STUDIES ON FAUNAL DIVERSITY IN KUNTHAVAI NAACCHIYAR COLLEGE CAMPUS, THANJAVUR, TAMILNADU

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Abstract

College campuses, featuring diverse habitats like gardens, lawns, shrubs, and wooded zones, offer rich opportunities for studying biodiversity, ecological dynamics, and human impact on nature. Moreover, they often mirror urban ecosystems, providing key insights into the sustainable management of green spaces within urban settings to enhance biodiversity amid environmental changes. The present study aims to document the various faunal groups observed within the campus of Kunthavai Naacchiyaar Government Arts College for Women, located in Thanjavur District, Tamil Nadu, India. Over a four-month period, from September to December 2024, a total of 85 species were recorded. The study recorded 85 species across major faunal groups, including Annelida, Arthropoda, Mollusca, and Chordata. Among these, Arthropoda showed the highest species richness, with Insecta emerging as the dominant class, comprising 58 species. Faunal diversity assessments on college campuses can serve as valuable baseline data for future biodiversity monitoring and research. The findings emphasize the importance of conserving and expanding green spaces in educational institutions to foster biodiversity and provide essential habitats for various animal species.

Keyword: Campus biodiversity, invertebrates, vertebrates, green spaces, educational institution, documentation

1.INTRODUCTION

Faunal diversity, or animal diversity, refers to the range of animal species, encompassing their richness,

abundance, and ecological functions. A rich variety of fauna contributes to ecosystem health and stability by facilitating key processes such as pollination, seed dispersal, nutrient cycling, and predator-prey interactions. In recent years, interest in biodiversity research has grown significantly, driven by the increasing environmental threats posed by human activities such as habitat degradation, pollution, and climate change [1].

Although urbanization is a leading cause of biodiversity decline, urban areas can still support rich biodiversity, particularly within green spaces such as parks, gardens, and college campuses [2]. Despite the pressures of human activity, these green spaces often sustain a notable variety of species, playing an essential role in preserving ecosystem services and promoting human well-being [3].

Earlier ecological studies have examined the relationship surrounding urban areas and their between environments in terms of biodiversity conservation [4,5], demonstrating the influence of proximity to non-urban populations on urban biodiversity conservation efforts. The results indicate that well-maintained urban green spaces can sustain diverse and plentiful animal populations, even in densely developed areas. Similarly, the presence of sufficient natural vegetation, including trees and plants, is essential for maintaining high bird species diversity in urban green spaces [6].

As such, documenting local fauna like recording species, their populations, and their ecological interactions is vital for formulating effective conservation strategies. Additionally, ensuring connectivity between green spaces can promote faunal diversity by facilitating movement and distribution across urban landscapes [7].

2. STUDY AREA

Kunthavai Naacchiyaar Government Arts College for Women (Autonomous), Thanjavur, is situated at a latitude of 10.77° North and a longitude of 79.13° East. The college campus covers an area of 22.31 acres, with 25,205.27 square feet allocated to the college buildings. The remaining space consists of open areas, including a playground, greenery, and various other uses. A garden, managed by the Botany Department, lies behind the main building and is home to a variety of plant species. Details about the study area are provided in Table 1.



Study Map: Satellite Map of Kunthavai Naacchiyaar Government Arts College for Women, Thanjavur (Source: https://www.google.com/maps)

Table 1 Information of Study Area

Name of the	Kunthavai Naacchiyaar
Place	Government Arts College for
	Women
Taluk	Thanjavur
District	Thanjavur
State	Tamil Nadu
Area of the	22.31 acres
Premise	
Geographical	Latitude - 10.77° North and a
Location	Longitude of 79.13° East
Habitat	Urban
1	1

3.RESEARCH METHODOLOGY

Generally, recording all forms of life in an area is a complex task. As a result, this study focuses on documenting only the major groups of faunal diversity. Data was collected from September 2024 to December 2024 through direct observations of animals in their natural habitat. The survey involved walking along predetermined routes within the study area to systematically observe the fauna.

