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Assessment Of Faunal Diversity And Composition Of Lunglei Government College Campus, Lunglei, Mizoram, India

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Abstract

Species is a currency of assessing the biodiversity. Faunal diversity refers to the native species. This study aims to document the faunal diversity of Lunglei Government College, Lunglei, Mizoram, India during 2019. The broad classes, mammals, birds, amphibians, reptiles and insects have been recognized during the study period. The study reveals a diverse range of 60 species across various groups, including mammals, birds, reptiles, and insects. Among vertebrates, 43 species were recorded, with birds exhibiting the highest diversity, followed by mammals, reptiles, and amphibians. Additionally, 17 invertebrate species were identified, comprising snails, crickets, spiders, beetles, ants, and cockroaches. The study shows a taxonomic diversity of 44 families, with the families Colubridae, Muridae, and Sciuridae exhibiting the highest frequency of occurrence, each represented by three species.

KEYWORDS: Fauna, diversity, species, vertebrates, invertebrates.

INTRODUCTION:

Fauna plays a major role in ecosystems a biotic component which serves as an indicator of ecosystems health. Accurate estimates of the population size and species demographics are crucial for effective management and conservation which will provide information in decision planning and preservation of biodiversity. However with rapid globalization, a threat to biodiversity arises with spread of exotic species, urbanization and climatic change [1]. This led to increase need of conservation, with forecasting a pronounced deterioration in future which amplifies the needs for concerns on depletion of biodiversity [2]. Understanding the baseline biodiversity data are essential for conservation, enabling monitoring and optimization [3] which will provide information for conservation and strategy development. Documentation of local fauna involves systematic collection and records of data on the distribution of a particular species at a specific location and time [4].Anthropogenic activities are the dominant cause of biodiversity decline worldwide, leading to ecosystem disruption and species loss at an alarming rate [5] [6].

MATERIALS AND METHODS:

Description of study site:
Lunglei Government College Campus is situated at College Veng Local Council Area in Lunglei District, Mizoram, India. It has an area of 2.39 Ha or 23888.91 Sqm with a green coverage of about 75% of its campus. The geographical position with an elevation of around 1,220 meters (4,000 feet) above sea level with its coordinates approximately 22.8673° N latitude and 92.7667° E longitude with long monsoon season favours rich diversity of plant and animal species.

Figure 1: Map of Lunglei Government College,Lunglei, Mizoram

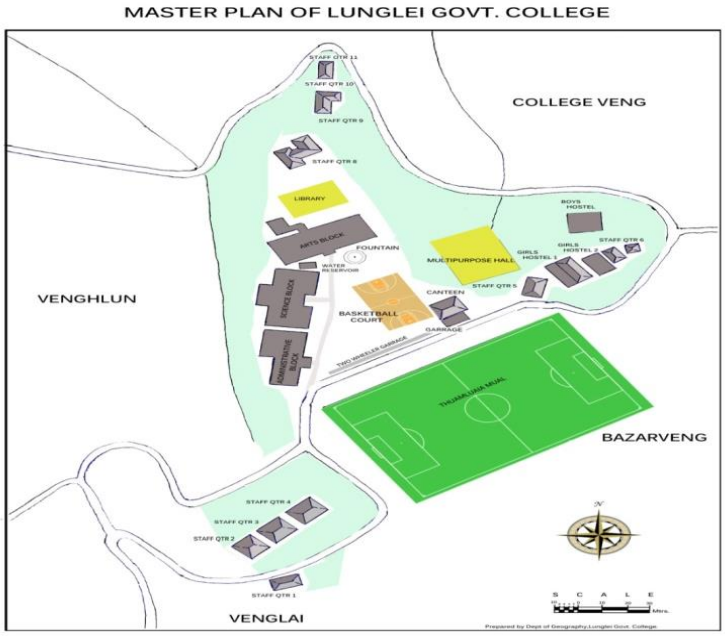


Figure2: Aerial view of Lunglei Government College Campus

Collection of data:

Intensive survey was carried out during January, 2019 to December, 2019 throughout the college campus. The survey was conducted in opportunistic pattern ensuring coverage of all season and habitats. All documentation of species is based on visual observation. For the study, broad groups such as mammals, birds, reptiles, amphibians and insects have been recognized. Identification is done through accessible journals and literatures. Experts for some taxa and field guides were used for identifications. This study assessed the qualitative data on the examined species.

