U U U
Dicruridae Black drongo White belied drongo Ashy drongo Greater racket tailed drongo	<i>Dicrurus macrocercus</i> <i>Dicrurus caerulescens</i> <i>Dicrurus leucophaeus</i> <i>Dicrurus paradiseus</i>	R R RM R	C U U O
Tephrodornithidae Common wood shrike	<i>Tephrodornis pondicerianus</i>	R	C
Laniidae Long tailed shrike Bay backed shrike Southern grey shrike	<i>Lanius schach</i> <i>Lanius vittatus</i> <i>Lanius meridionalis</i>	R R R	C C C
Sturnidae Brahminy starling Asian pied starling Rosy starling	<i>Sturnia pagodarum</i> <i>Gracupica contra</i> <i>Pastor roseus</i>	R RM PM	C C C

Chestnut tailed starling	<i>Sturnia malabarica</i>	RM	O
Common myna	<i>Acridotheres tristis</i>	R	C
Corvidae			
Rufous treepie	<i>Dendrocitta vagabunda</i>	R	C
House crow	<i>Corvus splendens</i>	R	C
Jungle crow	<i>Corvus macrorhynchos</i>	R	U
Oriolidae			
Indian golden oriole	<i>Oriolus oriolus</i>	R	C
Irenidae			
Common iora	<i>Aegithina tiphia</i>	R	C
Jerdon's leafbird	<i>Chloropsis jerdoni</i>	R	U
Pycnonotidae			
Red vented bulbul	<i>Pycnonotus cafer</i>	R	C
Timaliidae			
Common babbler	<i>Turdoides caudata</i>	R	C
Jungle babbler	<i>Turdoides malcolmi</i>	R	C
Large grey babbler	<i>Turdoides striata</i>	R	C
Yellow eye babbler	<i>Chrysomma sinense</i>	R	C
Campephagidae			
Small minivet	<i>Pericrocotus cinnamomeus</i>	R	C
Muscicapidae			
Red breasted flycatcher	<i>Ficedula parva</i>	WM	C
Tickells blue flycatcher			
Verditer flycatcher	<i>Cyornis tickelliae</i>	R	U
Asian brown flycatcher	<i>Eumyias thalassinus</i>	WM	U
Indian robin	<i>Muscicapa dauurica</i>	RM	C
Oriental magpie robin	<i>Saxicoloides fulicatus</i>	R	C
Black red start	<i>Copsychus saularis</i>	R	C
Pied bush chat	<i>Phoenicurus ochruros</i>	RM	C
Common stone chat	<i>Saxicola caprata</i>	R	C
Siberian stone chat	<i>Saxicola torquatus</i>	R	C
	<i>Saxicola maurus</i>	WM	O
Monarchidae			
Asian paradise flycatcher	<i>Terpsiphone paradise</i>	R	C
Rhipiduridae			
White browed fantail	<i>Rhipidura aureola</i>	R	C
Cisticolidae			
Ashy prinia	<i>Prinia socialis</i>	R	C
Plain prinia	<i>Prinia inornata</i>	R	C
Jungle prinia	<i>Prinia sylvatica</i>	R	C
Common tailor bird	<i>Orthotomus sutorius</i>	R	C
Zitting cisticola	<i>Cisticola juncidis</i>	R	C

Sylviidae Lesser white throat	<i>Sylvia curruca</i>	WM	C
Phylloscopidae Common chiffchaff	<i>Phylloscopus collybita</i>	WM	C
Turdidae Orange headed thrush	<i>Geokichla citrine</i>	R	U
Paridae Cinereous tit Indian yellow tit	<i>Parus major</i> <i>Parus xanthogenys</i>	R R	U U
Motacillidae Grey wagtail Yellow wagtail Citrine wagtail White browed wagtail White wagtail Paddy field pipit Tree pipit	<i>Motacilla cinerea</i> <i>Motacilla flava</i> <i>Motacilla citreola</i> <i>Motacilla maderaspatensis</i> <i>Motacilla alba</i> <i>Anthus rufulus</i> <i>Anthus trivialis</i>	WM WM WM R WM R RM	C C C C C C C
Zosteropidae Oriental white eye	<i>Zosterops palpebrosus</i>	R	C
Nectariniidae Purple sunbird Purple rumped sunbird	<i>Cinnyris asiaticus</i> <i>Leptocoma zeylonica</i>	R R	C C
Passeridae house sparrow chestnut shoulder petronia	<i>Passer domesticus</i> <i>Gymnoris xanthocollis</i>	R R	C C
Ploceidae Baya weaver	<i>Ploceus philippinus</i>	R	C
Estrildidae Indian silverbill Red avadavat White rumped munia Scaly breasted munia Black headed munia	<i>Euodice malabarica</i> <i>Amandava amandava</i> <i>Lonchura striata</i> <i>Lonchura punctulata</i> <i>Lonchura malacca</i>	R R R R R	C C U U U
Emberizidae Black headed bunting	<i>Emberiza melanocephala</i>	WM	C

Abbreviation used in the Table: -

Status :- R- Resident, RM- Resident Migrant, WM- Winter Migrant, BM- Breeding Migrant and PM- Passage Migrant.

