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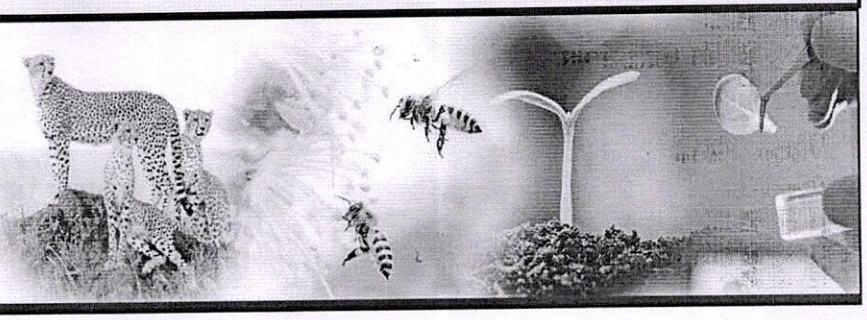

A STUDY ON THE FAUNAL DIVERSITY OF SHRI SHIVAJI COLLEGE CAMPUS, CHIKHLI, DIST. BULDANA (M.S.) INDIA.

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ABSTRACT

Faunal diversity is an indicator of soil quality. Estimating the population density of an animal species in an area is fundamental to understanding its status and demography and planning for its management and conservation. This study attempt to document the present faunal diversity of the Shri Shivaji College campus in Chikhli, Dist. Buldana from January 2020 to December2020.During this study period, we have investigated four vertebrate classes(Mammalia, Aves, Reptilia, and Amphibia,) and three invertebrate classes (Mollusca, Arthropoda, and Annelida), near the 18 acres campus college. Our effort resulted in the documentation of 06Mammals (06 families), 05Reptile (5 families), 21Aves (16 families), 03Amphibia (3 families), 01 Mollusca (01 families), 01 Annelida (01 families), and 16Arthropoda (13 families) species. A decreasing trend in terms of species richness was observed for most faunal groups over years caused primarily due to habitat degradation as well as due to human activities, such as land-use changes, pollution, and climate change. In this study, we have attempted to document the present faunal diversity of the college campus.

KEYWORDS: Faunal Diversity, College Campus, Chikhli Region.

INTRODUCTION

Shri Shivaji College campus is spread over around 18 acres in the center of Chikhli Taluka. The college is located in the city but it has various faunal and floral diversity and due to that, we have presented the document on the faunal diversity of the college campus. It is now, a well-established fact that biodiversity **(Savard *et al.* 2000)** is being decreased on a global scale due to various anthropogenic activities **(Magurran 2004; Pereira *et al.* 2010).**

Criteria such as species richness, representation, and rarity form an important component in assigning biodiversity value to terrestrial site which in turn provides a scientifically defensible framework for conservation **(Regan *et al.*2007)**.Due to the increasing urbanization or modernization is one of the most important key reasons for decreasing in biodiversity in the form of alteration of habitats and fragmentation of natural vegetation **(Tratalos *et al.* 2007)**. Biodiversity data is important for conservation **(Gardner *et al.* 2008)** and due to that, it is essential to understand the existing diversity. Chikhli Taluka is at the boundary of Marathwada and Vidarbha. They have rich in biodiversity, the campuses of which house significant biodiversity. Several studies focusing on a diversity of specific taxa in and around the city have been conducted to date but nobody focuses on the diversity of college campuses. A broad city-level assessment **(Dixit *et al.* 2000-01)** does not provide adequate locality-specific details which could be useful for undertaking regional conservation measures. Fragmentary studies on some taxa are also available from one such educational institute: The Shri Shivaji Science &Arts College Chikhli campus, but a unified and updated faunal diversity report of the campus was not available to date. Hence, we undertook the task of assessing and reviewing the faunal diversity of the Shri Shivaji Science & Arts College Chikhli campus. We aimed to evaluate the present and probable species richness of the various taxa from a college campus.

MATERIALS AND METHODS

The Shri Shivaji Science and Arts College Chikhli, with its 18-acre campus, are located centrally in the Chikhli city MH SH 176, Gandhi Nagar, Chikhli, Maharashtra 443201 India. (20° 20' 56.7528" N; 76° 15' 55.0404" E).The campus supports a rich diversity of plants including several rare and notable exotic as well as native species.

