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Diversity of birds at ratnagiri sub-Campus, University of Mumbai, an exploratory survey

Sonali Mestry, Harshada Mestry, Sharwari Panchal, Aarti Damle*
Department of Zoology, University of Mumbai Ratnagiri Sub-Campus, Ratnagiri, Maharashtra, India

Abstract
A laterite plateau is distributed throughout the world with areas of Southeast Asia and Africa. Laterite plateau is frequently found in tropical areas with monsoon weather, where strong rock weathering results in formation of laterite. Plateaus are covered by thin layer of soil which is rich in iron and aluminum oxides. The distinct chemical and physical characteristics of lateritic soils have allowed a variety of plants to evolve to flourish, adding to the total diversity of flora. A variety of animal species find homes and food sources among the flora that is supported by laterite soils. Because various species adapt to the unique environment of laterite locations, this enhances faunal variety. The current study was carried out in Ratnagiri Sub-Campus, University of Mumbai at MIDC Mirjole, Ratnagiri. The college campus is surrounded by the laterite plateau. During six years, from 2016 to 2022, total 45 bird species from 35 families were identified. The birds were observed, photographed, and identified with the help of binoculars, camera, and field guide respectively. The current research study offers a baseline count and documentation of the bird species found in the Ratnagiri Sub-Campus.

Keywords: Laterite plateau, avifaunal diversity, habitat, college campus

Introduction

Birds exhibit remarkable diversity in terms of species, behaviors, and adaptations. Different ecological niches are acquired by birds. The variety of diets, habitats, and migratory patterns exhibited by many species highlight the adaptability and durability of bird life. (Hung-MingTu, 2020) [2] (Sonali Mestry, 2021) [11] In addition to being fascinating, this diversity is essential to preserving the functionality and balance of ecosystems.

The plateaus are often seen as "waste lands" because of their lack of forest cover or woody species, but in actuality, they are landscape units with significant ecological significance and biological value that lack vegetation in remote sensing photos. (Sreejith KA, 2016) [12]. Although Laterite plateaus frequently contain different vegetation and microclimates, attracting bird species that are adapted to such environments. Birds may use the various floras of laterite plateaus to find nesting locations, food supplies, and shelter, adding to local biodiversity. Understanding and protecting these habitats is critical for the survival of bird populations in these places. Birds contribute significantly to ecological balance by managing insect populations, pollinating plants, and distributing seeds. (DANIEL G. WENNY, January 2011) [1] They help to maintain biodiversity and serve as markers of environmental health. Birds are also culturally significant and provide recreational enjoyment through bird watching.

Due to a variety of factors, such as the lack of forest cover on plateaus that give the impression of barren terrain, they are frequently seen as wastelands even though in reality they are landscape units with high biodiversity value and ecological significance. (Prejith Mp, February 2019) [8].

Ratnagiri Sub-Campus is surrounded by laterite plateau, which shows hot and humid climate during summer, heavy rainfall during monsoon and pleasant winters. Monsoons transform the lateritic plateau into tiny grassland with herbs and grasses. During the monsoon season, crops such as rice, ragi, sesame, and groundnut are grown. Harvested fields provide a suitable environment for pipits and larks. (Manasi K, 2018) [5] Alterations in temperature and seasons influence the distribution and behavior of bird species. Thus present study aims to document baseline data for diversity of birds in pre-monsoon, monsoon and post monsoon season.

Materials and methods

The fieldwork was conducted from July 2016 to April 2023 to document bird diversity of Ratnagiri Sub-Campus, University of Mumbai. The visual encounter survey, random sampling, line transect, method were used. The observations were carried out with the help of 8 × 40 binocular. Pictures were taken with the help of by Coolpix B600 and Cannon EOS M50 digital cameras. The documented data is used to understand the feeding behavior and seasonal diversity of birds found in the campus of Ratnagiri Sub-Campus, University of Mumbai. For seasonal analysis months are classified as Pre Monsoon (February to May), Monsoon (June to September), Post Monsoon (October to January).

Study area

Ratnagiri Sub-Campus (17.01267312692008, 73.3355630643403**)** is an administrative and academic centre of University of Mumbai located at P- 61 M.I.D.C, Kuwarbav Mirjole road, Ratnagiri. The laterite plateau encircles Ratnagiri Sub-Campus on one side, while Finolex College of Engineering and Industries such as Gadre Marine occupy the other. Seasonal variations affect the plateau's appearance. It seems lush green during the monsoon season and turns golden post monsoon. The campus is covered with a variety of floral species, including tiny trees, climbers, bushes, potted plants, and grasses.

Methods

The research was carried out at the college campus between 2016 and 2023. The visual encounter survey method was

applied to prepare checklist of birds. Observations of the birds were conducted from the campus terrace and corridors of building. Additionally, observations were made by using 8 × 40 binocular while on a regular stroll through the plateau area. Photographs were taken with the help of Digital cameras Coolpix B600 and Cannon EOS M50.and names were noted. During the investigation, no specimens were sampled or injured. The birds were identified with the help of Field guides and Identification keys. (Richard Grimmett, 2014) [10] (Kasambe, 100 Common Birds in India, 2020) [4] (Kasambe, Standard Marathi Names of Birds found in Maharashtra, 2016) [3] For reference, all of the photo-documented data from the study period is provided as composites in plates.

