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Study of Higher Chordates Biodiversity in Mankaura Village at Pachperwa of District Balrampur Uttar Pradesh, India

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Abstract

Study of Biodiversity of Higher Chordates in Mankaura Village, block Pachperwa and tehsil Tulsipur of district Balrampur, Uttar Pradesh, India. This Village was surveyed during the month of April 2024 to March 2025 for this study we used watching and Visual survey with the help of camera, in this study total 26 species were recorded .The notable higher chordates biodiversity includes 08 species of fishes,02 species of Amphibia,08 species of reptilia (04 species lizard and 04 species of nonpoisonous snakes), 06 species of birds and 02 species of mammals (Pests).Finally it concluded that it shows large biodiversity.

Keywords: Mankaura Village, District-Balrampur (U.P.), Biodiversity, Higher chordates

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Introduction

Changing is the rule of Biodiversity nature of Higher Chordatesis not explaining of it. It is the part and parietal of ecology. Specially in Mankaura Village at Pachperwa of district Balrampur, Uttar Pradesh. This Biodiversity of higher Chordates play a significant role to maintain ecology or ecosystem in this way I would like to study of Higher Chordates Biodiversity in Mankaura Village. Similar study biodiversity of chordates (Ali S, 1990, Alvey 2006) .

Biodiversity in India

India occupies 2.4% of the world's area and is host to 7% of the global biodiversity, accounting for 8% of the world's mammals, 13% birds,6% reptiles ,4% amphibians, 12% fish and 6% flowering plants. India is one of the 12 mega biodiversity hotspots of the world, the other countries being Bolivia, Brazil, China, Colombia, Ecuador, Indonesia, Mexico, Peru, South Africa, USA and Venezuela. So far over 91,200 species of animals and 45,500 species of plants have been documented in ten bio-geographic region of the country. India also has a variety of wetlands ecosystems ranging from high altitude cold deserts to hot and humid areas in coastal zones containing diverse flora and fauna (MoEF, 2014). However ,India is losing biodiversity at a rapid rate. Around 39 species of mammals, 72 species of birds and 1336 species of plants are considered vulnerable and endangered as the species have not been sighted during last 6-10 decades (Haripriya et.al., 2006).

Additionally, about 4,445 Km2 of the country is under mangroves (MoEF, 2009). India also possess rich marine diversity. It is third largest fish producing country in the World (MoEF, 2009), The vast coastline of India stretches 7,517 Km in total 7 and comprises of a wide range of habitats (like estuaries, lagoons, mangroves, backwater, salt marshes, rocky coasts, stretches and coral reefs). They are all characterised by rich and unique biodiversity components. Forests, covering.39 percent of the geographical area of the country (of which 75% occurs in the north eastern states), are crucial ecosystems for India.

Due to lack of awareness for the value of biodiversity and inadequate forest protection planning. This rich biodiversity is in continuous decline. As per the International Union for conservation of Nature (IUCN) Red list version 2010.4,94 species of mammals, 78 species of birds,66 species of Amphibians, 30 species of Reptiles, 122 species of fish,113 species of Invertebrates and 255 species of plants in India are listed as Critically Endangered, Endangered or Vulnerable.

Phylum-Chordata is the highly evolved phylum among all animal phyla. These are characterized by the presence of notochord, presence of dorsal tubular hollow nerve cord and presence of pharyngeal Gill slits orgill clefts .The chordata is divided in to two group lower chordata (Acrania or Protochordata) and higher chordata (Craniata or Euchordata). The higher chordata is represented by a single subphylum Vertebrata in which notochord is replaced by back bone (Vertebral column).The Vertebrates have ventral muscular cardiac system bearing 2-4 chambers. A vertebrate has notochord during its embryonic development which is replaced by a cartilaginous or bony vertebral column called as back bone in adult. Taxonomically higher chordates belong to a subphylum Veryebrata that includes seven classes living Cyclostomata (division-Agnatha), Chondrichthyes,Osteichthyes, Amphibia, Reptilia, Aves, Mammalia.

