

BIODIVERSITY STUDY IN SELECTED AREAS OF MANJAPRA PANCHAYATH, ERNAKULAM DISTRICT

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ABSTRACT

Biodiversity and its maintenance are very important for sustaining life on earth. The study was conducted to access the biodiversity in selected areas of Manjapra Panchayath, a small village in Ernakulam district, Kerala. The observed and recorded organisms were identified using books, internet and expert advice. Every single organism is unique in its appearance and characteristic features having specific role in the ecosystem. A diverse ecosystem is more productive and can withstand environmental stress. Biodiversity preserves different cultures and spiritual heritage. Therefore, it is very important to conserve biodiversity. The identified life forms were taxonomically analyzed and arranged accordingly. Major causes for biodiversity loss are devastation of habitat and fragmentation, pollution, global climate change, over exploitation and commercialization, illegal wildlife trade and species extinction etc. Since, our planet has a natural system and species depend on each other, losing even a very small number of species is disastrous. Human greed is endless, thus this will not work without penalizing behavior which threatens a loss in biodiversity.

Keywords: Biodiversity, Chordates, Non-chordates, Habitat, Manjapra, Ernakulam

INTRODUCTION

As biodiversity is the variety of life on the earth or in a particular habitat.[1] Biodiversity is the variety of different forms of life on earth, including the different plants, animals, micro-organisms, the genes they contain and the ecosystem they form. It refers to genetic variation, ecosystem variation, species variation (number of species) within an area, biome or planet. It has been empirically shown that native species richness is linked to the health of ecosystems, as is the quality of life for humans.[2] Terrestrial biodiversity is thought to be up to 25 times greater than ocean biodiversity.[3] The distribution and magnitude of the biodiversity that exists today has evolved over 3.5 billion years as a result of speciation, migration, extinction and more recently human influences that can be described at many hierarchical levels.[4] diversity is not evenly distributed amongst taxa. Arthropods, and especially insects, account for most known eukaryote species: of the 1.2–2 million described species, approximately 925,000 are insects [5][6]. Biodiversity in its broadest sense refers to all of the organisms on the planet earth, their homes or habitats, and the systems that support them. There are different varieties of living things in Earth and each of them are unlike from one another. This is due to the manifold diversity seen among them. Biodiversity refers to all living things in this globe, including plants, animals, microorganisms, fungi etc According to Mora and colleagues, the total number of terrestrial species is estimated to be around 8.7 million while the number of oceanic species is much lower, estimated at 2.2 million. The authors note that these estimates are strongest for eukaryotic organisms and likely represent the lower bound of prokaryote diversity.[7] However, has become clear that public perceptions of biodiversity do not reflect this invertebrate-dominated reality. In the UK, children asked to draw their „ideal rainforest“ over-represented mammals, reptiles and birds, and under-represented insects and annelids. [8] Such taxonomic chauvinism is by no means restricted to children, nor is it restricted to non-academic: 31% of papers published in 2001 in three prominent conservation journals focused on birds and mammals [9]. Biodiversity is greater in equatorial regions owing to favourable conditions.

The geographical regions where significant varieties of biodiversity is seen is known as biodiversity hotspot. These hotspots are dense with endemic species. There are 36 biodiversity hotspots in the whole world. Three biodiversity hotspots such as the Himalayas, the western Ghats and the indo-Burma region are seen in India. India is one of the seventeen mega diversity countries in the world. We can see high levels of species richness here. Many endemic species are also seen in India. 7.6% of all mammalian, 12.6% of all avian, 6.2% of all reptilian, 4.4% of all amphibian, 11.7% of all fish and 6.0% of all flowering plant species are present in India. There are 163 species that are facing a threat of extinction. Endemic species can be threatened with extinction.[10] The adverse effects of human impacts on biodiversity are increasing dramatically and threatening the foundation of sustainable development. The major problems associated with the biodiversity loss are the habitat fragmentation, due to human activities followed by the climate change, loading and biotic exchanges [11]. Human beings are exploiting natural resources beyond a limit. Due to this there is high levels of variations in the climate, increased levels of pollution etc. hence biodiversity should be conserved. India is one of the 12 mega biodiversity countries of the world, which represents 11% of world's flora in about 2.4% of global land mass. Approximately 28% of the total Indian flora and 33% of angiosperms occurring in India are endemic. Higher human population density in biodiversity hotspots in India puts undue pressure on these sensitive eco-regions. [12] India is home to thousands of community-protected forests, called sacred groves. Sacred forests or groves are sites that have cultural or spiritual significance to the people who live around them. These areas may also be key reservoirs of biodiversity.[13] In India there are 13 biosphere reserves, 87 national parks and more than 566 wildlife sanctuaries for conserving biodiversity. Over 47,000 species of plants and 81,000 species of animals have been recorded by the Botanical Survey of India and the Zoological[14]