Fig 1: Map of Ratnagiri Sub-Campus University of Mumbai

Results and discussion

A survey of the avifauna is a valuable tool for learning about applied and basic ecology as well as for determining priority areas for conservation (Padma M, 2016) [7]. A total of 48 different bird species from 28 different families have been recorded at the Ratnagiri Sub-Campus of the University of Mumbai for the first time. Out of 48 species 5 species belongs to family Accipitridae. 4 species belong to family Sturnidae, 3 species from Muscicapidae, 2 species belong to cuculidae, Oriolidae, Pycnonotidae, Columbidae, ardeidae, Coraciidae, Alcedinidae. While Family Upupidae, Rallidae, Monarchidae, Strigidae, Apodidae, Leiothrichida, Anatidae, Tytonidae, Hirundinidae, Meropidae, Alacididae, Cisticolidae, Ciconiidae, Aegithinidae, Passeridae, Laniidae, Dicuridae, Custicolidae, Charadnidae, Nectariniidae, Dicruridae, Estrildidae has only 1 species each. According to (Puja S, 18july 2022) [9] no records of critically threatened or endangered species were made throughout the study period. Similarly no data for threatened or endangered species were found in the current investigation.

As the laterite plateau of Ratnagiri Sub-Campus, University of Mumbai is blessed with different kind of vegetation of grasses, herbs, shrubs etc. It creates a beautiful habitat for several insects, birds, amphibians and reptiles. Availability of food resources is abundant for both frugivorous and carnivorous birds. During the study Birds' dietary habits were also noticed. The majority of birds were insectivorous, granivorous, and omnivorous.

(Minal D, 2012) [6] reported that birds like oriole, Barbet, Plum headed Parakeet, house crow, Indian treepie, Asian Koel were observed feeding on the fruits of *F. benghalensis*. In the current study Birds like golden oriole, Asian koel, Chestnut tail starling, Oriental white-eye, Jungle myna, Rosy starling, Common Myna prefer small fruits of Indian charcoal tree (*Trema orientale*). Whereas the birds like drongo, kingfisher, black kite, Bramhini kite prefer carnivorous diet. Competition between species seeking same kind of food can occasionally be seen (For example, Black Drongo and Indian Roller).

During current study period we recorded a good diversity of birds at Ratnagiri Sub-Campus, University of Mumbai thus we can conclude that the University Sub-Campus provides an abundance of habitat and food sources for them. The current study demonstrates the potential of the University of Mumbai's Ratnagiri Sub-Campus as a less-explored diversified habitat for flora and fauna. To create effective conservation methods, further scientific research on various biotic factors pertaining to all other faunal and floral species found in Sub-Campus environments can be beneficial.

Conclusion

The diversity of birds inhabiting in the Ratnagiri Sub campus is being documented for the first time by this current study. Occurrence and coexistence of bird community in the study areas were also largely dependent on availability of food resources such as flora, Insect abundance and water resource in their habitats. Even though plateaus are referred as waste land, they create a unique habitat for flora as well as fauna and hence further investigation and conservation efforts are necessary.

Table 1: Checklist of Ratnagiri Sub-Campus area

Sr. No	Common name	Scientific name	Family	Status	Occurance	Feeding habits
1	Scaly breasted munia	*Lonchura punctulata*	Estrildidae	LC	O	OM
2	Black hooded oriole	*Oriolus xanthornus*	Oriolidae	LC	C	I
3	Golden oriole	*Oriolus oriolus*	Oriolidae	LC	C	I
4	Asian koel	*Eudynamys scolopacea*	Cuculidae	LC	VC	F

