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Research Article

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A current and annotated inventory of the faunal diversity found on the Anna University campus in Tamil Nadu, India

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ABSTRACT
The variety of creatures that are endemic or local to a certain area and that reside there is referred to as faunal diversity. It includes platyhelminths, odonatan, reptiles (predators), hymenopteran, lepidopteran (pollinators), molluscan, avifauna and mammals. An assessment of animal variety explains the food, habitat, ecology, and population of the various species. A survey was carried out to assess the condition of the faunal diversity at Anna University in Chennai. The study's objectives were to list and define the many animal groups belongs to families, genera, and species that inhabit the region, along with information on their habitats and distribution. A total of 85 species, discovered during the course of a year, from May 2023 to November 2023, are included in the study. There were 85 species in 7 phyla. With 55 species, or 64.71% of all species, the Arthropodan has the largest species abundance of any other group. Only one of the 85 species of Platyhelminthes, the hammer-headed worm (*Diversibipalium*), was found in the vicinity of the university green garden between September and November of 2023 (Vijayan et al., 2023). The observational study found that the area's green spaces, diversity of flora, and water features contributed to its importance as a habitat for a range of animal species. In order to promote biodiversity conservation efforts and offer habitat for animal species, the study highlights the importance of maintaining or growing green spaces at educational institutions.
Keywords: Faunal diversity, Predators, Pollinators, Invasive, Endemic, Anna University.

INTRODUCTION

Fauna plays a significant role in the ecosystem as biotic components and are indicative of the health of the ecosystem. Faunal variety is a sign of better soil. Estimating the size or density of the local population and understanding the condition and demography of the species are crucial for planning the management and conservation of animal species. Rapid worldwide change is affecting biodiversity and jeopardising the essential ecological services it provides, including the expansion of exotic species, intensification of urbanisation and climate change (Vellend et al., 2017). The literature has reported declines in biodiversity, alterations to species ranges and populations, and phenological shifts in several ecosystems (Parmesan, 2006). These trends are predicted to worsen of faunal diversity in the upcoming years (Pereira et al., 2020). For this reason, conservation is crucial of faunal diversity. Faunal richness and puts into practice wildlife conservation strategies to preserve our vital ecosystem. The concept of faunal variety is multifaceted at its core; the word was coined in 1985. Thorough research is necessary for exploring variety, but it also calls for a deft assessment of how the data should be interpreted (Zhou et al., 2016).

With a 0.46 Biodiversity score on the diversity indexed, 102,718 species of fauna, and 23.39% of its land area covered by forests and trees in 2020, India is the eighth most biodiverse region in the world (Bijulal & Mini, 2022). Tamil Nadu boasts a varied range of wildlife, including 167 species of freshwater fish, 76 species of amphibians, 177 species of reptiles, 454 species of birds, and 187 species of mammals (ENVIS, 2006). A biological explanation of the fauna diversity of a given area typically includes information on the genus and species of the animals, their favoured growth or breeding behaviours, and their relationships with one another in the environment (Bretze et al., 2017). Making an organised collection or record by describing the morphology and quantity of a certain species at a given place and time is known as documentation of local fauna (Dudley, 2008). The local wildlife is referred to as fauna. The term "diversified fauna" refers to the variety of animals that inhabit that area and are indigenous to it (Dar et al., 2022). Studies of faunal diversity have recently gained significance due to the limited habitats, the increase in the number of extinction species, and the

government's commitment on animal protection (Shivanna, 2022).

The current study focuses on the inventory of several faunal groups associated with the Anna University campus in Chennai District, Tamil Nadu, India. This includes the state of conservation, endemicity, patterns of faunal distribution, and an overview of the diversity of fauna on campus.

