

A Study on the Faunal Diversity of Sree Narayana College, Cherthala

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Abstract: Biodiversity or biological diversity is the variety and variability of life on Earth. Documentation of biodiversity is a foundation of any conservation action. As biodiversity provides a variety of environmental services from its species that are essential at the global, regional and local level, the preservation of biological resources is essential for the wellbeing and the long term survival of mankind. The studies of biodiversity have now assumed greater significance as ecologists try seriously to document global biodiversity in the face of unprecedented perturbations, habitat loss and extinction rates. In view of this, we selected SN College campus to examine the biodiversity around there. The campus has diverse ecological communities performing a variety of functions. The study was conducted in association with ATREE which is to document the local biodiversity of Kerala and to prepare a backyard biodiversity register book.

Main objective of our project is conservation and protection of biodiversity around our campus. Around 120 different species were recorded and it was found that we are facing an unprecedented biodiversity crisis that threatens the very future of humanity. Species numbers have been collapsed around us, and once they go extinct, they will be lost forever. While the issue of biodiversity loss is overwhelming and hopeless, there are steps that every one of us can take to help. To safeguard our future, we must protect biodiversity.

Keywords: Campus biodiversity, conservation, documentation, global biodiversity, biodiversity Crisis

INTRODUCTION

'Biological diversity' or biodiversity is that part of nature which includes the differences in genes among the individuals of a species, the variety and richness of all the plant and animal species at different scales in space, locally, in a region, in the country and the world, and various types of ecosystems, both terrestrial and aquatic, within a defined area. Therefore, preservation of biological resources is essential for the wellbeing and the long term survival of mankind. Documentation of biodiversity is a foundation of any conservation action. Biodiversity documentation is the process of identifying/recording species of plants, animals, fungi, etc. in a given area such as a prairie remnant by methods photography, sound recordings and collection of voucher specimens such as pressed plant specimens or butterflies.

The studies of biodiversity have now assumed greater significance as ecologists try seriously to document global biodiversity in the face of unprecedented perturbations, habitat loss and extinction rates. In view of this, we selected SN College campus to examine the biodiversity around there. The project came from a citizen science initiative of ATREE CERC named A Kerala BioBlitz which is to document

the local biodiversity of Kerala and to prepare a backyard biodiversity register book. The role of Kerala BioBlitz in our project is that they help us to identify many species.

MATERIALS AND METHODS

The study was restricted from January 2022-April 2022. The SN College is situated in the SL Puram, Pokkalassery Road, Kanjikuzhy, S.L. Puram, Mararikulam, 15 km away from Alappuzha.

A VES (visual encounter survey) is one in which field personnel walk through an area or habitat for a prescribed time period systematically searching for animals. Time is expressed as the number of person-hours of searching in each area to be compared. The VES is an appropriate technique for both inventory and monitoring studies. The VES is used to determine the species richness of an area, to compile a species list (species composition of an assemblage), and to estimate relative abundances of species within an assemblage. This is the main method used in the study.

The fauna in the campus is critically surveyed in different localities of the campus. Direct observation of animal species present around each of the building locations were done. Aquatic and terrestrial vegetation around the college were observed. Efforts were also taken to check area under green cover, various environment friendly activities carried out by the institution, threat to the local biotic components, awareness activities undertaken by the college, etc Digital photographs were taken for some of the fauna. Mainly the observations were done in morning and evening for one hour. The photographs were taken in mobile phones. Images of different species taken are identified by their morphological characters and some are identified with the help of India Biodiversity Portal (IBP) via, Kerala BioBlitz. This feature finds details of any species that have been sighted and reported from any location.