Kerala is a state situated at the south most part of India. This small state consists of evergreen forests, mountains, beaches, rivers, lakes etc. there are 44 rivers in Kerala. Kerala is rich in flora and fauna, but endemic species are less in number. Some parts of the

great western Ghats is situated in Kerala. The Kerala forests have bewildering diversity of floristic composition. More than one thousand arborescent species make Kerala's forests rich and varied. There are also herbaceous cardamom, bamboo, the giant grass-, calamus rotang-, the longest of the phanerogams-, piper nigrum- the black gold-, and sweet scented vetiveria. In terms of animal diversity also Kerala holds a leading position. Elephant, tiger, wild boars, tahrs, spotted deer, leopard are among the numerous different wild animals seen. Some endemic forms constituting endangered species, also exist. Lion-tailed monkeys, Nilgiri langur, Malabar civet and Giant squirrels are a few examples.[15]

The biodiversity study was conducted in the selected sites of Manjapra Panchayath. Manjapra is a small village of Ernakulam district of Kerala. This place is filled with manifold fields cultivating plantains, paddy and other crops. Many varieties of flora and fauna are present here. Birds, insects etc. are common in this village. Water bodies such as ponds, streams, water channels and small dikes are common here. Plants and trees are diverse in this country-side. Manjapra looks like an island surrounded by paddy fields on all its sides. The unique geographical feature of Manjapra is that all four entry points to this Panchayath are from a paddy field and streams of water. This place is known as green village and is close to the famous pilgrimage centre, Malayattoor. Thattupara church is situated next to this village. This pilgrim centre is situated on top of a small mountain. There is a small waterfall and water stream near to this church. The view is point so beautiful attract many. Organisms like pied pond skimmer, black drongo, Common myna, Asian blood tail, house crow, greater coucal etc. are commonly found.

RELEVANCE OF STUDY

Biodiversity preserves different cultures and spiritual heritage. The rich heritage of traditional knowledge associated with the biodiversity provides an extremely important component from local to global levels. Biodiversity ensures security of food, fuel, shelter, medicines and other products which are vital for our survival. So, it is very important to conserve biodiversity.

METHODOLOGY

Study Area

Selected sites of Manjapra Panchayath, Ernakulam, Kerala

Method:

The Biodiversity study of the selected areas of Manjapra Panchayath was completed in a period of 4 months. The flora and fauna concentrated in this area were thoroughly observed and captured their pictures using camera. The photographed diversity was identified using different devices like reference books, internet facility and expert opinion. The identified life forms were taxonomically analyzed and arranged accordingly.

OSSEVATION & RESULTS

The project on „biodiversity study in selected areas of Manjapra Panchayath“ had been completed in 4 months. As a result of the study, 66 organisms were observed, recorded and identified. 1 species of Annelida, 41 species of Arthropoda, 1 species of Mollusca and 23 species of Chordata (2 Amphibia, 2 Reptilia, 18 Aves and 1 Mammalia) are described in the table below.