RESULTS AND DISCUSSION:

The faunal diversity of the College Campus does not directly proportionate to the floral diversity as faunal diversity of the campus can vary depending on factors like location, trophic structures, habitat available within a campus, urbanization surrounding the campus and campus management practices. The study shows presence of 60 species under the broad groups such as mammals, birds, reptiles and insects. With the four vertebrate taxa examined for diversity, 43 vertebrates belonging to phylum Chordatawere observed. Birds showed maximum species followed by mammal, reptiles and amphibians. 17 species were identified under invertebrate belonging to Arthropoda phylum which includes snails, cricket, spiders, beetle, ants and cockroaches.

Table 1: Major animal groups in College campus

Mammals	10
Birds	22
Amphibians	5
Reptiles	7
Insects	17
Total	**61**

Figure 3: Diversity of animal group in the campus

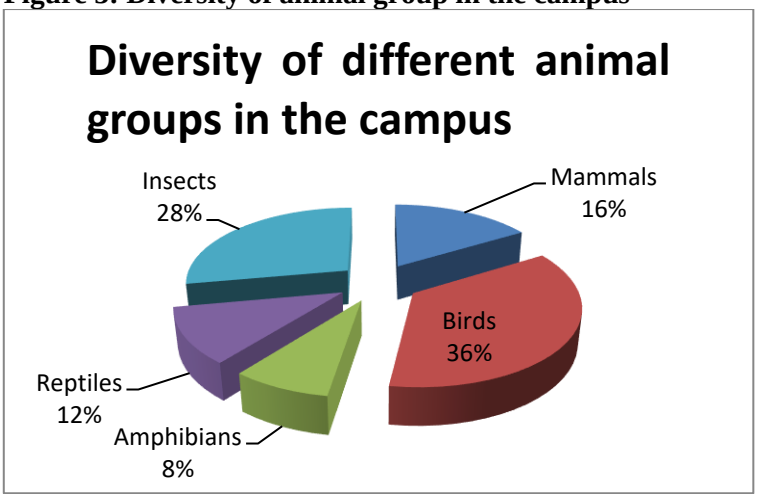
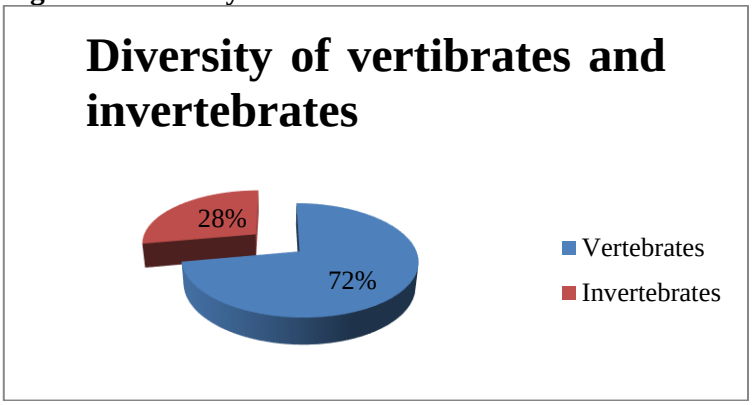


Table 2: Number of vertebrates and invertebrates in the campus

Vertebrates	44
Invertebrates	17

Figure 4: Diversity of vertebrates and invertebrates in the campus



The study shows a taxonomic diversity of 44 families, with the families Colubridae, Muridae, and Sciuridae exhibiting the highest frequency of occurrence, each represented by three species. The families Apidae, Araneidae, Bufonidae, Formicidae, Gekkonidae, Gryllidae, Megalaimidae, Picidae, Pycnonotidae, Tettigoniidae &Timaliidae have the second highest frequency represented by 2 species respectively and the remaining families are represented by 1 species.

Figure 5: Diversity of faunal families in the campus.