REVIEW OF LITERATURE

The most unique feature of Earth is the existence of life, and the most extraordinary feature of life is its diversity. Approximately 9 million types of plants, animals, protists and fungi inhabit the Earth. So, too, do 7 billion people. Two decades ago, at the first Earth Summit, the vast majority of the world's nations declared that human actions were dismantling the Earth's ecosystems, eliminating genes, species and biological traits at an alarming rate. This observation led to the question of how such loss of biological diversity will alter the functioning of ecosystems and their ability to provide society with the goods and services needed to prosper. (Jones, C. G., Lawton, J. H. & Shachak, M. *Organisms*, 1994)

Human needs and actions have, and will continue to, extensively alter ecosystems and biodiversity on a global scale (Vitousek, P.M., Mooney, H.A., Lubchenco, J. and Melillo, J.M., 1997). Predictions of changes in biodiversity, not only in marine, but also terrestrial and freshwater ecosystems (Sala, O.E., Chapin, F.S., Armesto, J.J., Berlow, E., Bloomfield, 2000), have raised substantial concern over the consequences of biodiversity loss on ecosystem processes and ecosystem function, which subsequently affect the provision of ecosystem goods and services, and ultimately affect human well-being. (Diaz, D., Fargione, J., Chapin, F.S. III and Tilman, D., 2006)

The documentation and organization of biodiversity remains largely the task of the systematics community (taxonomists, systematists, phylogeneticists) of evolutionary biologists, whose work governs the rate of discovery and description on which biodiversity inventories and conservation efforts depend. The tasks of this community range from identifying the intraspecific taxonomic units that are important for conservation (Waples 1991; Moritz 1994; Crandall et al. 2000) all the way to disentangling branches of the tree of life that orient all biological knowledge. (Cracraft and Donoghue 2004).

Our planet is losing biodiversity at unprecedented rate due to land-use change, direct exploitation, climate change, pollution and the invasion of exotic species (Cardinale et al., 2012; IPBES, 2019; Millennium Ecosystem Assessment, 2005; Tilman, 1999)

Biodiversity conservation is closely related to other global environmental changes and globalization issues, such as climate change, land use and land cover change, and sustainable development (Gude et al. 2007; Liu et al. 2011). Over the last century humans have been changing ecosystems more rapidly than in any comparable period in history, as a result biodiversity or the variety of genes, species and ecosystems has declined rapidly. (Balmford et al. 2003).

RESULTS AND DISCUSSION

SL NO	CLASS	ORDER	FAMILY	GENUS	SPECIES	COMMON NAME
1	Insecta	Lepidoptera	Crambidae	Diaphania	indica	Cotton caterpillar
2	Insecta	Lepidoptera	Crambidae	Ptychopseustis	plumbeolinealis	Snout moth
3	Insecta	Lepidoptera	Crambidae	Udea	rubigalis	Greenhouse leaf tier
4	Insecta	Lepidoptera	Crambidae	Uresiphita	reversalis	Sophora worm
5	Insecta	Lepidoptera	Erebidae	Amata	phegea	Nine spotted moth
6	Insecta	Lepidoptera	Erebidae	Lymantria	dispar	Gypsy moth
7	Insecta	Lepidoptera	Erebidae	Orgyia	antiqua	Rusty tussock moth
8	Insecta	Lepidoptera	Erebidae	Sphrageidus	similis	Swan moth
9	Insecta	Lepidoptera	Geometridae	Hyposidra	talaca	Black looper

10	Insecta	Lepidoptera	Notodontidae	Thaumetopoea	processionea	Oak processionary
11	Insecta	Lepidoptera	Pyralidae	Oncocera	semirubella	Prachtmot
12	Insecta	Lepidoptera	Pyralidae	Plodia	interpunctella	Indian meal moth
13	Insecta	Lepidoptera	Saturniidae	Actias	luna	Luna moth
14	Insecta	Lepidoptera	Tortricidae	Endothenia	hebesana	Verbena bud moth
15	Insecta	Lepidoptera	Hesperiidae	Hesperia	comma	Silver spotted skipper
16	Insecta	Lepidoptera	Lycaenidae	Rathinda	amor	Monkey puzzle
17	Insecta	Lepidoptera	Lycaenidae	Spalgis	epius	Apefly
18	Insecta	Lepidoptera	Nymphalidae	Acraea	serena	Dancing acraea
19	Insecta	Lepidoptera	Nymphalidae	Acraea	terpsicore	Tawny coster
20	Insecta	Lepidoptera	Nymphalidae	Hypolimnas	misippus	Danaid eggfly
21	Insecta	Lepidoptera	Papilionoidae	Chilasa	clytia	Common mime
22	Insecta	Lepidoptera	Papilionoidae	Ypthima	huebneri	Common four ring
23	Insecta	Lepidoptera	Pieridae	Leptosia	nina	Psyche
24	Insecta	Odonata	Coenagrionidae	Ischnura	hastata	Citrine forktail
25	Insecta	Odonata	Libellulidae	Acisoma	panorpodies	Trumpet tail
26	Insecta	Odonata	Libellulidae	Brachydiplax	chalybea	Blue dasher
27	Insecta	Odonata	Libellulidae	Brachythemis	contaminata	Ditch jewel
28	Insecta	Odonata	Libellulidae	Diplacodes	lefebvrii	Black percher