The following tables show the abundance of species in Manjapra Panchayath

List of organisms identified-Non chordates

Common name	Binomial name	Phylum	Class	Order	Family	Genus	Species
Red earthworm	<i>Lumbricus rubellus</i>	Annelida	Clitellata	Opisthopora	Lumbricidae	Lumbricus	rubellus
Long-flange millipede	<i>Orthomorpha coarctata</i>	Arthropoda	Diplopoda	Polydesmida	Paradoxosomatida	Orthomorpha	coarctata
Rusty millipede	<i>Trigoniulus corallinus</i>	Arthropoda	Diplopoda	Spirobolida	Trigoniulidae	Trigoniulus	corallinus
Garden millipede	<i>Oxidus gracilis</i>	Arthropoda	Diplopoda	Polydesmida	Paradoxosomatidae	Oxidus	gracilis
millipede	<i>Phyllogonostreptus nigrolabiatus</i>	Arthropoda	Diplopoda	spirostreptida	harpagophoridae	Phyllogonostreptus	nigrolabiatus
Common green bottle fly	<i>Lucilia cericata</i>	Arthropoda	Insecta	Diptera	Calliphoridae	Lucilia	cericata
Fruit fly	<i>Drosophila simulans</i>	Arthropoda	Insecta	Diptera	Drosophilidae	Drosophila	simulans
Iridescent Centurion	<i>Sargus iridatus</i>	Arthropoda	Insecta	Diptera	Stratiomyidae	Sargus	iridatus
Tiger mosquito	<i>Aedes albopictus</i>	Arthropoda	Insecta	Diptera	Culicidae	Aedes	albopictus
Banana stalk fly	<i>Telostylinus lineolatus</i>	Arthropoda	Insecta	Diptera	Neriidae	Telostylinus	lineolatus
White banded	<i>Amegilla quadrifasciata</i>	Arthropoda	Insecta	Hymenoptera	Apidae	Amegilla	quadrifasciata