Cyclostomata constitutes a group of eel -shaped vertebrate without jaws or paired appendages including the living jawless fishes: the lampreys and hagfishes. They have elongated and eel like body with suctorial and circular mouth. Fishes [Superclass - Pisces, Class - Chondrichthyes (Cartilaginous fishes) and Osteichthyes (bony fishes)] are exclusively aquatic animals. They have Cartilaginous or bony Vertebral column to support and protect the spinal cord, tubular nerve cord, ventral muscular 2-Chambered heart, fins as paired appendages and gills for breathing. These are cold blooded animals having ability to

appendages and gills for breathing. These are cold blooded animals having no ability to regulate their body temperature that changes according to the temperature of their surroundings.

Class- Amphibia constitute a subphylum-Vertebrata that live on land but breed in water.These are cold blooded (Pokilothermic or Ectotherms) animals with dicondylic skull. Class Amphibia comprises of three orders: Apoda that includes limbless amphibians like Caecilians, Urodela that includes newts and Salamanders and Anura that includes Frog and toads.

Reptiles are also Cold blooded animals with monocondylic skull. These are first exclusively terrestrial vertebrates with creeping mode of locomotion. In general the class Reptilia contains four orders viz. Chelonia (turtle and tortise), Rhynchocephalia (tuatara), Squamata (lizards and Snakes) and Crocodilia (Crocodiles).

Birds (Aves) also referred to as masters of air are warm-blooded (homoiothermic) egg laying vertebrates characterized by feather and forelimbs modified as wings for flight. Jaw bones are prolonged in to toothless beak to seves like hands and mouth concurrently.

Mammals are warm blooded vertebrate having the skin more or less covered with hair; Young are born alive (Viviparous) except for the small subclass of monotremes (most primitive mammals comprising the only extant members of the subclass- Prptotheria) and nourished with milk, having dicondylic skull and a muscular diaphragm. Presence of Mammary glands is the most unique features of this group. The class Mammalia includes egg laying mammals (Prototheria), Pouched mammals (Metatheria) and higher Viviparous mammals (Eutheria). Jones Waltor (2009) has study of biodiversity of chordates.

Studies of fish biodiversity have been immense interest to researchers of (Day, 1978, Menon, 1999, Srivastava, 2002, Kumar, 2012, Shukla and Singh (2013), Nagma and Khan (2013), Kaushik and Bardoloi, 2016, Bhat and Rao, 2018, Mishra et.al., 2021).

Kanaujia et.al. (2017) have reported Herpetofauna (Amphibia and Reptilia) in Uttar Pradesh, including 70 species of Reptiles: 38 species are Snakes (18 Venomous and 20 nonvenomous), 18 turtles and 12 lizards and 23 species of Amphibia were also recorded.

Nasim Ahmad Ansari (2018) has reported herpetofaunal diversity at the Surajpur Wetland, India, a total of 19 species of herpetofauna belonging to 14 families and three orders were recorded. It comprised of six species of Amphibians belonging to five families and 13 species of reptiles belonging to nine families. Ahmed et.al. (2009) also recorded reptiles and amphibians of Northeast India.

Vikas, K.S.(2020): has reported effects and values of biodiversity in India while Rajesh K.Srivastava et.al.(2022) has reported birds are the most attractive and fascinating groups of animals on the earth. Birds play an important role and dynamic role in the balanced ecological Parameters uniting of food chain in ecological units of nature and data were collected in Lucknow Zone for 12 consecutive months by using the point count method, recorded 35 species of birds that includes 11 orders and 23 families. The order Passeri-formes has 19 species of birds, The family saturnidae and Phasianidae (3 species) was the most diverse among all the 23 families. Michael (2021) has reported 11 species of smaller mammals in Trichy forest range Tiruchirapalli, TamilNadu, India.

In Mankaura Village of district Balrampur Uttar Pradesh, India, the objective of the present study was to documented Higher Chordates Biodiversity (Fish, Amphibia, Reptilia, Aves and Eutherian Mammals) in Mankaura Village, block-Pachperwa of district Balrampur, Uttar Pradesh, India. Similar results other biodiversity in India of higher chordates have also been noted by Inger et.al. (1984), Srivastava G.J. (2002), Jayaram (1999), Hallerman et.al (2001), Chanda (2002), Das (2002), Singh and Banyal (2003),