A Visual Encounter Survey (VES) involves field researchers walking through an area or habitat for a set period of time, systematically looking for animals. The duration of the survey is measured in person-hours of searching, allowing for comparison across different areas. The VES is an effective method for both inventory and monitoring studies. This approach was primarily used in the current study. The fauna on the campus was surveyed in various locations, with direct observations made around each building. Both aquatic and terrestrial vegetation surrounding the college were also noted. Observations were conducted during the animals' peak activity period, from 6:00 am to 8:00 am, typically lasting one to two hours. Additional observations were made at other times as needed [8]. The photographs were taken using mobile phones. The species captured in the images were identified based on their morphological traits, with some additional identification provided by the India Biodiversity Portal (IBP). For further identification of faunal diversity, relevant literature, websites, and assistance from teachers were also consulted. The study aimed only to document the names of the animals without attempting to quantify them. The animals were categorized into broad groups such as mammals, birds, reptiles, and insects.

4.RESULTS

The list of invertebrates and vertebrates is given in the Table 2 and 3. The study identifies 85 species across broad groups such as Annelida, Arthropoda, Mollusca, and Chordata. Within Chordata, species from amphibians, reptiles, birds (Aves), and mammals were found. The highest number of species were recorded in Arthropoda, followed by Aves, Annelida, and reptiles, while only one species each was observed in amphibians and mollusks. According to Table 4, 58 species were classified as invertebrates within the phylum Arthropoda, including butterflies, bees, crickets, beetles, spiders, and more.

The study highlights taxonomic diversity across 4 classes, with the Phylum Arthropoda showing the greatest frequency of occurrence in Insecta (49 species), followed by Arachnida (6 species) and Diplopoda (3 species). The Phylum Annelida was represented only by earthworms and leeches, both under the class Clitellata, while the Phylum Mollusca included just one species within the class Gastropoda. For the Phylum Chordata, the highest frequency was observed in Aves (11 species), followed by Mammalia (7 species) and Reptilia (3 species). The Phylum Amphibia contained a single species.

Sl.No.	SCIENTIFIC NAME	COMMON NAME	PHYLUM	CLASS
1.	Hirudio medicinalis	Leech	Annelida	Clitellata
2.	Pheretima posthuma	Earthworm	Annelida	Clitellata
3.	Eisenia fetida	Tiger worm	Annelida	Clitellata
4.	Lampito mauritii	Common Indian earthworm	Annelida	Clitellata
5.	Tetra ponera nigra	Ant	Arthropoda	Insecta
6.	Pieris rapae	White Butterfly	Arthropoda	Insecta
7.	Libellula depressa	Dragonfly	Arthropoda	Insecta
8.	Musca domestica	House Fly	Arthropoda	Insecta
9.	Polyommatus Iicarus	Blue Butterfly	Arthropoda	Insecta
10.	Solenopsis Iinvicta	Fire Ant	Arthropoda	Insecta
11.	Lasius niger	Black Ant	Arthropoda	Insecta
12.	Colotis aurora	Orange Butterfly	Arthropoda	Insecta
13.	Eurema hecabe	Common Grass Yellow Butterfly	Arthropoda	Insecta
14.	Pachliopta hector	Crimson Rose Swallowtail Butterfly	Arthropoda Insecta	
15.	Papilio clytia	Common Mime Swallowtail	Arthropoda	Insecta
16.	Atrophaneura hector	Crimson rose butterfly	Arthropoda	Insecta
17.	Danaus chrysippus	Plain Tiger Butterfly	Arthropoda	Insecta
18.	Leptosia nina	Wandering Psyche Butterfly	Arthropoda	Insecta
19.	Loxura atymnus	Yamfly Butterfly	Arthropoda	Insecta
20.	Erebus marcrops	Common Owl moth	Arthropoda	Insecta