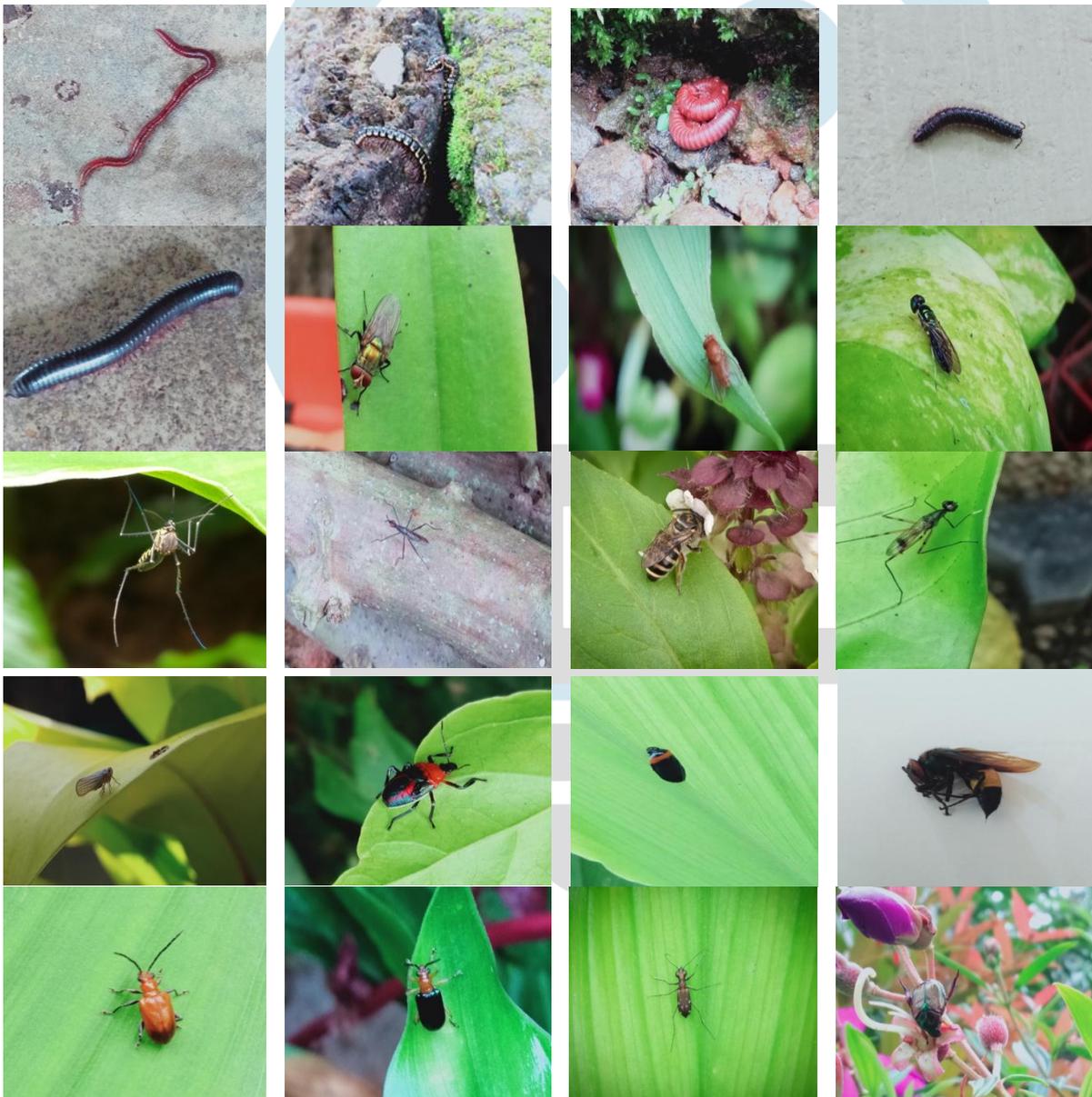
digger bee							
Stilt legged fly	<i>Micropeza corringiolata</i>	Arthropoda	Insecta	Diptera	Micropezidae	Micropeza	corringiolata
Small white hopper	<i>Nisia carolinensis</i>	Arthropoda	Insecta	Hymenoptera	Meenoplidae	Nisia	carolinensis
Florida predatory stink bug	<i>Euthyrhynchus floridanus</i>	Arthropoda	Insecta	Hymenoptera	Pentatomidae	Euthyrhynchus	floridanus
Spittle bug	<i>Phymatostetha deschampsii</i>	Arthropoda	Insecta	Hymenoptera	Cercopidae	Phymatostetha	deschampsii
Greater banded hornet	<i>Vespa tropica</i>	Arthropoda	Insecta	Hymenoptera	Vespidae	Vespa	tropica
Cucurbit leaf beetle	<i>Aulacophora femolaris</i>	Arthropoda	Insecta	coleoptera	Chrysomelidae	Aulacophora	femolaris
Cereal leaf beetle	<i>Oulema melanopus</i>	Arthropoda	Insecta	coleoptera	Chrysomelidae	Oulema	melanopus
Tiger beetle	<i>Cicindela ocellata</i>	Arthropoda	Insecta	coleoptera	Carabidae	Cicindela	ocellata
Japanese beetle	<i>Popillia japonica</i>	Arthropoda	Insecta	coleoptera	Scarabaeidae	Popillia	japonica
Giant Asian mantis	<i>Hierodula membranacea</i>	Arthropoda	Insecta	Mantodea	Mantidae	Hierodula	membranacea
Rice swift	<i>Borno cinnara</i>	Arthropoda	Insecta	lepidoptera	Hesperiidae	Borno	cinnara
Footman moth	<i>Nepita conferta</i>	Arthropoda	Insecta	lepidoptera	Erebidae	Nepita	conferta
Small fan-footed wave	<i>Idaea biselata</i>	Arthropoda	Insecta	lepidoptera	Geometridae	Idaea	biselata
Common crow	<i>Euploea core</i>	Arthropoda	Insecta	lepidoptera	Nymphalidae	Euploea	core
Day flying moth	<i>Episteme adalatrix</i>	Arthropoda	Insecta	lepidoptera	Noctuidae	Episteme	adalatrix
Tawny coster	<i>Acraea terpsicore</i>	Arthropoda	Insecta	lepidoptera	Nymphalidae	Acraea	terpsicore
Eumelea	<i>Eumelea ludovicata</i>	Arthropoda	Insecta	lepidoptera	Geometridae	Eumelea	ludovicata
Grey swallowtail moth	<i>Micronia aculeata</i>	Arthropoda	Insecta	lepidoptera	Uraniidae	Micronia	aculeata
Common five ring	<i>Ypthima baldus</i>	Arthropoda	Insecta	lepidoptera	Nymphalidae	Ypthima	baldus
Grass demon	<i>Udaspes folus</i>	Arthropoda	Insecta	lepidoptera	Hesperiidae	Udaspes	folus
Curoba	<i>Curoba sangarida</i>	Arthropoda	Insecta	lepidoptera	Erebidae	Curoba	sangarida
Common celurean	<i>Jamides celeno</i>	Arthropoda	Insecta	lepidoptera	Lycaenidae	Jamides	celeno
Large snow flat	<i>Tagiades gana</i>	Arthropoda	Insecta	lepidoptera	Hesperiidae	Tagiades	gana
Orange tailed marsh dart	<i>Ceriangrion cerinorubellum</i>	Arthropoda	Insecta	odonata	Coenagrionidae	Ceriangrion	cerinorubellum
Blue marsh	<i>Orthetrum aculeata</i>	Arthropoda	Insecta	odonata	Libellulidae	Orthetrum	aculeata