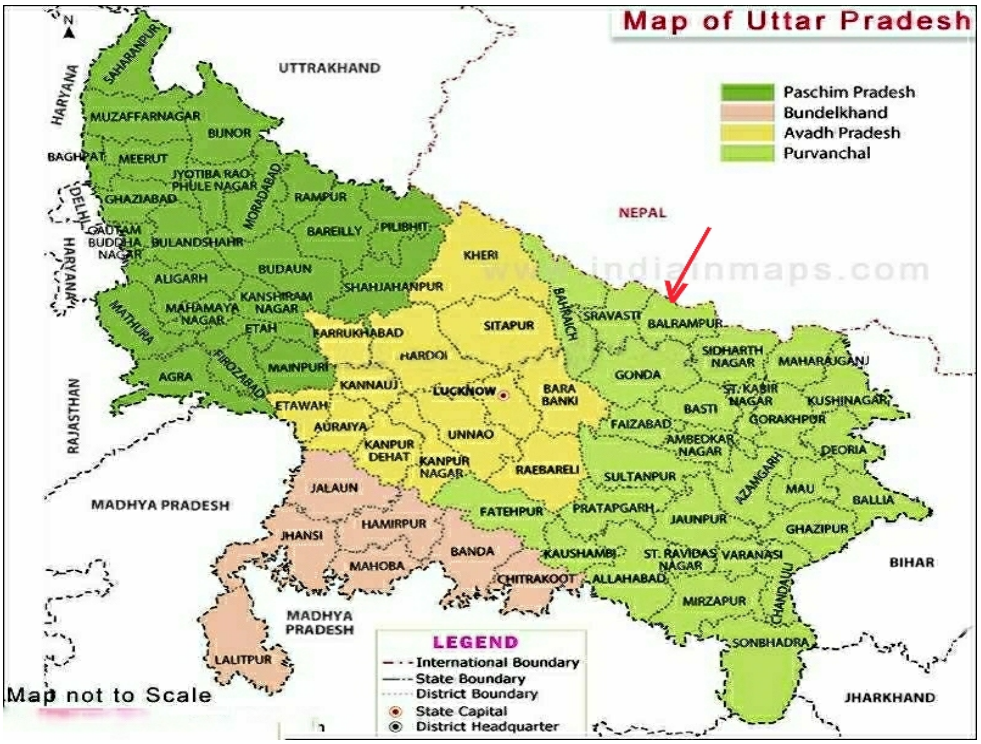
Whitaker and Captain (2004), Saikia et.al. (2007), Rooijen et.al.(2008), Ahmad et.al. (2009) Dinesh et.al. (2013) and Seema Jain(2017).

Location of study area

Pachperwa is a town and a nagar panchayat in district Balrampur in Indian State of Uttar Pradesh with 27.532458 Latitude and 82.419236 Longitude.Pachperwa is situated 54 KM from district headquarter Balrampur.

Mankaura is a village in Pachperwa block in district Balrampur of Uttar Pradesh state, India. It belong to Devipatan division. It is located 54 Km towards north-east from the district head quarter Balrampur. Mankaura Village located 14 Km from Pachperwa in South direction and 205 Km from state Capital Lucknow(Map-1, 2 & 3).

Map-1: Location of Study Area in India



Map-2: Location of study area of Uttar Pradesh

Map-3: Location of study area at Pachperwa of District Balrampur, Uttar Pradesh

Materials and Methods

The study was carried out during April 2024 to March 2025, with an aim to determine the Biodiversity, distribution and natural history information at Mankaura Village of district Balrampur, Uttar Pradesh. Field surveys were carried out during day time. During the extensive survey, we carried out visual inspection of fields, grasses, ponds and houses. All possible areas were searched thoroughly including such microhabitat as puddles and springs and such areas which often attract amphibians and reptiles for food, shelter or breeding. We go through all the literature, Department of Zoology Museums, M.L.K.P.G.College, Balrampur, Uttar Pradesh and by help of local people for identification of fishes, amphibians, reptiles, birds and mammals (Fig.-1, 2 and 3).

Fishes were identified using the standard keys of Day (1978), Jhingran(1991), Jayaram (1999) and Srivastava (1998). Dinesh (2017) helped to identify amphibian while reptiles with the help of Aengals (2011), Observation and identification of birds were made 8:30 to 11:30 AM in the morning and 2:30 to 5:30 PM in the evening. Bird species were identified by using taxonomic manuals and key references books Grimmett et.al (1998), Singh et.al. (2018), Kumar and Srivastava (2021),Rajesh et.al.(2022).