Both direct and indirect methods were employed to understand the diversity of selected taxa (Mammalia, Aves, Reptilia, Mollusca, Arthropoda, Annelida, and Amphibia) within the campus **(Fig. 1 & 2).** Indirect methods included extensive literature surveys along with contacting selected students and teachers of the college who were/are involved in these research activities. In general, for all taxa that have been actively assessed, the authors carried out intensive surveys as a team during regular intervals per month from January 2020 to December2020. The surveys were carried out opportunistically but covered all the seasons and habitats. From January 2020 to December 2020. During some of these fieldwork sessions, experts of respective taxa (acknowledged) were also invited to confirm the identification details of taxa-specific methodology, relevant literature review, and the field guides used for identification are provided in the respective sections.

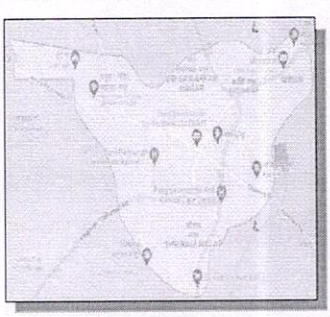

Fig 1. Map of Chikhli

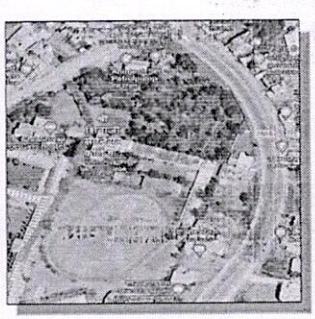

Fig 2. Map of College

RESULTS

Within the four vertebrate taxa examined for diversity, Aves(Table 1& Fig. 3) showed maximum richness followed by mammals (Table 2& Fig. 3) and reptiles (Table 3& Fig. 3), and lastly, amphibians (Table 4& Fig. 3) showed minimum diversity and within three invertebrates taxa, the Arthropoda (Table 5& Fig. 3)showed significant diversity followed by Mollusca (Table 6& Fig. 3) and Annelida (Table 7& Fig. 3).Taxa-specific results are discussed in the respective sections. It is clear from the literature survey that relatively more literature is available about avifauna on the campus as compared to other taxa.

Diversity of vertebrate taxa:

In our study, we find out there are four vertebrate taxa such as Mammalia, Aves, Reptilia, and Amphibia. Of these four different vertebrate taxa the Aves showed maximum species diversity than the other taxa such as Mammalia, Reptilia, and Amphibia as well as Mammalia is in the second position in species diversity and followed by Reptilia and finally the taxa Amphibia showed minimum species diversity. We find out various species diversity in vertebrate taxa such as in Aves (Indian Grey Hornbill Spotted owl, Green bee-eater, Red-Vented Bulbul, Asian Koel, House sparrow, common hawk cuckoo, House Crow, purple sunbird, Indian jungle crow, white-throated kingfisher, cattle egret, common tailorbird, ashy pirina, Indian golden oriole, spotted dove, Hariyal, Indian Pond Heron, Parrots, yellow wattled lapwing, and Red-wattled lapwing), in Mammalia (Squirrel, Dog, Pig, Mouse, Monkey, and Bats), in Reptilia (Chameleon, Common garden Calottes, Wall Lizard, Scorpions, and Snake) and Amphibia (Frog, toads, and salamanders)

Diversity of Invertebrate taxa:

In our study, we have investigated three invertebrate taxa such as Mollusca, Arthropoda, and Annelida. Of these three different vertebrate taxa the Arthropoda showed maximum species diversity than the other taxa such as Mollusca and Annelida but the Mollusca and Annelida is a showing very little bit species diversity. We have also investigated various species diversity in invertebrate taxa such as in Arthropoda (Spider, Monarch Butterfly, Centipedes, Millipedes, Dragonflies, Gypsy moth, Grasshopper, Mantis, Wasp, Honey bee, Ants, Mosquito, Termite, Cockroach, and Beetles), in Mollusca (Snail) and Annelida (Earthworm).