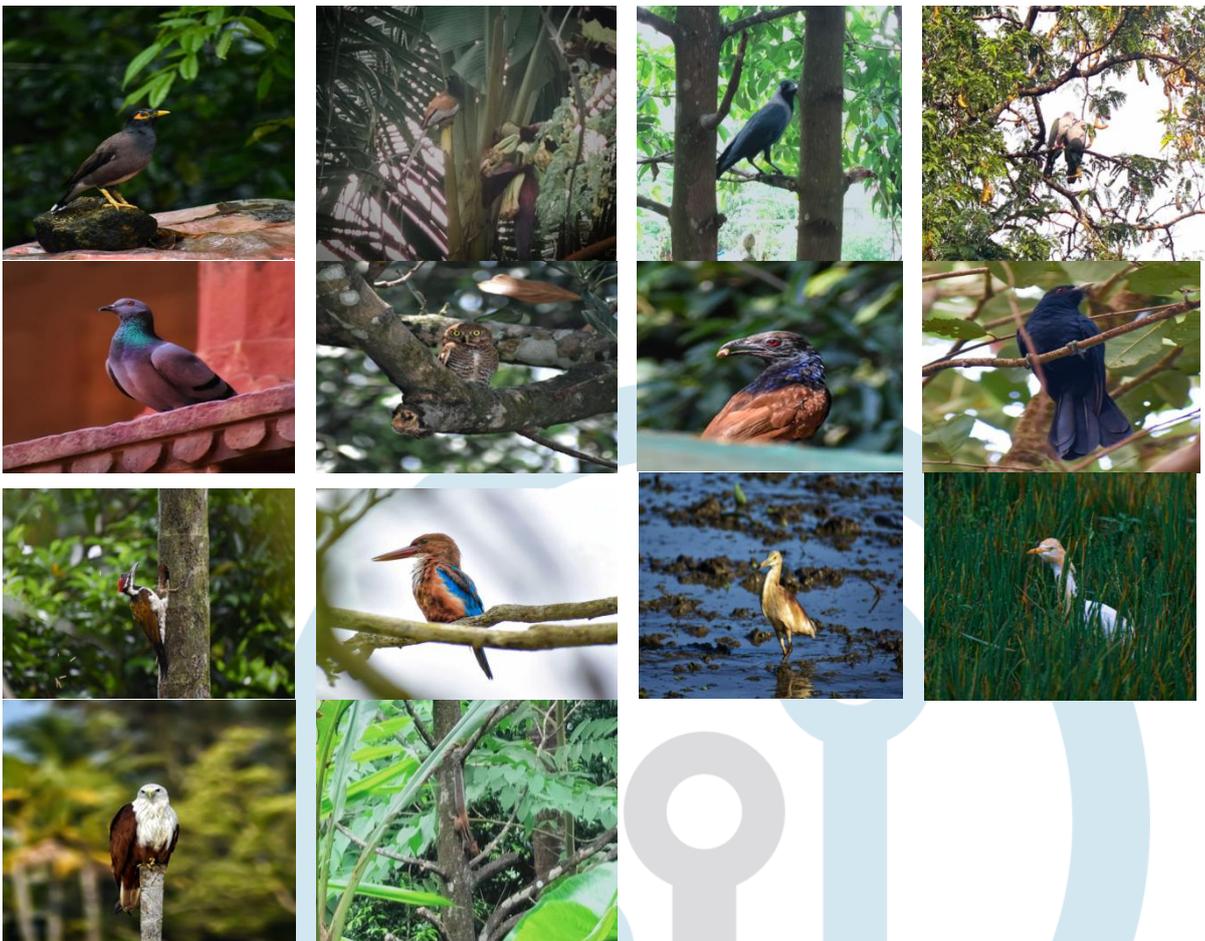
hawk							
Red-veined dropwing	<i>Trithemis arteriosa</i>	Arthropoda	Insecta	odonata	Libellulidae	Trithemis	arteriosa
Common picture wing	<i>Rhyothemis variegata</i>	Arthropoda	Insecta	odonata	Libellulidae	Rhyothemis	variegata
Striped lynx spider	<i>Oxyopes salticus</i>	Arthropoda	Arachnida	Araneae	Oxyopidae	Oxyopes	salticus
Banded phintella	<i>Phintella vittata</i>	Arthropoda	Arachnida	Araneae	Salticidae	Phintella	vittata
Two striped jumper	<i>Telamonia dimidiata</i>	Arthropoda	Arachnida	Araneae	Salticidae	Telamonia	dimidiata
Ghost spider	<i>Hibana incursa</i>	Arthropoda	Arachnida	Araneae	Anyphaenidae	Hibana	incursa
Black slug	<i>Arion ater</i>	Mollusca	Gastropoda	stylommatophora	Arionidae	Arion	ater

