



ISSN 2347-2677  
IJFBS 2019; 6(3): 48-50  
Received: 21-03-2019  
Accepted: 25-04-2019

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## Biodiversity of higher chordates at Khanwari village of Kaushambi (U.P.)

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### Abstract

Khanwari village is located in block and taluk of Sirathu of Kaushambi district of Uttar Pradesh. This village was surveyed and studied in detail once in a month for the period from Jan 2017 to Dec 2017. The survey indicates a rich higher chordate biodiversity of the said village Khanwari. The notable vertebrate diversity includes 19 genera of fishes, 2 genera of amphibians, 4 genera of reptiles, 12 genera of birds and 13 genera of mammals.

**Keywords:** Khanwari village, biodiversity, fishes, amphibia, birds, mammals, conservation

### Introduction

*Chordata* is the highly evolved phylum among all animal phyla. These are characterized by the presence of dorsal tubular nerve cord, notochord and pharyngeal gill slits. The *Chordata* is divided into lower *Chordata* and higher *Chordata*. The higher *Chordata* is represented by a single subphylum Vertebrata in which notochord is replaced by 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 backbone in adults. Taxonomically higher chordates belong to a subphylum Vertebrata that includes seven classes of living animal viz. Cyclostomata, Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves and 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 (Chondrichthyes and Osteichthyes) are exclusively aquatic animals. They have cartilaginous or bony vertebral column to support and protect the spinal cord, tubular nerve chord, ventral muscular 2-chambered heart, fins as paired 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.

Amphibians constitute a class of vertebrates that live on land but breed in water. These are poikilothermic animals with dicondylic skull. Class Amphibia comprises of three orders; Apoda (Gymnophiona) that includes limbless amphibians like, caecilians, Urodela (Caudata) that includes newts and salamanders and Anura (Salientia) that includes frogs and toads.

Reptiles are also poikilothermic animals with monocondylic skull. These are first exclusively terrestrial vertebrates with crawling or creeping mode of locomotion. In general the class Reptilia comprises four orders viz. Chelonia (turtle and tortoise), Rhynchocephalia (tuatara), Squamata (lizards and snakes) and Crocodilia (crocodiles).

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

Mammals are homoiothermic vertebrates 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 Prototheria) and nourished with milk, having dicondylic skull and a muscular diaphragm. Presence of mammary glands is the most unique feature of this group. The class Mammalia includes egg laying mammals (Prototheria), pouched mammals (Metatheria) and higher viviparous mammals (Eutheria). Prakash *et al* (2015a, 2015b, 2015c and 2016)<sup>[7-10]</sup>, Verma *et al* (2016)<sup>[19]</sup> and Verma (2016a and 2016b)<sup>[12, 13]</sup> conducted the limnological studies as well as studies on fish biodiversity in a

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fresh water body. Verma (2016c)<sup>[14]</sup> performed hydrobiological studies of Muntjibpur pond while Verma (2016d)<sup>[15]</sup> did preliminary survey of fishes of Muntjibpur pond. Verma (2017a & 2017b)<sup>[16, 17]</sup> studied the ichthyodiversity and conservation status of fishes while Verma (2018)<sup>[18]</sup> did a biodiversity survey of Muntjibpur pond. Verma *et al* (2017)<sup>[20]</sup> studied the fish biodiversity of Khanwari pond. The present study is undertaken to evaluate the whole village in terms of higher chordate diversity.

### **Study Area**

This Khanwari village is surrounded by Jiyapur in east, Tulsipur and Admapur in the north, Kaini in the south and Nadin Ka Pura in the west. The climatic change influences to its vast openness, landscape ecology and biodiversity. The said village is more than 75 km away from Prayagraj, 10 km from Manjhanpur (headquarter of district Kaushambi) and 270 km from Lucknow by road. Its nearest railway station is Sirathu at a distance of 15 km and nearest airport Bamrauli (Prayagraj) is at a distance of 60 km.

### **Methodology**

Fishes were identified using the standard keys of Mishra (1959)<sup>[6]</sup>, Day (1989)<sup>[2]</sup>, Jhingran (1991)<sup>[5]</sup>, Jayaram (1999)<sup>[4]</sup> and Srivastava (1998)<sup>[11]</sup>. Dinesh (2017)<sup>[3]</sup> helped to identify Amphibians while reptiles with the help of Aengals (2012)<sup>[1]</sup>. Local people also assisted the author in many ways for collection and identification.

### **Result and discussion**

Khanwari village has rich vertebrate diversity including (1) 19 genera of fishes (Verma *et al.* 2017)<sup>[20]</sup> represented by *Catla*, *Labeo*, *Cirrhinus*, *Puntius*, *Mystus*, *Wallago*, *Ompak*, *Clarias*, *Heteropneustes*, *Ailia*, *Channa*, *Glossogobius*, *Anabas*, *Colisa*, *Notopterus*, *Gudusia Setipinna*, *Xenentodon* and *Mastacembelus* (2) two genera of amphibians: Indian bullfrog (*Hoplobatrachus* or *Rana tigrina*) and common Indian toad (*Duttaphrynus*) (3) four genera of reptiles: common house lizard (*Hemidactylus*), garden lizard (*Calotes*), Cobra (*Naja naja*) and Krait (*Bungarus*) (4) 12 genera of birds: Peacock (*Pavo*), Parrot (*Psittacula*), Crow (*Corvus*), Vulture (*Neophron*), Pigeon (*Columba*), House sparrow (*Passer*), Quail, Bulbul, Koel, Owl, Fowl and Egrets and (5) 13 types of mammals: shrew, mouse, pig, squirrel, bat, dog, cat, rabbit, jackal, monkey, goat, cow, buffalo etc.

### **Conclusion**

Human-animal interactions have a long history even before the era of domestication. The mutual benefit sharing has been a tradition between human and animals. As the civilization progressed the animals came under domestication and today often act as "social substitutes" through bonding. However, there is a lack of clear scientific data at local levels to suggest and defines the most appropriate procedures for developing the ecological bonding between native people and their faunal diversity. Thus such studies will fill the lacuna of scientific understanding of Human-animal interactions on one hand and shall promote the conservation strategies in the days 19 genera of fishes, 2 genera of amphibians, 4 genera of reptiles, 12 genera of birds and 13 genera of mammals from the village Khanwari. The study in long run shall be able to compile a scientific record of animal species diversity of a particular region as a ready reference for future research to know the faunal status.

### **Acknowledgements**

Author is highly grateful to the Prof. Ashish Joshi, Principal DDU Govt. P.G. College Saidabad- Prayagraj for providing necessary laboratory facilities. Author is also obliged to Dr Shri Prakash an eminent Zoologist and Dr H.P. Pandey an eminent Botanist, local Gram Pradhan and local people for their support and co-operation during entire study.

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