DISCUSSION

The faunal diversity in the campus can be attributed to the array of habitats, both macro, and micro that are present currently. It is clear from the results that for most of the taxa, the richness overtime has declined. From our preliminary observations, we presume that activities like changing land use in form of college constructions and the removal of herbaceous and arboreal vegetation pose a great threat to the fauna. This college is one of the very few campuses in the city which has tremendous potential for sustaining diversity and hence ensuring the protection of this diversity should be given priority. Activities like

conducting field (outdoor) practical's, and regular awareness drives on the campus might also serve the cause of conservation of the campus fauna. Such urban green spaces can provide multiple ecosystem services and sometimes in peri-urban ecosystems, the species richness can be greater than the original ecosystem that has been replaced**(Dearborn & Kark 2010)**.Apart from the obvious disadvantages, urbanization and urban ecosystems can be also viewed from a different perspective: studying these ecosystems can aid in developing a more ecologically informed audience and thus eventually serving conservation by effecting conservation policies **(McKinney 2002)**.First-hand outdoor experience about biodiversity is also necessary for its protection and unfortunately, there has been little emphasis on the urban landscape **(Dearborn & Kark 2010).** Further, educational institutes that have life sciences departments can provide a hands-on practical training platform to the students by constructing a campus biodiversity database **(Dangerfield & Pik 1999)** and involve students in protecting the campus diversity **(Hongyan 2003).** Due to its manifold advantages, replicating such biodiversity studies in other institutes should be given adequate priority.

CONCLUSIONS

In this study, we have finally concluded that the various species diversity is present on the college campus. In this diversity from the vertebrate taxa, class Aves showed maximum species diversity and the lowest species diversity was shown by the class Amphibia as well as from the invertebrate taxa, Arthropoda was showed the maximum species diversity and Mollusca and Annelida were showed lowest species diversity.

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Table. 1-4 showing the diversity of Vertebrate taxa

Table 1: Checklist of Aves

Sr.No.	Family/Scientific name	Common name
	Buceritidae	
1	*Ocycerosbirostris*	Indian Grey Hornbill
	Strigidae	
2	*Strix occidentalis* (Xántus de Vésey, 1860)	Spotted owl
	Meropidae	
3	*Merops Orientalis* Latham, 1802	Green bee-eater
	Pycnonotidae	
4	*Pycnonotus cafer* (Linnaeus, 1766)	Red-Vented Bulbul
	Cuculidae	
5	*Eudynamys scolopaceus* (Linnaeus, 1758)	Asian koel
	Passeridae	
6	*Passer domesticus* (Linnaeus, 1758)	House sparrow
	Cuculidae	
7	*Hierococcyxvarius*	common hawk cuckoo
	Corvidae	
8	*Corvus splendens* Vieillot, 1817	House Crow
	Nectariniidae	
9	*Cinnyrisasiaticus*	purple sunbird
	Corvidae	
10	*Corvusculminates*	Indian jungle crow
	Alcedinidae	
11	*Halcyon smyrnensis* (Linnaeus, 1758)	white-throated kingfisher
	Ardeidae	
12	*Bubulcus ibis* (Linnaeus, 1758)	cattle egret
	Cisticolidae	
13	*Orthotomus sutorius* (Pennant, 1769)	common tailorbird
	Cisticolidae	
14	*Priniasocialis*	ashy pirina
	Oriolidae	
15	*Orioluskundoo*	Indian golden oriole
	Columbidae	
16	*Streptopelia chinensis* (Scopoli, 1786)	spotted dove
	Columbidae	
17	*Treronphoenicoptera*	Hariyal
	Ardeidae	
18	*Ardeola grayii* (Sykes, 1832)	Indian Pond Heron
	Psittacidae	
19	Psittaciformes	Parrots
	Charadriidae	
20	*Vanellusmalabaricus*	yellow wattled lapwing
	Charadriidae	
21	*Vanellus indicus* (Boddaert, 1783)	Red-wattled lapwing

Table 2: Checklist of Mammals

Sr.No.	Family/Scientific name	Common name
	Sciuridae	
1	*Sciurus carolinensis* Gmelin, 1788	Squirrel

	Canidae	
2	*Canis lupus familiaris* Linnaeus, 1758	Dog
	Suidae	
3	*Sus scrofa* Linnaeus, 1758	Pig
	Muridae	
4	*Mus musculus* Linnaeus, 1758	Mouse
	Cercopithecidae	
5	*Nasalis larvatus* (van Wurmb, 1787)	Monkey
	Microchiroptera	
6	*Chiroptera* Blumenbach, 1779	Bats