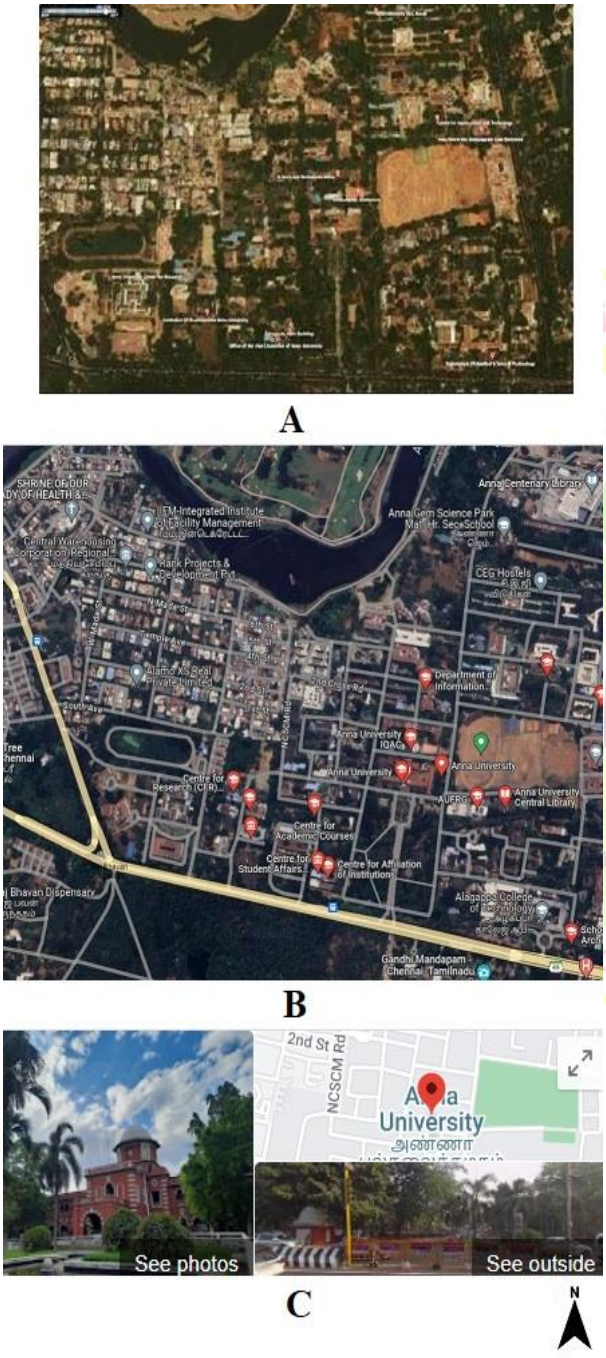

Figure 1. Study map showed were the investigation done. A) After Vardah Cyclone in 2016 (ENVIS, 2018), B) Current study site google map (Source: https://www.google.com/maps) and C) A colourful digital image of Anna University.

MATERIALS AND METHODS

Description of study area

Anna University is located in Tamil Nadu, India, and has an area of 189 acres (76.4856 hectares) Figure 1. The distance between the institution and the southern portion of Chennai is three kilometres. Ten kilometres from the closest train station, Guindy. The range of temperatures is 18–20°C for the coolest and 38–42°C for the highest. The average rainfall 140 cm or 1400 mm. This university campus covered many tremendous trees for ex: Aala maram (*Figus benghalensis*) Aththi (*Ficus racemose*), Copper pod (*Peltophorum ptrecarpum*), Illavam panju (*Ceiba pentandra*), Nettilingam (*Polyalthia longifolia*), Pulia maram (*Tamarindus indica*), Sarakonrai (*Cassia fistula*), Savukku (*Casuarina equisetifolia*), Vaembu (*Azardirachta indica*) and Yanai pudukan (*Kigelia africana*), etc. were observed.

Data collection

The data were collected between May 2023 to November 2023, Anna University campus in Chennai, Tamil Nadu. Throughout the field survey, only photographic records were used. Because fauna plays a vital role on this campus. For example, lepidoptera, which includes moths and butterflies, are groups that pollinate and have a function in plantations; reptiles, which include frogs and geckos, are predators that naturally control arthropods and are part of the food chain. Thus, throughout the entire endeavour, only photographic collection was made. The photos were taken using the 40 Mega Fixel cell phone camera (Vivo V20 SE). Identification based on previously published articles and the accessible literature.

RESULTS AND DISCUSSION

The purpose of this study was to create a baseline for knowledge of the current faunal variety at Anna University in Chennai, Tamil Nadu. The data were collected between May 2023 to November 2023. This data shows all 85 species of the seven phyla that have been recognised. A total of 85 species, discovered during the course of a year, from May 2023 to November 2023, are included in the study (Table 1-6 & Figure 2-3). In comparison with Nerlekar et al. (2016), 370 species in total were recorded on the campus of Fergusson College in Pune. A healthy degree of recorded fauna diversity is a result of long-term work. However, the city of Anna University is metropolitan area. According to the fauna, our results might be lower. There were 85 species in 7 phyla. Shukla et al. (2023) state that although an intra-campus faunal investigation was conducted in the past, only four phyla were identified. In contrast to Shukla et al., we announced record seven phyla based on our results. The majority of the groups observed were arthropodan (55 species), with platyhelminths (one species) being the lowest category (Figure 4).