29	Insecta	Odonata	Libellulidae	Diplacodes	trivialis	Chalky percher
30	Insecta	Odonata	Libellulidae	Libellula	saturata	Flame skimmer
31	Insecta	Odonata	Libellulidae	Urothemis	signata	Greater crimson glider
32	Insecta	Orthoptera	Acrididae	Acrida	cinerea	Chinese grasshopper
33	Insecta	Orthoptera	Acrididae	Acrida	ungarica	Cone-headed grasshopper
34	Insecta	Orthoptera	Acrididae	Chorthippus	parallelus	Meadow grasshopper
35	Insecta	Orthoptera	Acrididae	Dichromorpha	viridis	Short-winged green grasshopper
36	Insecta	Orthoptera	Acrididae	Gomphocerippus	rufus	Rufous grasshopper
37	Insecta	Orthoptera	Acrididae	Trimerotropis	pallidipennis	Pallid winged grasshopper
38	Insecta	Orthoptera	Pyrgomorphidae	Sphenarium	purpurascens	Corn-field grasshopper
39	Insecta	Orthoptera	Acrididae	Patanga	succincta	Bombay locust
40	Insecta	Orthoptera	Acrididae	Trimerotropis	maritima	Seaside locust
41	Insecta	Coleoptera	Coccinellidae	Coccinella	transversalis	Transverse ladybird
42	Insecta	Coleoptera	Coccinellidae	Harmonia	axyridis	Asian ladybeetle
43	Insecta	Coleoptera	Coccinellidae	Harmonia	octomaculata	Ladybird

44	Insecta	Coleoptera	Dermestidae	Anthrenus	scrophulariae	Common carpet beetle
45	Insecta	Coleoptera	Elateridae	Agriotes	sputator	Common click beetle
46	Insecta	Coleoptera	Scarabaeidae	Strategus	aloeus	Ox beetle
47	Insecta	Coleoptera	Tenebrionidae	Blapstinus	histicus	Darkling beetle
48	Insecta	Coleoptera	Chrysomelidae	Crioceris	duodecimpunctata	Spotted asparagus beetle
49	Insecta	Coleoptera	Chrysomelidae	Cassida	circumdata	Tortoise beetle
50	Insecta	Coleoptera	Chrysomelidae	Gastrophysa	viridula	Green dock beetle
51	Insecta	Coleoptera	Scarabaeidae	Maladera	castanea	Asiatic garden beetle
52	Insecta	Hymenoptera	Crabronidae	Sphecius	speciosus	Cicada killer
53	Insecta	Hymenoptera	Evaniidae	Evania	appendigaster	Blue-eyed ensign wasp
54	Insecta	Hymenoptera	Siricidae	Sirex	noctilio	Wood wasp
55	Insecta	Hymenoptera	Sphecidae	Chalybion	californicum	Common blue mud dauber
56	Insecta	Hymenoptera	Sphecidae	Podalonia	luctuosa	Thread waisted wasp
57	Insecta	Hymenoptera	Sphecidae	Sphex	pensylvanicus	Great black wasp
58	Insecta	Hymenoptera	Vespidae	Vespa	orientalis	Oriental hornet
59	Insecta	Hymenoptera	Vespidae	Vespula	germanica	German wasp