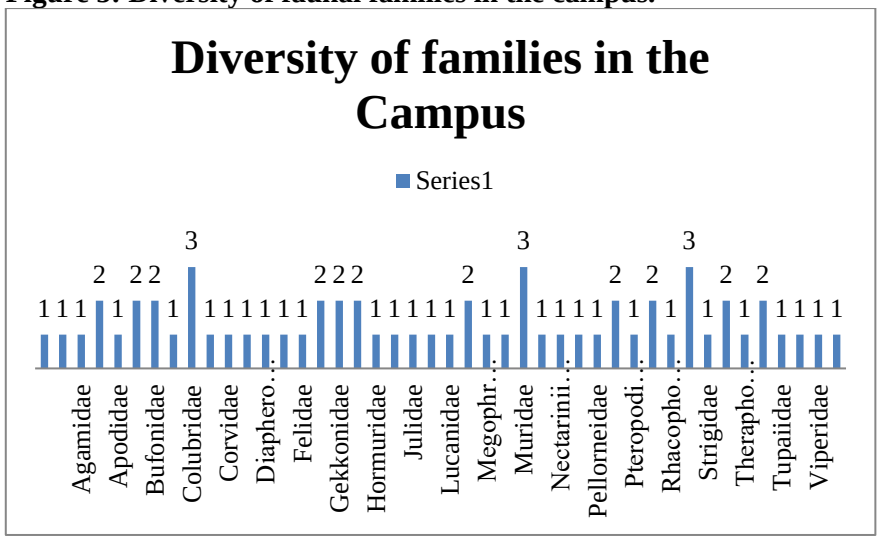


Table 3 : List of vertebrates diversity in the campus- Mammals:

S.No	Common Name	Scientific Name	Phylum	Class	Family	Local Name	W.P.Act/ Remarks
1	Leopard Cat	Prionailurus bengalensis	Chordata	Mammalia	Felidae	Sanghar	Schedule I/Uncommon
2	Red-belliedTree Squirrel	Callosciurus erythraeus	Chordata	Mammalia	Sciuridae	Hlei-kap-sen	Schedule I
3	Irrawady Squirrel	Callosciurus pygerythrus	Chordata	Mammalia	Sciuridae	Hleilubial	Schedule I
4	Orange bellied Himalayan Squirrel	Dremomys lokriah	Chordata	Mammalia	Sciuridae	Hlei(pui) mei-par	Schedule II
5	House rat	Rattus rattus	Chordata	Mammalia	Muridae	Zu-in	Schedule II
6	White -bellied rat	Niviventer niviventer	Chordata	Mammalia	Muridae	Zu-pawl	Schedule II
7	House mouse	Mus musculus	Chordata	Mammalia	Muridae	Chaite	Schedule II
8	Lesser Short-nosed Fruit bat	Cynopterus brachyotis	Chordata	Mammalia	Pteropodidae	Bak	Schedule I
9	Masked Palm Civet	Paguma larvata	Chordata	Mammalia	Viverridae	Sazaw/Zaw-buang	Schedule I
10	Northern Treeshrew	Tupaia belangeri	Chordata	Mammalia	Tupaiidae	Che-pa	Schedule I

Table 4 : List of vertebrates diversity in the campus - Birds (Aves) :

S.No	Common Name	Scientific Name	Phylum	Class	Family	Local Name	W.P.Act/ Remarks
1	Crested Goshawk	Accipiter trivergatus	Chordata	Aves	Accipitridae	Mu-ar-la	Schedule I/ endangered
2	Lesser Kestrel	Falco naumanni	Chordata	Aves	Falconidae	Mu-te	Schedule II
3	Common Emerald Dove	Chalcophaps indica	Chordata	Aves	Columbidae	Ram-par-va	Schedule II
4	Banded Bay Cuckoo	Cacomantis sonneratii	Chordata	Aves	Cuculidae	Thangfenpa bawp	Schedule II
5	Golden - throated Barbet	Psilopogon franklinii	Chordata	Aves	Megalaimidae	Zo-tuk-lo	Schedule II
6	Blue-eared Barbet	Psilopogon cyanotis	Chordata	Aves	Megalaimidae	Tuk-lo-beng-ngawng	Schedule II

7	Spotted Owlet	Athene brama	Chordata	Aves	Strigidae	Hrangkir	Schedule II
8	Himalayan Swiftlet	Aerodramus brevirostris	Chordata	Aves	Apodidae	Va-mur	Schedule II
9	White bellied Woodpecker	Dryocopus javensis	Chordata	Aves	Picidae	Thloh-lu-sen	Schedule II
10	Lesser Yellownape	Picus chlorolophus	Chordata	Aves	Picidae	Thloh-lu-par/Thloh lu eng	Schedule II
11	Large-billed Crow	Corvus macrorhyncos	Chordata	Aves	Corvidae	Cho-ak	Schedule II
12	Black crested Bulbul	Rubigula flaviventris	Chordata	Aves	Pycnonotidae	Tuk-khum-vi-lik	Schedule II
13	Red- vented Bulbul	Pycnonotus cafer	Chordata	Aves	Pycnonotidae	Tlai-berh	Schedule II
14	Bar throated Minla	Actinodura strigula	Chordata	Aves	Leiothrichidae	Zo-mitval	Schedule II
15	Rufous-capped Babbler	Cyanoderma ruficeps	Chordata	Aves	Timaliidae	Daikat-chi-khat	Schedule II
16	Tawny-breasted Wren-babbler	Spelaeornis longicaudatus	Chordata	Aves	Timaliidae	Va-lei-sawt	Schedule II/ near threatened
17	Rufous-winged Fulvetta	Schoeniparus castaneceps	Chordata	Aves	Pellorneidae	Vate-chi-khat	Schedule II
18	Little Forktail	Enicurus scouleri	Chordata	Aves	Muscicapidae	Chin-rang-te	Schedule II
19	Common Tailorbird	Orthotomus sutorius	Chordata	Aves	Cisticolidae	Hnah-khawr/Hnah-fun	Schedule II
20	Streaked spiderhunter	Arachnothera magna	Chordata	Aves	Nectariniidae	Ki-reuh	Schedule II
21	House Sparrow	Passer domesticus	Chordata	Aves	Passeridae	Chawngzawng-chi-khat	Schedule II
22	Olive-backed Pipit	Anthus hodgsoni	Chordata	Aves	Motacillidae	Chip	Schedule II