Abundance: - C- Common, U- Uncommon, O- Occasional, L- Rare

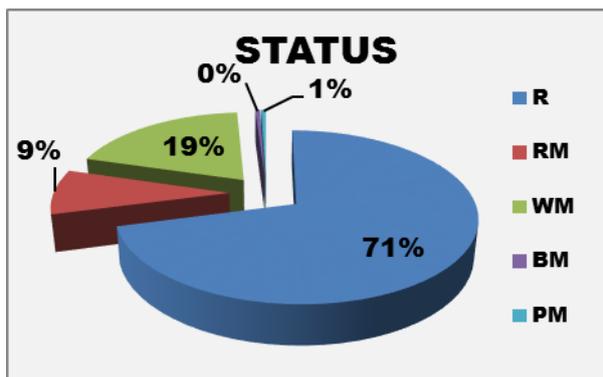


Fig. 2 : showing the status

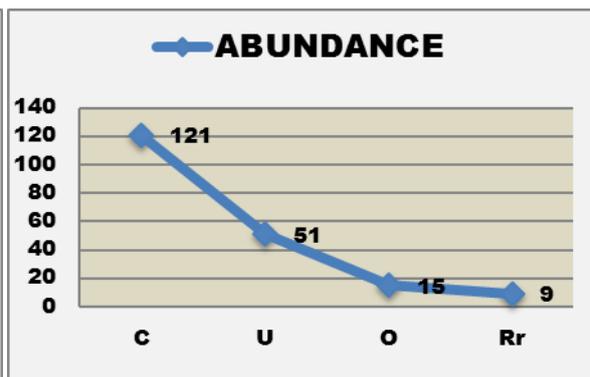


Fig. 3: Showing abundance

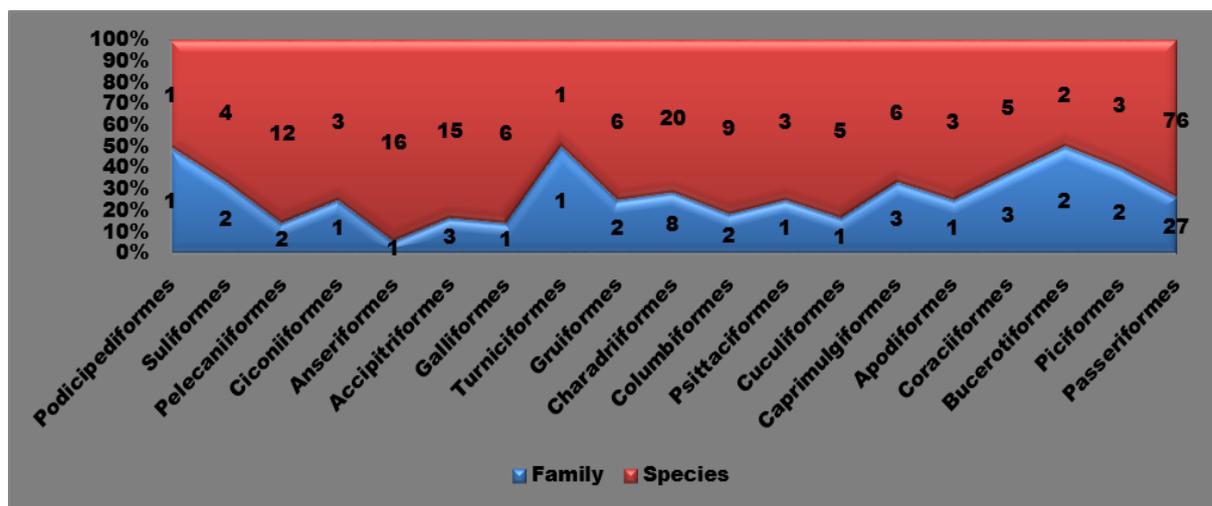


Fig. 4 : Showing percentage species per family

It was seen that Indian Silverbill found into a flocks in winter. The Rosy Starling was found after winter in flocks. House Sparrow was also found in small flocks throughout year. However Painted Stork, Common Coot, Red Crested Pochard, Northern Shoveler, Northern Pintail, Spot billed Duck, Lesser whistling Duck, Rudy Shelduck, were found in flocks during winter. Some surprisingly birds like bar headed Goose, Comb Duck, Jungle Owlet, Pallid Harrier; White eye Buzzard, Common Crane and Demoiselle Crane was also sighted at dam area. Some important and rare sighting were Greylag Goose, Osprey, Grey headed fish Eagle, Eurasian Thick-Knee and Indian Skimmer.