Table 3: Checklist of Reptiles

Sr.No.	Family/Scientific name	Common name
	Chamaeleonidae	
1	*Chamaeleo calyptratus* A. M. C. Duméril and A. H. A. Duméril, 1851	Chameleon
	Agamidae	
2	*Calotes versicolor* (Daudin, 1802)	Common garden Calotes
	Lacertidae	
3	*Podarcis muralis* (Laurenti, 1768)	Wall Lizard
	Scorpionoidea	
4	*Scorpiones*	Scorpions

5	*Serpentes Linnaeus, 1758*	Snake

Table 4: Checklist of Amphibia

Sr.No.	Family/Scientific name	Common name
	Ranidae	
1	*Lithobates sylvaticus* (LeConte, 1825)	Frog
	Bufonidae	
2	*BufoBufo*	Toad
	Salamandridae	
3	*Lacertasalamandra* Linnaeus, 1758	Salamander

Table. 1-3 showing the diversity of invertebrate taxa

Table 5: Checklist of Arthropoda

Sr.No.	Family/Scientific name	Common name
	Araneidae	
1	*Araneae*	Spider
	Nymphalidae	
2	*Danaus plexippus* (Linnaeus, 1758)	Monarch Butterfly
	--	
3	*Chilopoda*	Centipedes
	Spirobolida	
4	*Narceus americanus* (Palisot de Beauvois, 1817)	Millipedes
	Aeshnidae	
5	*Anisoptera Selys, 1854*	Dragonflies
	Erebidae	
6	*Lymantria dispar* (Linnaeus, 1758)	Gypsy moth

	Acrididae	
7	*Schistocerca americana* (Drury, 1773)	Grasshopper
	Mantidae	
8	*Mantis religiosa* (Linnaeus, 1758)	Mantis
	Vespidae	
9	*Polistes fuscatus*	Wasp
	Apidae	
10	*Apis mellifera* Linnaeus, 1758	Honey bee
	Formicidae	
11	*Formicidae*	Ants
	Culicidae	
12	*Aedes aegypti* (Linnaeus, 1762)	Mosquito
	Rhinotermitidae	
13	*Isoptera*	Termite
	Blattidae	
14	*Periplaneta americana* (Linnaeus, 1758)	Cockroach
	Carabidae	
15	*Coleoptera Linnaeus, 1758*	Beetles

Table 6: Checklist of Mollusca

Sr.No.	Family/Scientific name	Common name
	Subulinidae	
1	*Rumina decollata* (Linnaeus, 1758)	Snail

Table 7: Checklist of Annelida

Sr.No.	Family/Scientific name	Common name
	Lumbricidae	
1	*Lumbricus terrestris* Linnaeus, 1758	Night crawler

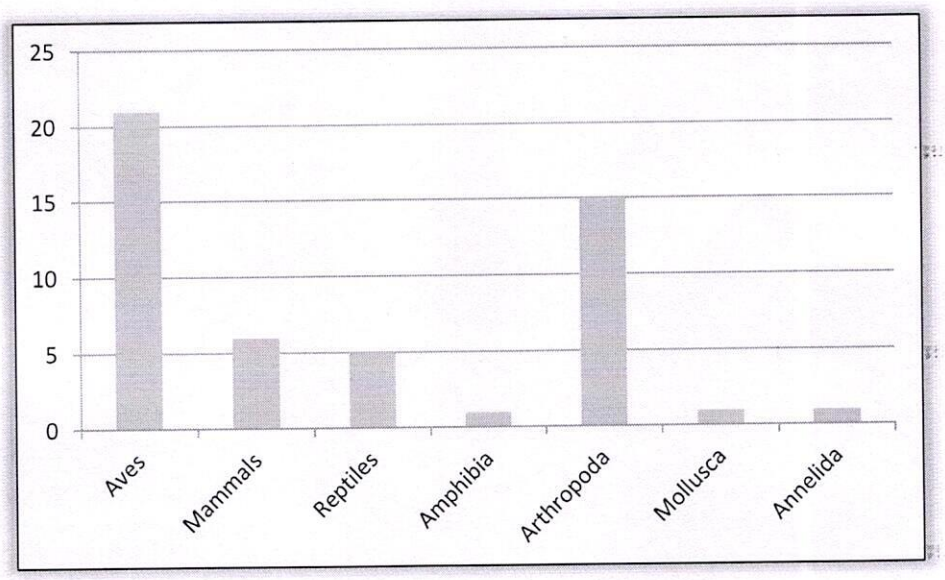

Fig3. Diversity of Vertebrate and Invertebrate Taxa