With 55 species, or 64.71% of all species, the Arthropodan has the largest species abundance of any other group. Similar report was done previously (Shukla et al., 2023).

Among the 55 arthropodan species were the lepidoptera groups occupied majority of 26 species or 47.27%. Diverse insect species play different role in the terrestrial environment. Because they make up the most diverse group of creatures on Earth, insects are essential to the health of ecosystems and the global economy in many ways (Nayak et al., 2021). Nevertheless, the hymenopteran and lepidopteran orders are responsible for pollination and support of the campus's surrounding environmental plantation. Furthermore, mammals and birds aid in the flora's dissemination of living areas. There are 16 species of birds, or 18.82% more than the other categories, after the lepidoptera. Mahesh et al. (2022) reported that chordates were more common than invertebrates. On this campus, groupings of invertebrates (69.41%) predominate over those of vertebrates (30.59%).

All bird species fall within the category of least concern. It displayed a superb diversity of plants and the university interior offered a perfect habitat. However, mammalian species were threatened by anthropogenic impacts. Human activity posed a threat to the Chital (*Axis axis*) and Bonnet macaque (*Macaca radiata*) species of mammals. According to ENVIS (2018), previously reported anna university campus variety of faunal diversity was different reptile and mammals. For example, reptiles – *Dendrelaphis tristis*, *Naja naja*, *Ptyas mucosa*, *Varanus bengalensis*, *Xenochrophis piscator*; fishes - *Channa punctata* and *Rasbora dandia*; and mammals - *Antilope cervicapra*, *Canis aureus*, *Hystrix indica* and *Viverricula indica* were reported. This species was not enlisted or seen during our investigation periods. Additionally, records were kept for two species that are considered vulnerable: the frog (*Quasipaa spinosa*) and the mammal (*Macaca radiata*). Furthermore, certain invasive species were observed throughout the course of the survey. It may threat the local or native species in future for example: *Diversibipalium* sp., *Lissachatina fulica*, *Acridotheres tristis* and *Columba livia*. A variety of flora and fauna were mostly abundant in this campus. Our study report faunal diversity found at Anna University campus, Chennai district, is highlighted. It is recommended to add additional plant species and increase greenery in order to improve diversity. With focused conservation efforts, this study emphasises the need of preserving green spaces in educational institutions as they have the potential to become healthy habitats for fauna.

Figure 2. Different arthropodan species were observed in Anna University Campus, Chennai – (A) Pantropical jumping spider, (B) Parasitoid wasp, (C) Blue eyed ensign waps, (D) Paper wasp, (E) Stingless bee, (F) Tussock moth, (G) Geometrid moth, (H) T-moth, (I) Common crow, (J) Great eggfly, (K) Psyche, (L) Twilight brown, (M) Mother of pearl moth, (N) Variegated cutworm, (O) Beet webworm moth, (P) Indian bark mantis, (Q) Scarlet grenadier, (R) Narrow winged damselfly, (S) Old world twister and (T) Coneheads

Figure 3. A glimpse of some observed arthropodan, molluscan, platyhelminths, amphibian, reptiles, bird and mammalian species in Anna University Campus, Chennai – (U) Jungle centipede, (V) Giant African land snail, (W) Tropical leatherleaf, (X) Hammerhead flatworm, (Y) Chinese spiny frog, (Z) Common house gecko, (AA) Supple skinks, (AB) Jungle babbler, (AC) Chital and (AD) Bonnet macaque

Table 1. Different arthropodan groups and one platyhelminths were observed in Anna University Campus.