Conflicts of interest: The authors stated that no conflicts of interest.

Acknowledgment

Authors are thankful to Dr. Sachin Wazalwar Assistant Professor, Dept. Of Applied chemistry, Rajiv Gandhi college of Engineering, Research & Technology, Chandrapur In his continuous inspiration and support. Also thankful to Krishna Khan & Sanket Kolhe for their valuable support to us. Sincerely thankful to the birder friends of Chandrapur Vicky Petkar, Wandeeep Rode, Nikhil Zade, Swapnil Karekar, Prasad Chatte, Chetan Saw and Shailesh Upre.

REFERENCES

Ali S (2012) The Book of Indian Birds. 14 Edn., Bombay Nat. Hist. Soc. Oxford University Press, Mumbai.

Awan MN, Awan MS, Ahmed KB, Khan AA and Dar NI (2004) A preliminary study on distribution of avian fauna of Muzaffarabd - Azad Jammu and Kashmir, Pakistan. *Int. J. Agri. and Biol.*, 6, 300- 302.

Balkhande JV, Bhowate CS and Kulkarni AN (2012) Check list of birds of river Godavari, Dhargar Takli near Purna, Dist. Parbhani Maharashtra. *Bion. Front.*, 5, 266-268.

- Bhat PI and Cristopher SS and Hosetti BB (2009) Avifaunal diversity of Anekere wetland, Karkal, Udupi district, Karnataka, India. *J. Environ. Biol.*, 30, 1059-1062.
- Chavhan PR and Dhamani AA (2014) Avian diversity in and around Chaprala wild life sanctuary, District- Gadchiroli, Maharashtra, India. *International Journal of Fauna and Biological Studies*; 1 (6): 90-95.
- Chilke AM (2012) Avian Diversity in and around Bamanwada Lake of Rajura, District Chandrapur (Maharashtra). *Annals of Biological Research*, 3 (4):2014-2018.
- Harney NV (2015) Avifaunal Diversity of Junona Lake near Chandrapur (MS), India. Vol 3, No. 1.
- Harney NV, Dhamani AA, Andrew RJ (2011) Studies on Avifaunal Diversity of Three water bodies near Bhadravati , district Chandrapur(MS). Volume: I, Issue: VI.
- Harney NV (2014) Avifaunal diversity of Ghotnimbala Lake near Bhadravati, Chandrapur, Maharashtra, India. *Int. J. of Life Sciences*, Vol. 2(1): 79-83.
- Harney NV and Bhute KB (2014) Diversity of Avifauna in and around Chalbardi (Rai) lake near Bhadravati, district Chandrapur(M.S.), *Journal of Global Biosciences* ISSN 2320-1355 Vol. 3(2), , pp. 399-405.
- Harney NV (2014) Status and Diversity of Avifauna in Dudhala Lake, Bhadravati, Distt. Chandrapur (MS), India. Vol 2, No 3.
- Kakde VR (2012) A Report on Avifaunal Diversity at and Around Buldana Town, District Buldana (M S). *International Interdisciplinary Research Journal* ISSN2249-9598, Volume-II, Issue-I.
- Kasambe R and Sani Tarique (2009) Avifauna in and around Nagpur city of Maharashtra; an annotated, contemporary checklist. *Newsletter for birdwatchers*. 49 (3):35-40.
- Kulkarni AN, Kanwate VS and Deshpande VD (2005) Birds in and around Nanded City, Maharashtra. *Zoos' Print J.*, 20, 2076-2078.
- Narayanan SP, Thomas AP and Sreekumar B (2011) Ornithofauna and its conservation in the Kuttanad wetlands, southern portion of Vembanad-Kole Ramsar site, India. *J. Thret. Taxa*, 3, 1663-1676.
- Narwade S and Fartade MM (2011) Birds of Osmanabad district, Maharashtra. India, *Thret. Taxa*, 3, 1567-1576.
- Mistch WJ and Gosselink (2000) *Wetlands*. John Willey & Sons Inc, United States of America, P. 356.
- Pawar Santosh and Wanjari Amar (2013) Avian Diversity and Seasonal Abundance of Muchi Lake Wetland Near Pandhakawada, Dist. Yavatmal (M.S.) India. (IJSR) ISSN: 2319-7064.
- Wadatkar JS and Kasambe R (2002) Checklist of birds from Pohara-Malkhed reserve forest, Dist. Amravati, Maharashtra. *Zoos' Print J.*, 17, 807-811.