Avian data were collected for 12 consecutive months by using the point count method were carried out by conducting avian surveys. Birds were also counted by using direct count method from walking within the selected habitats of Mankaura Village at Pachperwa of district Balrampur, Uttar Pradesh, India. Birds photographs were taken with the help of Canon EOS 1000 D SLR Camera and Android mobile phone.The birds were observed most active during the period of day time.

Mammalian biodiversity With the help of R.L. Kotpal book. Local people also assisted the author in many ways for collection and identification.

Fig.-1: Fish Collection by Investigator for Study of Fishes In Mankaura Village at Pachperwa of district Balrampur

Fig.-2: Capturing photos of Reptiles and Mammals (Pests) in Mankaura Village at Pachperwa by Investigator for Collection of data

Fig.-3: Capturing Photos of birds in Mankaura Village at Pachperwa by Investigators for collection of birds data

Results

Table-1: List of Different Species of Higher Chordates in Mankaura Village at Pachperwa of District Balrampur, Uttar Pradesh, India
(Data April 2024 to March 2025)

S.No.	Class	Scientific Name	Common Name
	Osteichthyes		
1		*Cirrhinus reba*	Naini
2		*Notopterus notopterus*	Patra
3		*Cyprinus carpio*	Common carp
4		*Labeo rohita*	Rohu
5		*Channa marulius*	Saur
6		*Heteropneustes fossilis*	Singhi
7		*Clarias batrachus*	Magur
8		*Xenentodon cancila*	Kauwa fish
	Amphibia		
9		*Duttaphrynus melanostictus*	Common Indian Toad
10		*Rana tigrina*	Indian Frog
	Reptilia (Lizard)		
11		*Lygosoma punctata*	Snake Skink
12		*Hemidactylus brookii*	Brook's Gecko
13		*Hemidactylus flaviviridis*	House Gecko
14		*Eutropis carinata*	Brahminy
	Reptilia (Snakes)		
15		*Ptyas mucosa*	Dhamin (Non-Poisonous)
16		*Amphiesma stolatum*	Buff Striped Keelback (Non-Poisonous)
17		*Eryx johnii*	Two headed Snake (Non-Poisonous)
18		*Eryx conicus*	Rough Tailed Sand Boa (Non-Poisonous)
	Aves		
19		*Pavo cristatus*	Indian Peafowl
20		*Milvus migrans*	Black Kite
21		*Acridotheres tristis*	Common Myna
22		*Columba livia*	Rock Pigeon
23		*Passer domesticus*	House Sparrow
24		*Corvus splendens*	House Crow
	Mammalia (Pests)		
25		*Funambulus palmarum*	Striped Squirrel
26		*Boselaphus tragocamelus*	Nilgai

Photoplates of different Higher Chordates in Mankaura Village

Image-1: Cirrhinus reba

Image-2: Notopterus notopterus

Image-3:Cyprinus carpio

Image-4: Labeo rohita

Image-5 : Channa marulius (Saur)

Image-6: Heteropneustes fossilis

Image-7:Clarias batrachus Mangur

Fig.-8:Xenentodon cancila

Image-9: Duttaphrynus melanostictus

Image-10: Rana tigrina

Image-11: Lygosoma punctata

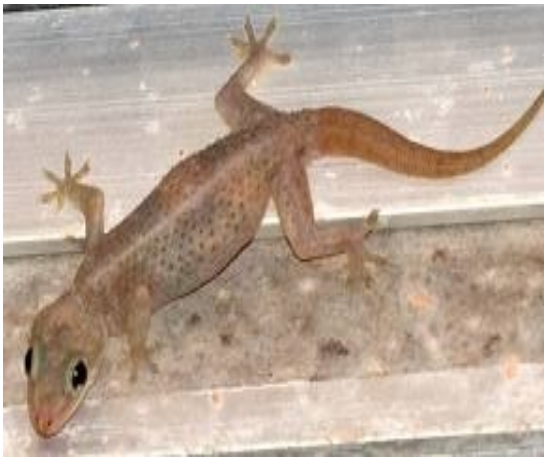


Image-12: Hemidactylus brookii

Image-13: Hemidactylus flaviviridis

Image-14: Eutropis carinata

Image-15: Ptyas mucosa

Image-16:Amphiesma stolatum

Image-17:Eryx johnii

Image-18:Eryx conicus

Image-19: Pavo cristatus

Image-20:Milvus migrans

Image-21:Acridotheres tristis

Image-22:Columba livia

Image-23: Passer domesticus

Image-24: Corvus splendens

Image-25:Funambulus palmarum

Image-26: Boselaphus tragocamelus

Mankaura Village at Pachperwa of district Balrampur, Uttar Pradesh hasrich Higher Chordates Biodiversity including-