Table 2: List of invertebrates in the Campus

21.	Xylocopa aestuans	white-cheeked carpenter bee	Arthropoda	Insecta	
22.	Acherontia atropos	Death Head Hawkmoth	Arthropoda	Insecta	
23.	Eupterote moth	Monkey moth	Arthropoda	Insecta	
24.	Acheta domesticus	House Cricket	Arthropoda	Insecta	
25	Mycalesis patnia	Glad-eye bushbrown	Arthropoda	Insecta	
26	Cirrochroa thais	Tamil Maravan	Arthropoda	Insecta	
27.	Papilio polytes	Common mormon	Arthropoda	Insecta	
28	Troides minos	southern birdwing	Arthropoda	Insecta	
29	Danaus chrysippus	plain tiger	Arthropoda	Insecta	
30	Cepora nerissa	Common Gull	Arthropoda	Insecta	
31	Delias eucharis	Common Jezebel Butterfly	Arthropoda	Insecta	
32	Lethe drypetis	Tamil Treebrown	Arthropoda	Insecta	
33	Orthetrum sabina	Green Marsh Hawk	Arthropoda	Insecta	
34.	Pantala flavescens	wandering glider	Arthropoda	Insecta	
35.	Crocothemis servilia	Scarlet Skimmer	Arthropoda	Insecta	
36	Apis cerana indica	Indian hive bee	Arthropoda	Insecta	
37.	Apis florea	Little bee	Arthropoda	Insecta	
38.	Anopheles culicifacies	Mosquito	Arthropoda	Insecta	
39.	Culex quinquefasciatus	House Mosquito	Arthropoda	Insecta	
40.	Ropalidia marginata	Wasp	Arthropoda	Insecta	
41.	Oryctes rhinoceros	Coconut rhinoceros beetle	Arthropoda	Insecta	
42.	Anacridium Aegyptium	Egyptian grasshopper	Arthropoda	Insecta	
43.	Acrida Cinerea	Oriental longheaded grasshopper	Arthropoda	Insecta	
44.	Acheta domesticus	House Cricket	Arthropoda	Insecta	
45	Conocephalus longipennis	lesser meadow katydid.	Arthropoda Insecta		
46	Amata passalis	Sandalwood defoliator	Arthropoda	Insecta	
47	Coccinella transversalis	Transverse ladybird	Arthropoda	Insecta	
48	Rhyothemis variegata	Common picture wing	Arthropoda Insecta		
49.	Oryctes rhinoceros	Coconut rhinoceros beetle	Arthropoda	Insecta	
50	Gymnopleurus gemmatus	Dung Beetle	Arthropoda	Insecta	
51	Periplaneta americana	American cockroach	Arthropoda	Insecta	
52	Coptotermes formosanus	Termite	Arthropoda	Insecta	
53	Musca domestica	House Fly	Arthropoda	Insecta	
54	Argiope pulchella	Garden cross spider	Arthropoda	Arachnida	
55	Cyrtophora citricola	Tent-web spider	Arthropoda	Arachnida	
56	Carrhotus viduus	Jumping spider	Arthropoda	Arachnida	
57	Lycosa bistriata	Wolf spider	Arthropoda	Arachnida	
58	Hersilia savignyi	Two-tailed spider	Arthropoda	Arachnida	
59	Mesobuthus tamulus	Indian red scorpion	Arthropoda	Arthropoda Arachnida	
60	Xenobolus carnifex	red-spined millipede	Arthropoda	Diplopoda	
61	Trigoniulus corallinus	common Asian millipede	Arthropoda	Diplopoda	

62	Anoplodesmus saussurii	Asian millipede	Arthropoda	Diplopoda
63	Cryptozona ligulata	Common land snail	Mollusca	Gastropoda

Table 3: List of Vertebrates in the Campus

Sl.No.	SCIENTIFIC NAME	COMMON NAME	PHYLUM	CLASS
1.	Duttaphrynus scabe	Schneider's toad	Chordata	Amphibia
2.	Calotes versicolor	Common garden lizard	Chordata	Reptilia
3.	Hemidactylus frenatus	Common house gecko	Chordata	Reptilia
4.	Ptyas mucosa	Oriental rat snake	Chordata	Reptilia
5	Corvus splendens	House crow	Chordata	Aves
6.	Acridotheres tristis	Common myna	Chordata	Aves
7.	Pavo cristatus	Indian peafowl	Chordata	Aves
8.	Passer domesticus	House sparrow	Chordata	Aves
9.	Clanga hastata	Indian Spotted Eagle	Chordata	Aves
10.	Psittacula krameri	Rose-ringed parakeet	Chordata	Aves
11.	Bubulcus ibis	Cattle egret	Chordata	Aves
12.	Spilopelia chinensis	Spotted dove	Chordata	Aves
13	Copsychus fulicatus	Indian Robin	Chordata	Aves
14.	Egretta garzetta	Little egrets	Chordata	Aves
15.	Gallus gallus domesticus	Rooster hen	Chordata	Aves
16.	Bos taurus indicus	Zebu	Chordata	Mammalia
17.	Canis lupus familiaris	Dog	Chordata	Mammalia
18.	Funambulus palmarum	Indian palm squirrel	Chordata	Mammalia
19.	Prionailurus rubiginosus	Rusty-spotted cat	Chordata	Mammalia
20	Mus musculus	House mouse	Chordata	Mammalia
21	Bandicota Bengalensis	lesser bandicoot rat	Chordata	Mammalia
22.	Pteropus giganteus	Indian flying fox	Chordata	Mammalia