Scientific name	Common name	Order	Family	IUCN
Phylum: Platyhelminthes				
Diversibipalium sp.	Hammerhead flatworm	Tricladida	Geoplanidae	UN
Phylum: Arthropoda				
Cheiracanthium inclusum	Yellow sac spider	Araneae	Cheiracanthiidae	UN
Menemerus bivittatus	Gray wall jumper		Salticidae	UN
Oxyopes salticus	Lynx spider		Oxyopidae	UN
Phlegra prasanna	Jumping spider		Salticidae	UN
Plexippus paykulli	Pantropical jumping spider		Salticidae	UN
Musca vetustissima	Australian bush fly	Diptera	Muscidae	UN
Probergrothius sanguinolens	Indian red bug	Hemiptera	Pyrrhocoridae	UN
Apis dorsata	Giant honey bee	Hymenoptera	Apidae	UN
Apis indica	Indian honey bee		Apidae	UN
Apis mellifera	Western honey bee		Apidae	DD
Camponotus pennsylvanicus	Black carpenter ant		Formicidae	UN
Camponotus sericeus	Carpenter ant		Formicidae	UN
Cotesia sp.	Parasitoid wasp		Braconidae	UN
Evania appendigaster	Blue eyed ensign waps		Evaniidae	UN
Ropalidia marginata	Paper wasp		Vespidae	UN
Trigona corvina	Stingless bee		Apidae	UN
Xorides sp.	Ichneumon wasps		Ichneumonidae	UN
Acraea violae	Tawny coster	Lepidoptera	Nymphalidae	UN
Artaxa sp.	Tussock moth		Erebidae	UN
Belenois aurota	Poineer white		Pieridae	LC
Catopsilia pomona	Common emigrant		Pieridae	UN
Catopsilia pyranthe	Mottled emigrant		Pieridae	UN
Cigaritis sp.	Silverline butterfly		Lycaenidae	UN
Cirrochroa thais	Tamil yeoman		Nymphalidae	UN
Cleora sp.	Geometrid moth		Geometridae	UN
Danaus genutia	Common tiger		Nymphalidae	UN
Elymnias hypermnestra	Common palmfly		Nymphalidae	UN
Emmelina monodactyla	T-moth		Pterophoridae	UN
Euploea core	Common crow		Nymphalidae	LC
Hypolimnas bolina	Great eggfly		Nymphalidae	UN
Hypolimnas misippus	Danaid eggfly		Nymphalidae	LC
Lasiommata petropolitana	Northern wall brown		Nymphalidae	LC
Leptosia nina	Psyche		Pieridae	UN
Melanitis leda	Twilight brown		Nymphalidae	LC
Pachliopta aristolochiae	Common rose		Papilionidae	LC

Pachliopta hector	Crimson rose		Papilionidae	LC
Papilio polytes	Common mormon		Papilionidae	LC
Pareronia hippia	Indian wanderer		Pieridae	UN
Parthenos sylvia	Clipper butterfly		Nymphalidae	UN
Patania ruralis	Mother of pearl moth		Crambidae	UN
Peridroma saucia	Variegated cutworm		Noctuidae	UN
Spoladea recurvalis	Beet webworm moth		Crambidae	UN
Tirumala limniace	Blue tiger		Nymphalidae	UN
Humbertiella ceylonica	Indian bark mantis	Mantodea	Gonypetidae	UN
Crocothemis servilia	Scarlet skimmer	Odonata	Libellulidae	LC
Diplacodes trivialis	Chalky percher		Libellulidae	LC
Lathrecista asiatica	Scarlet grenadier		Libellulidae	LC
Pantala flavescens	Globe skimmer		Libellulidae	LC
Rhyothemis variegata	Common picture wing		Libellulidae	LC
Telebasis vulnerata	Narrow winged damselfly		Coenagrionidae	LC
Tholymis tillarga	Old world twister		Libellulidae	LC
Trithemis festiva	Black stream glider		Libellulidae	LC
Conocephalus longipennis	Coneheads	Orthoptera	Tettigoniidae	UN
Microcentrum sp.	Angle wing katydids		Tettigoniidae	UN
Scolopendra subspinipes	Jungle centipede	Scolopendromorpha	Scolopendridae	UN

Table 2. Three species of molluscs were observed.

Scientific name	Common name	Order	Family	IUCN
Cryptozona ligulata	Common snail	Stylommatophora	Ariphantidae	UN
Lissachatina fulica	Giant African land snail	Stylommatophora	Ariphantidae	UN
Laevicaulis alte	Tropical leatherleaf	Systellommatophora	Veronicellidae	UN

Table 3. Three species of amphibian were observed.

Scientific name	Common name	Order	Family	IUCN
Duttaphrynus melanostictus	Asian common toad	Anura	Bufonidae	LC
Polypedates leucomystax	Common tree frog		Rhacophoridae	LC
Quasipaa spinosa	Chinese spiny frog		Dicroglossidae	VU

Table 4. Two species of reptiles were observed.