List of Organisms identified- Chordates

Common name	Binomial name	Phylum	Class	Order	Family	Genus	Species
Common toad	<i>Bufo bufo</i>	Chordata	Amphibia	Anura	Bufo	<i>Bufo</i>	<i>bufo</i>
Romer's tree frog	<i>Liuixalus romeri</i>	Chordata	Amphibia	Anura	Rhacophoridae	<i>Liuixalus</i>	romeri
Indian garden lizard	<i>Calotes versicolor</i>	Chordata	Reptilia	Squamata	Agamidae	Calotes	versicolor
House lizard	<i>Hemidactylus frenatus</i>	Chordata	Reptilia	Squamata	Gekkonidae	Hemidactylus	frenatus
Greater racket tailed drongo	<i>Dicrurus paradiseus</i>	Chordata	Aves	Passeriformes	Dicruridae	Dicrurus	paradiseus
Red whiskered bulbul	<i>Pycnonotus jocosus</i>	Chordata	Aves	Passeriformes	Pycnontidae	Pycnonotus	jocosus
Black hooded oriole	<i>Oriolus xanthornus</i>	Chordata	Aves	Passeriformes	Oriolidae	Oriolus	xanthornus
Olive backed sunbird	<i>Cinnyris jugularis</i>	Chordata	Aves	Passeriformes	Nectariniidae	Cinnyris	jugularis
Loten's sunbird	<i>Cynnis lotenius</i>	Chordata	Aves	Passeriformes	Nectariniidae	Cynnis	lotenius
Common myna	<i>Acridotheres tristis</i>	Chordata	Aves	Passeriformes	Sturnidae	Acridotheres	tristis
Rufous treepie	<i>Dendricitta vagabunda</i>	Chordata	Aves	Passeriformes	Corvidae	Dendricitta	vagabunda
House crow	<i>Corvus splendens</i>	Chordata	Aves	Passeriformes	Coryidae	Corvus	splendens
Green imperial pigeon	<i>Ducula aenea</i>	Chordata	Aves	Columbiformes	Columbidae	Ducula	aenea
Common pigeon	<i>Columba livia</i>	Chordata	Aves	Columbiformes	Columbidae	Columba	livia
Jungle owlet	<i>Glaucidium radiatum</i>	Chordata	Aves	Stringiformes	Strigidae	Glaucidium	radiatum
Greater caucal	<i>Centropus sinensis</i>	Chordata	Aves	Cuculiformes	Cuculidae	Centropus	sinensis