5	Jungle myna	*Acridotheres fuscus*	Sturnidae	LC	C	I
6	Eurasian hoopie	*Upupa epops*	Upupidae	LC	M	I
7	White breasted waterhen	*Amauronis phoenicurcus*	Rallidae	LC	O	OM
8	Common myna	*Acridotheres tristis*	Sturnidae	LC	C	I
9	Red vented bulbul	*Pycnonotus cafer*	Pycnonotidae	LC	VC	I
10	Indian robin	*Saxicoloides fulicatus*	Muscicapidae	LC	VC	I
11	Red whiskered bulbul	*Pycnonotus jocosus*	Pycnonotidae	LC	VC	I
12	Oriental magpie robin	*Copsychus saularis*	Pycnonotidae	LC	VC	I
13	Spotted dove	*Streptopelia sinensis*	Columbidae	LC	VC	G
14	Common barn owl	*Tyto alba*	Tytonidae	LC	C	CV
15	Red rumped swallow	*Cecropis daurica*	Hirundinidae	LC	C	I
16	Blue rock pigeon	*Culumba livia*	Columbidae	LC	VC	G
17	Green bee eater	*Merops orientalis*	Meropidae	LC	VC	I
18	Black shouldered kite	*Elanus axallaris*	Accipitridae	LC	C	CV
19	Bramhini kite	*Haliastur indus*	Accipitridae	LC	VC	CV
20	Crested lark	*Galerida cristata*	Alacididae	LC	C	I
21	Plain prinia	*Prinia inornata*	Cisticolidae	LC	C	I
22	Pond heron	*Areola grayii*	Ardeidae	LC	O	CV
23	House sparrow	*Passer domesticus*	Passeridae	LC	VC	G
24	Jungle crow	*Carvus culminatus*	Coraciidae	LC	VC	OM
25	House crow	*Carves spledens*	Accipitridae	LC	VC	OM
26	Long tailed shrike	*Lanius schach*	Laniidae	LC	C	CV
27	Black drongo	*Dicrurus macrocercus*	Dicruridae	LC	C	I
28	Common tailor bird	*Orthotomus sutorius*	Custicolidae	LC	C	I
29	Red wattled lapwing	*Vanellus indicus*	Charadnidae	LC	VC	I
30	White throated kingfisher	*Halcyon smyrnensis*	Alcedinidae	LC	C	CV
31	Purple sunbird	*Cinnyris asiaticus*	Nectariniidae	LC	C	N
32	Shikra	*Accipiter badius*	Accipitridae	LC	O	CV
33	Black kite	*Milvus migrans*	Accipitridae	LC	C	CV
34	Indian roller	*Coracias beghalensis*	Coraciidae	LC	M	I
35	Cattle egret	*Bubulcus ibis*	Ardeidae	LC	S	OM
36	Indian paradise flycatcher	*Terpsiphone paradisi*	Monarchidae	LC	R	I
37	Spotted owlet	*Athene brama*	Strigidae	LC	R	CV
38	Crow phesant	*Centrous sinensis*	Cuculidae	LC	C	I
39	Common kingfisher	*Alcedo atthis*	Alcedininae	LC	C	CV
40	House swift	*Apus nipalensis*	Apodidae	LC	C	I
41	Jungle babbler	*Argya striata*	Leiothrichidae	LC	C	OM
42	Lesser whisteling duck	*Dendrocygna javanica*	Anatidae	LC	M	OM
43	Black redstart	*Phoenicurus ochruros*	Muscicapidae	LC	C	OM
44	Open bill stork	*Anastomus oscitans*	Ciconiidae	LC	R	CV
45	Common iora	*Aegithina tiphia*	Aegithinidae	LC	C	I
46	Rosy starling	*Pastor roseus*	Sturnidae	LC	C	OM
47	Chestnut tail starling	*Sturnia malabarica*	Sturnidae	LC	C	F
48	Tickell's blue flycatcher	*Cyornis tickelliae*	Muscicapidae	LC	C	I

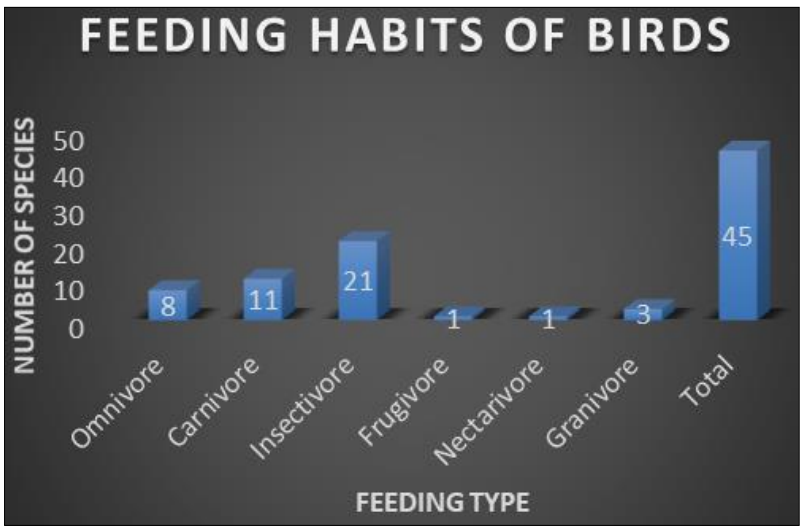

Fig 2


Spotted Owlet


Red Vented Bulbul Chick


Pipit


Long Tailed Shrike


Indian Robin


Oriental Whiteeye


Black Drongo


Common Tailor Bird


Asian Koel

Plate 1


Indian Robin


Siberian Stonechat


Blacke Red Start


Chestnut Tailed Starling


White Throated Kingfisher


Shikra


Black Shouldred Kite


Golden Oriole


Rosy Starling

Plate 2

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Abbreviations

C- Common
VC- Very Common
M- Migratory
O – Occasional migrant
G - granivorous
I - Insectivorous
CV - Carnivorous
F - Frugivorous
Om – Omnivorous

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