Scientific name	Common name	Order	Family	IUCN
Hemidactylus frenatus	Common house gecko	Squamata	Gekkonidae	LC
Lygosoma sp.	Supple skinks		Scincidae	UN

Table 5. Birds' species are observed.

Scientific name	Common name	Order	Family	IUCN
Acridotheres tristis	Common myna	Passriformes	Sturnidae	LC
Amaurornis phoenicurus	White breated waterhen	Gruifromes	Rallidaeq	LC
Ardea alba	Great egret	Pelecaniformes	Ardeidae	LC
Ardeola grayii	Pond herons	Pelecaniformes	Ardeidae	LC
Argya striata	Jungle babbler	Passriformes	Leiothrichidae	LC
Bubulcus ibis	Cattle egret	Pelecaniformes	Ardeidae	LC
Centropus sinensis	Great coucal	Cuculiformes	Cuculidae	LC
Columba livia	Rock dove	Columbiformes	Columbidae	LC
Coracina macei	Large cuckooshrike	Passriformes	Campephagidae	LC
Corvus macrorhynchos	Large billed crow	Passriformes	Corvidae	LC
Corvus splendens	House crow	Passriformes	Corvidae	LC
Dicrurus macrocercus	Black drongo	Passriformes	Dicruidae	LC
Halcyon smyrnensis	White throated kingfisher	Coraciiformes	Alcedininae	LC
Hieraaetus pennatus	Booted eagle	Accipitriformes	Accipitridae	LC
Milvus migrans	Black kite	Accipitriformes	Accipitridae	LC
Psittacula krameri	Rose ringed parakeet	Psittaciformes	Psittaculidae	LC

Table 6. Mammals' species are observed.

Scientific name	Common name	Order	Family	IUCN
Axis axis	Chital	Artiodactyla	Cervidae	LC
Funambulus palmarum	Indian palm squirrel	Rodentia	Sciuridae	LC
Macaca radiata	Bonnet macaque	Primates	Cercopithecidae	VU
Pteropus medius	Indian flying fox	Chiroptera	Pteropodidae	LC
Urva edwardsii	Indian grey mongoose	Carnivora	Herpestidae	LC

Abbreviation: LC – Least Concern, VU – Vulnerable, DD – Data Deficiency and UN – Unknown

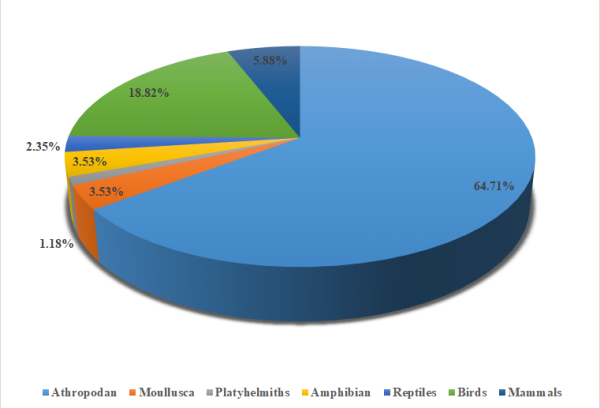

Figure 4. The percentages showed variation in the chart observed faunal diversity.

CONCLUSION

The study emphasises the faunal richness that may be found at Chennai, Tamil Nadu's Anna University. A total of 85 species were found during the course of six months, from May 2023 to November 2023, and are included in the study. Seven phyla included these species. With 55 species altogether, or 64.71 percent of all species, the Phylum Arthropoda has the highest species abundance of any other taxon. Additionally, records were kept for two species that are considered vulnerable: the frog (*Quasipaa spinosa*) and the mammal (*Macaca radiata*). According to ENVIS (2018), was published a book of "Biodiversity Register of Anna University" in this campus. However, the sole objective of this endeavour was faunal variety. A few more recent species were added as a result of this. Thus, there are numerous approaches to cultivate, preserve, and use fauna as control agents. This study offers suggestions for maintaining habitat, reducing pollution, and keeping an eye on human activity in order to maintain an ecosystem that supports the natural growth of other plants and animals as well as lepidopterans, reptiles, and mammals.

CONFLICT OF INTEREST

The author here declares that there is no conflict of interest in the publication of this article.

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