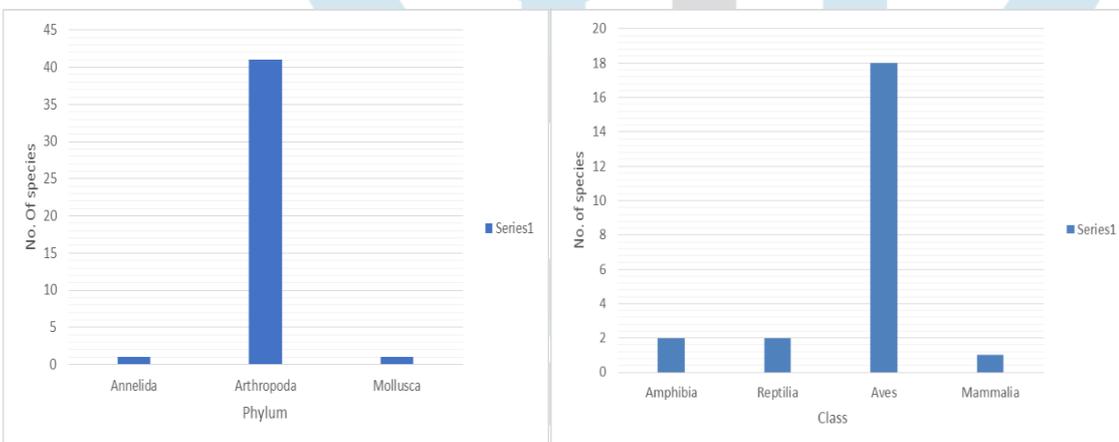
Asian koel	<i>Eudynamys scolopaseus</i>	Chordata	Aves	Cuculiformes	Cuculidae	Eudynamys	scolopaseus
Black rumped flameback	<i>Dinopium benghalense</i>	Chordata	Aves	Piciformes	Picidae	Dinopium	benghalense
White throated kingfisher	<i>Halcyon smyrnensis</i>	Chordata	Aves	Coraciiformes	Alsenidae	Halcyon	smyrnensis
Javan pond heron	<i>Ardeola speciosa</i>	Chordata	Aves	Pelecaniformes	Ardeidae	Ardeola	speciosa
Cattle egret	<i>Bubulcus ibis</i>	Chordata	Aves	Pelecaniformes	Ardeidae	Bubulcus	ibis
Brahminy kite	<i>Haliastur indus</i>	Chordata	Aves	Accipitriformes	Accipitridae	Haliastur	indus
Indian palm squirrel	<i>Funambulus palmarum</i>	Chordata	Mammalia	Sciuridae	Sciuridae	Funambulus	palmarum





Species richness(Non-chordata)

species richness (chordate)



DISCUSSION

Biodiversity comprehend the evolutionary, ecological and cultural processes that sustain life. The study was conducted in Manjapra, a village near Angamaly, Ernakulam District Many species of animals were spotted and recorded during the course of the study.

Manjapra is a small village having it's main four entrances are enriched with agricultural fields and water bodies. Manjapra is rich in its biodiversity in which Arthropoda constitutes the highest number. Arthropoda includes beetles, butterflies, dragon flies, spiders etc. They were recorded mostly in the shady and vegetative areas under study. Millipedes were located in the regions with high moisture content. Red whiskered bulbul, sunbirds were very common in this area. Greater racket tailed drongo was seen near paddy fields. Kingfishers were present near water bodies and agricultural fields catching small fishes.

Manjapra looks like an island surrounded by paddy fields on all sides. The unique geographical feature of Manjapra is that all four entry points to this panchayat are from a padam (cultivated paddy field) and stream of water called as Thodu. The unique feature of Manjapra entertains a broader variety of organisms in this area. But the richness of biodiversity was noted declining compared to the past. Biodiversity is totally dependent on current climatic change and human interventions.

Healthy ecosystems provide us with many essentials we take for granted. In short, biodiversity provides us with clean air, fresh water, good quality soil and crop pollination. It helps us fight climate change and adapt to it as well reduce the impact of natural hazards.

Since living organisms interact in dynamic ecosystems, the disappearance of one species can have a far-reaching impact on the food chain. It is impossible to know exactly what the consequences of mass extinctions would be for humans, but we do know that for now the diversity of nature allows us to thrive.

CONCLUSION

Biodiversity includes not only species we consider rare, threatened, or endangered but also every living thing from humans to organisms we know little about, such as microbes, fungi, and invertebrates. Biodiversity is important to most aspects of our lives. Every single organism has a role to play. Biodiversity stabilizes ecosystem and global climate. The study was conducted in selected areas of Manjapra panchayat in the time period of 4 months, from August 2021 to November 2021. Manjapra is rich in biodiversity though it constitutes both agricultural fields and industries. Manjapra is known as green village as quality agricultural products are exported to different parts of the world from this small village. 66 organisms were sighted and identified. The organisms identified belonged to the Phyla Annelida, Arthropoda, Mollusca, and Chordata. Among Chordates there were Amphibia, Reptiles, Aves and Mammal.

If there is no biodiversity there will be no future for humanity. Loss of biodiversity occurs when either the habitat essential for the survival of a species is destroyed, or particular species are destroyed, by drastic climatic changes and human interventions. With the loss of several species, the ecosystem balance is hindered hence all the species on earth are interconnected to each other in every other way. Hence, the loss of one species poses as a threat to the existence of another species. The study showed that the biodiversity is fast declining and appropriate measures should be taken to conserve biodiversity.

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