60	Insecta	Hymenoptera	Sphecidae	Sceliphron	curvatum	Asian mud-dauber wasp
61	Insecta	Hymenoptera	Apidae	Xylocopa	latipes	Tropical carpenter bee
62	Insecta	Hymenoptera	Formicidae	Camponotus	japonicus	Japanese carpenter ant
63	Insecta	Hymenoptera	Formicidae	Camponotus	cruentatus	Carpenter ant
64	Insecta	Hymenoptera	Formicidae	Oecophylla	smaragdina	Weaver ant
65	Insecta	Hymenoptera	Formicidae	Solenopsis	invicta	Red imported fire ant
66	Insecta	Hymenoptera	Formicidae	Solenopsis	geminata	Fire ant
67	Arachnida	Araneae	Lycosidae	Hogna	radiata	Wolf spider
68	Arachnida	Araneae	Oecobiidae	Oecobius	navus	Wall spider
69	Arachnida	Araneae	Salticidae	Menemerus	bivittatus	Gray wall jumper
70	Arachnida	Araneae	Salticidae	Menemerus	semilimbatus	Fairly big jumping spider
71	Arachnida	Araneae	Salticidae	Platycryptus	undatus	Tan jumping spider
72	Arachnida	Araneae	Salticidae	Plexippus	paykulli	Jumping spider
73	Arachnida	Araneae	Salticidae	Plexippus	petersi	Small zebra jumper
74	Arachnida	Araneae	Araneidae	Argiope	keyserlingi	St Andrew's cross spider
75	Arachnida	Araneae	Araneidae	Argiope	amoena	Zipper spider
76	Arachnida	Araneae	Salticidae	Hasarius	adansoni	Adanson's house jumper

77	Arachnida	Araneae	Cheiracanthiidae	Cheiracanthium	mildei	Northern yellow sac spider
78	Arachnida	Araneae	Pisauridae	Dolomedes	tenebrosus	Dark fishing spider
79	Insecta	Diptera	Asilidae	Efferia	albibarbis	Robber fly
80	Insecta	Diptera	Asilidae	Machimus	atricapillus	Robber fly
81	Insecta	Diptera	Bombyliidae	Exoprosopa	jacchus	Silver bee-fly
82	Insecta	Diptera	Calliphoridae	Calliphora	vomitorea	Blue bottle fly
83	Insecta	Diptera	Drosophilidae	Drosophila	melanogaster	Fruit fly
84	Insecta	Diptera	Ephydriidae	Hydrellia	griseola	Rice leaf miner
85	Insecta	Diptera	Muscidae	Musca	domestica	Housefly
86	Insecta	Diptera	Psychodidae	Psychoda	grisea	moth fly
87	Insecta	Diptera	Sarcophagidae	Sarcophaga	africa	Flesh fly
88	Insecta	Diptera	Ulidiidae	Euxesta	pechumani	Picture winged fly
89	Insecta	Diptera	Culicidae	Aedes	aegypti	Yellow fever mosquito
90	Insecta	Diptera	Culicidae	Aedes	vittatus	Bigot
91	Insecta	Diptera	Culicidae	Aedes	albopictus	Asian tiger mosquito
92	Insecta	Orthoptera	Gryllidae	Acheta	domesticus	House cricket
93	Insecta	Orthoptera	Gryllidae	Gryllodes	sigillatus	Tropical house cricket

94	Insecta	Orthoptera	Gryllidae	Gryllus	campestris	European field cricket
95	Insecta	Orthoptera	Gryllotalpidae	Gryllotalpa	gryllotalpa	European mole cricket
96	Insecta	Orthoptera	Rhaphidophoridae	Diestrammena	japanica	Camel cricket
97	Insecta	Orthoptera	Tettigoniidae	Phaneroptera	falcata	Sickle-bearing bush-cricket
98	Insecta	Orthoptera	Tridactylidae	Xya	pfaendleri	Pygmy mole cricket
99	Insecta	Hemiptera	Aphrophoridae	Philaenus	spumarius	Meadow spittlebug
100	Insecta	Hemiptera	Cicadellidae	Aphrodes	makarovi	True bug
101	Insecta	Hemiptera	Cydnidae	Sehirus	cinctus	White-margined burrower bug
102	Insecta	Hemiptera	Lygaeidae	Nysius	huttoni	Wheat bug
103	Insecta	Hemiptera	Pentatomidae	Halyomorpha	halys	Brown marmorated stink bug
104	Insecta	Hemiptera	Delphacidae	Sogatella	furcifera	White-backed planthopper
105	Insecta	Hemiptera	Cixiidae	Cixius	nervosus	Planthoppers
106	Insecta	Diptera	Stratiomyidae	Microchrysa	polita	Black-horned gem
107	Insecta	Hemiptera	Cicadidae	Cicada	barbara	Brown baker
108	Insecta	Blattodea	Blaberidae	Pycnoscelus	surinamensis	Greenhouse cockroach
109	Diplopoda	Spirobolida	Pachybolidae	Xenobolus	carnifex	Millipede