(A).08 Species of fishes: 08 species of fishes Including: Cirrhinus reba, Notopterus notopterus, Cyprinus carpio, Labeo rohita, Channa marulius, Heteropneustes fossilis, Clarias batrachus and Xenentodon cancila were observed during our survey in Mankaura Village at Pachperwa of district Balrampur, Uttar Pradesh, India.

(B). 02 Species of Amphibia: 08 species of Amphibian including: Duttaphrynus melanostictus and Rana tigrina (Indian frog) were recorded in Mankaura Village at Pachperwa.

(C)-08 species of Reptilia:

04 species of lizard including: Lygosoma punctata, Hemidactylus brookii, Hemidactylus flaviviridis and Eutropis carinata were recorded

04 species of Snakes including: Ptyas mucosa (Non-Poisonous), Amphiesma stolatum (Non-Poisonous), Eryx johnii (Non-Poisonous) and Eryx conicus (Non-Poisonous) were observed during our survey in Mankaura Village at Pachperwa of district Balrampur, Uttar Pradesh, India.

(D) -06 species of Birds: 06 species of Birds including: Pavo cristatus, Milvus migrans, Acridotheres tristis, Columba livia, Passer domesticus and Corvus splendens were observed and documented during our survey in Mankaura Village at Pachperwa of district Balrampur, Uttar Pradesh, India.

(E). 02 species of Mammals: 02 species of Mammal including: Funambulus palmarum (Stripped Squirrel) and Boselaphus tragocamelus (Nilgai) were commonly recorded during our survey in Mankaura at Pachperwa of district Balrampur, Uttar Pradesh, India.

Discussion

Total 26Higher Chordates are found during the study period from 05 Classes which were listed in (Table-01 and Image -01 to 26). Including: 08 species of fishes, 02 species of Amphibia, 08 species of reptilian (Lizards and Snakes), 06 species of birds and 02 species of Mammalia (Pests), Table-1.

Fish fauna: Several workers have works in various lentic and lotic water bodies regarding the distribution and abundance of fish diversity Shukla and Singh (2013), Tripathi (2020) and Shukla and Tripathi (2021).

Herpetofauna (Amphibia and Reptilia): Many habitat types may occur within an area, amphibians may utilize only a few of these. The number of Individuals that represents each species in community may vary from place to place depending on the amount of rainfall, available habitat and human interference as the structure and diversity of an amphibian community is determined by the availability of food, macro and micro habitat (Chanda, 2002, Dinesh et.al. 2011). Workers have work similar previous survey of Herpetofaunal (Amphibia and Reptilia) diversity of North-East India and Wildlife sanctuary Uttar Pradesh (Ahmed et.al., 2009, Daset.al.2012).

Avian fauna: Workers have works similar previous survey of Avian biodiversity in Uttar Pradesh (Kumar et. al., 2015, Carpenter, 2019)

Mammalian fauna: Workers have work similar previous survey of mammalian Biodiversity in Uttar Pradesh (Nasim Ahmad Ansari 2017).

Conclusion

To conclude the study of Higher Chordates Biodiversity in Mankaura Village at Pachperwa of district Balrampur, Uttar Pradesh shows that many Higher Chordates animals which were found in these Mankaura Village area many years back have now vanished or reduced to a very few due to human interference. These Mankaura Village ponds, gardens and shrubs also need to be protect and improve management for Higher Chordates diversity.

The survey of the study area showed different habitat having rich Fish fauna and Avian fauna this is due to availability of varieties of food and ponds resources. The finding illustrated 08 species of Fishes and 06 species of birds, specially house crow, common myna and rock pigeon are very common birds in this Mankaura villages.

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