 Table 4: Showing the No. of Faunal Species

SL.	INVERTEBRATE/VERTEBRAT	NO. OF
NO	E	SPECIE
		S
1.	Annelida	04
2.	Arthropoda	58
3.	Mollusca	01
4.	Amphibia	01
5.	Reptilia	03
6.	Aves	11
7.	Mammalia	07
	TOTAL	85

5.DISCUSSION

Biodiversity, or biological diversity, refers to the variety of life forms, including species richness, evenness, and the presence of unique organisms, found within different terrestrial and aquatic ecosystems in a specific area. The conservation of biological resources is vital for human wellbeing and the continued survival of our species. Faunal biodiversity documentation involves recording and identifying species at specific locations and times using techniques such as photography, sound recording, and specimen collection, forming the groundwork for conservation initiatives. Human activities remain the leading cause of biodiversity decline, causing severe ecosystem disruptions and accelerating species loss.

A total of 106 species were recorded from the campus of K.R.G.P.G. Autonomous College, Gwalior. The findings included 1 species of Earthworm (Annelida), 38 insect species (Arthropoda), 2 species of Mollusca, 1 fish species, 4 amphibian species, 6 reptile species, 48 bird species, and 6 mammal species (Chordata). The rich faunal diversity on the campus is believed to be largely due to the abundant greenery present.[9]. From Anna University campus a total of 85 species were documented between May and November 2023, spanning seven different phyla. Among these, Arthropoda exhibited the highest species abundance compared to other groups. Their observational study emphasized that the area's green cover, plant diversity, and presence of water bodies played a key role in supporting a wide range of animal species [10].

Isabella Thoburn College in Lucknow, Uttar Pradesh, recorded 56 species with most species belonging to the Phylum Arthropoda [11]. 12 species of butterflies were observed at Kongunadu College of Arts and Sciences [12]. In the present study about 16 species were recorded. Butterflies, a key group of insects, serve as indicators of ecological changes. However, ongoing urbanization worldwide is causing significant habitat loss for these insects. [13] recorded a total of 60 species across major groups such as mammals, birds, reptiles, and insects. Birds were the most diverse group, followed by mammals, reptiles, and amphibians. Among invertebrates, 17 species from the Arthropoda phylum were identified, including snails, crickets, spiders, beetles, ants, and cockroaches. At Sree Narayana College, Cherthala campus, [8], recorded around 120 different species, with insects accounting for the highest number — 96 species belonging to 55 families and 8 orders.

The faunal diversity of the Fergusson College campus in Pune from 2011 to 2014 [14], documented approximately 370 species. The butterfly population on campus showed seasonal fluctuations and preferences. The present study recorded a total number of species comparable to previous studies on college campuses. Insects from the phylum Arthropoda were more abundant than birds, likely because the campus had more herbs and shrubs than trees. The findings highlight the significance of institutional campuses as key habitats for butterflies. If plant diversity is sustained through proper landscaping and gardening, the butterfly diversity could increase on campus [12].

6.CONCLUSION

This study emphasizes the faunal diversity observed at Kunthavai Naacchiyaar Government Arts College for Women (Autonomous), Thanjavur. A total of 85 species were recorded over a span of four months, from September to December 2024, belonging to seven different phyla. Among these, Phylum Arthropoda showed the highest species richness. College campuses are vital urban green spaces that support a range of plants and animals, contributing significantly to biodiversity while offering numerous environmental and health benefits. As in previous studies, insects were the predominant group found on campus. These insects play crucial roles in ecosystem functions such as pollination, decomposition, nutrient recycling, and pest control, and serve as a food source for other animals. This study reinforces the significance of maintaining green spaces in educational institutions.

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