110	Gastropoda	Stylommatophora	Helicidae	Cornu	aspersum	Garden snail
111	Actinopterygii	Cyprinodontiformes	Aplocheilidae	Aplocheilus	panchax	Blue panchax
112	Actinopterygii	Characiformes	Characidae	Paracheirodon	innesi	Neon tetra
113	Reptilia	Squamata	Agamidae	Calotes	versicolor	Common garden lizard
114	Reptilia	Squamata	Gekkonidae	Cnemaspis	littoralis	Coastal day gecko
115	Aves	Columbiformes	Columbidae	Streptopelia	risoria	Barbary dove
116	Aves	Passeriformes	Corvidae	Corvus	macrorhynchos	Jungle crows
117	Mammalia	Carnivora	Canidae	Canis	familiaris	Dog
118	Mammalia	Carnivora	Felidae	Felis	catus	Cat
119	Unidentified					



Pontoscolex corethrurus



Diaphania indica



Udea rubigalis



Vespa orientalis



Xylocopa latipes



Machimus atricapillus



Acrida ungarica



Coccinella transversalis



Platycriptus undatus



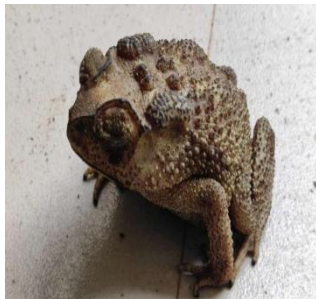
Spinotarsus colosseus



Achatina fulica



Aplocheiluspanchax



Duttaphrynus melanostictus



Calotes versicolor



Streptopelia risoria



Felis catus



Canis familiaris



Unknown

CONCLUSION

The entire bio rich campus was surveyed to collect information of different fauna. High diversity of animal species within the college vicinities are recorded. Around 120 different species are seen in the college. In the present investigation, a total of 96 insect species belonging to 55 families and 8 orders have been recorded and described. A lot of spiders were noticed in different areas of college. The dragonflies are mainly seen in the plants on the border of pond. Other vertebrates and invertebrates except insets are less spotted around the college.

Several anthropogenic influence, like construction works in the college have been involved in environmental modification. This construction works causes the habitat loss. Habitat loss negatively influences biodiversity directly through its impact on species abundance, genetic diversity, species richness, species distribution, and also indirectly. Invasive alien species were entered and established in the environment from outside of their natural habitat, are also one of the main causes of biodiversity loss in college. In college, the inappropriate development is degrading the land, water, and atmosphere, and progressively extinguishing a broad array of the Earth's organisms and the habitats they inhabit. The fluctuations in the climatic conditions were administrating the diversity and abundance of insect population. Sudden peak in insect population of certain species followed by disappearance of the same, and dominance of another was observed. Birds are also currently confronted with many threats, the most important of which are habitat loss and deterioration.

Measures to protect the biodiversity of campus includes the protection of microhabitats of insects which includes trees, grasslands, small ponds, etc.the fire to grass should be controlled, no chemical pesticides should be used within the campus, which helps to protect the butterfly,plantation of seed bearing and flowering plants, the organic waste in the college campus is recycled in Vermicomposting units, reduce the cutting of trees, place bird feeders throughout the grounds, restriction or marked use of vehicles in campus area, which would avoid disturbance for bird diversity, the green campus should be maintained through adequate tree plantation.

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