Table 5 : List of vertebrates diversity in the campus - Amphibians :

S.No	Common Name	Scientific Name	Phylum	Class	Family	Local Name	W.P.Act/ Remarks
1	Asian Common Toad	Duttaphrynus melanostictus	Chordata	Amphibia	Bufonidae	Tawk-eng/ U-tawk	Common
2	Indian Marbled Toad	Duttaphrynus stomatictus	Chordata	Amphibia	Bufonidae	U-phar/U-tawk-phar	Common
3	Red eyed Frog	Leptobrachium smithi	Chordata	Amphibia	Megophryidae	Chung-u-mit-sen	Common
4	Jerdon's Tree Frog	Hyla annectans	Chordata	Amphibia	Hylidae	U-chhawl-hring-te	Common
5	Dwarf Bush Frog	Raorchestes parvulus	Chordata	Amphibia	Rhacophoridae	Dawng-thlek-te	Common

Table 6 : List of vertebrates diversity in the campus- Reptiles:

S.No	Common Name	Scientific Name	Phylum	Class	Family	Local Name	W.P.Act/ Remarks
1	Oriental Garden Lizard	Calotes versicolor	Chordata	Reptilia	Agamidae	Lai-king	
2	Lunglei Bent-toed Gecko	Cyrtodactylus lungleiensis	Chordata	Reptilia	Gekkonidae	Ram-daidep	Found in Lunglei town
3	Tokay Gecko	Gekko gecko	Chordata	Reptilia	Gekkonidae	Awk-e	Schedule I
4	Tawny Cat Snake	Boiga ochracea	Chordata	Reptilia	Colubridae	Rul-sakhi/Rul-sen	Schedule II

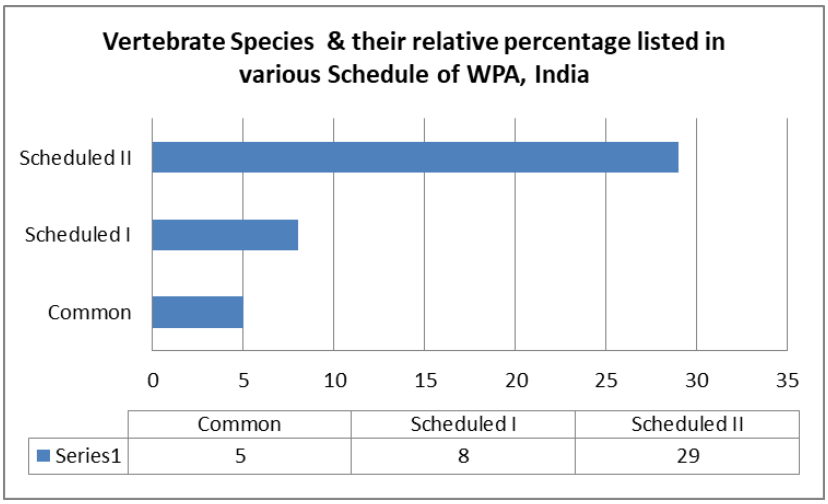
5	Red- necked Keelback	Rhabdophis subminiatus	Chordata	Reptilia	Colubridae	Rul-nghawng-sen	Schedule II
6	Red -tailed Pit Viper	Trimeresurus erythrurus	Chordata	Reptilia	Viperidae	Rul-tu-ha/Zawngrul	Schedule II
7	Wall's Bronzeback	Dendrelaphis cyanochloris	Chordata	Reptilia	Colubridae	Rul-vankai	Schedule II

Table 7 : List of invertebrates in the campus:

S.No	Common Name	Scientific Name	Phylum	Class	Family	Local Name	W.P.Act/ Remarks
1	Stick insect	Oreophoetes species	Arthropoda	Insecta	Diapheromeridae	Ar-a-mawnghawlh	Common
2	Bush Cricket	Sanaa intermedia	Arthropoda	Insecta	Tettigoniidae	Chawngphul-i-nu	Common
3	Angle-wing Katydid	Microcentrum rhombifolium	Arthropoda	Insecta	Tettigoniidae	Khau-chher	Common
4	Millipede	Ommatoiulus rutilans	Arthropoda	Diplopoda	Julidae	Ke-tami-nu	Comon
5	Tropical House Cricket	Gryllodes sigillatus	Arthropoda	Insecta	Gryllidae	Khuang-bai	Common
6	Scorpion	Liocheles australasiae	Arthropoda	Arachnida	Hormuridae	Khawmual-kaikuang	Common
7	Asian Mahogany	Ornithoctonus andersoni	Arthropoda	Arachnida	Theraphosidae	Ching-chip	Schedule iv
8	American Cockroach	Periplaneta americana	Arthropoda	Insecta	Blattidae	Chukchu	Common
9	Indian Honey bee	Apis cerana indica	Arthropoda	Insecta	Apidae	Khawi-vah	Common
10	Lesser Paper Wasp	Parapolybia species	Arthropoda	Insecta	Vespidae	Khawi-sa-nghar	Common
11	Stingless Bee	Lepidotrigona arcifera	Arthropoda	Insecta	Apidae	Khawi-te	Common
12	Cocktail Ant	Crematogaster wroughtonii	Arthropoda	Insecta	Formicidae	Mawng-er	Common
13	Field Cricket	Gryllus species	Arthropoda	Insecta	Gryllidae	Perhpawng	Common
14	Weaver Ant	Oecophylla smaragdina	Arthropoda	Insecta	Formicidae	Sai-hmar-thur	Common
15	Giant Wood Spider	Nephila pilipes	Arthropoda	Arachnida	Araneidae	Tang-tial	Common
16	Golden Stag Beetle	Odontolabis cuvera	Arthropoda	Insecta	Lucanidae	Thing-nghet	Schedule 5 of Wildlife and Countryside act 1981 in the UK
17	Giant African Snail	Lissachatina fulica	Mollusca	Gastropoda	Achatinidae	Chengkawl-lian/ Phun-chengkawl	Common

The significant and ongoing decline of wild animals and birds in India has led serious concerns with species facing imminent threats and some species are already extinct. The Wildlife Protection Act, 1972 serves as the legal foundation for wildlife conservation in India. This study evaluates the existing faunal diversity on campus, in accordance with the Wildlife Protection Act, to guide conservation strategies and promote environmental conservation. The present analysis on vertebrates shows that 8 species were under Schedule I, where *Accipiter trivergatus* is endangered and *Prionailurus bengalensis* uncommon. 29 species is categorized under Scheduled II with *Spelaeornis longicaudatus* under nearly threatened category. 5 species of the vertebrates falls under common. All invertebrates identified were listed under Common category in the Wildlife Protection Act.

Figure 6: Species percentage in various Schedule of Wildlife Protection act, India in the campus.



CONCLUSION:

The College Campus development poses several challenges to faunal diversity which leads to decline in animal species richness and diversity. The increase urbanization with construction of more internal roads within and near the campus has great impacts on animal diversity including habitat destruction and fragmentation. These effects on the survival, feeding behavior and breeding, which led to population decline and even to the extent of extinction.

Factors such as artificial lighting can disrupt nocturnal species behaviors and habitats. The campus isolation from surrounding natural areas and forests restricts connectivity, hindering animal migration and dispersal, including for migratory birds. Introduction of exotic species like African Giant snails has been identified in the campus for the last several years which is invasive and can invade the native species for resources and habitat

The study unveils the challenges and threats on the diversity of fauna in the campus. The institution can take necessary steps to create wildlife- friendly campus that will support faunal diversity and natural beauty of the campus. Conserving living and non-living natural resources is vital for human existence and sustainable development, requiring the protection of species, ecosystems, and their interdependence to preserve biodiversity [7]. Urban forestry can be successfully integrated with campus development projects, and with effective management and planning, the floral and faunal diversity can be preserved.

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