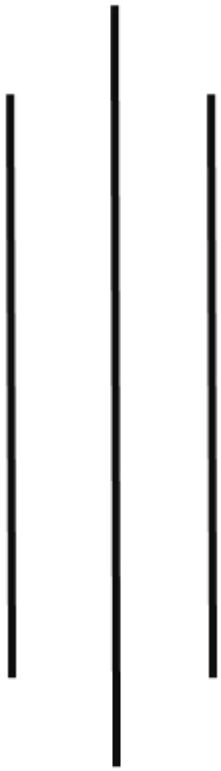
"FISH DIVERSITY OF RAPTI RIVER, NEPAL"

A Report in Partial Fulfilment of the Requirement of Practice Examination of Biology(bio.301) for Secondary Label Education of NEB.



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DECLARATION

We hereby declare that the project work entitled **"Fish Diversity of Rapti River"** under the supervision of **Mr. Devendra Prasad Dhakal** of Makawanpur Multiple Campus is done originally by us and not been submitted for the elsewhere for the award of any degree. All source of information have been specified acknowledge by reference to the authors or institutions.

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CERTIFICATE OF APPROVAL

This is to certify that report entitled **"Fish Diversity of Rapti River"**, submitted by the students of class XI for the Zoology pratical of +2 first year, has been accepted as a partial fulfilment of the requirement for the completion of first year +2 certificate Science (Zoology). This is their own work and has not formed the basics for the award of any degree, diploma or any other similar title.

…….. ……..

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1. INTRODUCTION

The Rapti River is an important freshwater river of central Nepal that supports a rich diversity of fish species. It is a perennial river originating from the Mahabharat Range and the Churia Hills, flowing from east to west before finally joining the Narayani River at Golaghat (Singh, 2013). Due to its continuous flow and suitable aquatic environment, the Rapti River provides a favorable habitat for various freshwater fish species.

Several studies have been conducted on the fish diversity of the Rapti River. Paudel (2006) studied the fishes of the Rapti River and reported 59 fish species belonging to 8 orders, 18 families, and 36 genera. Other studies by Edds (2007) and Rayamajhi (2017) focused on the Narayani–Rapti River system within the Chitwan National Park area and recorded 91 and 55 fish species, respectively. These studies indicate that the Rapti River is an important river system for freshwater fish diversity in Nepal.

In the present study area, two sampling sites were selected along the Rapti River, covering a total river length of about 5 km. During the monsoon season, the river becomes wide with strong water current and carries a large volume of floodwater. In contrast, during other seasons, the river remains comparatively shallow with mild to moderate water flow. The river water remains clear during the winter season, with algal growth making the riverbed slippery, while it becomes muddy during the rainy season.

The present study aims to observe and document the freshwater fish diversity of the Rapti River. Such studies are important for understanding fish diversity, supporting conservation efforts, and contributing to the collection and preservation of voucher specimens for future taxonomic and biodiversity research.

2. OBJECTIVE

The main goal of this study is to explore and document the variety of fish species found in the Rapti River near Hetauda. As a group, we sought to identify different fish by observing their physical features and using scientific references to understand their classification. We also wanted to observe the general environmental conditions of the river to see how they support different types of fish. Furthermore, our study used simple angling methods to catch and release specimens safely within their natural habitat. The main objective of this study is:

- **To find the diversity of fish in the study area.**

3. MATERIALS AND METHOD

In this report various descriptions, terminology and abbreviations are used to describe elements of the data or the source of data used in the analysis. Furthermore, different materials and methods were used and found to be helpful during the preparation of this report.

a) **Study Area:** We selected a 5-Kilometer section of Rapti River in Hetauda as the study area. This river is a perennial body of water situated between latitudes 27.431999 and 27.459464N and longitudes 85.021771 and 85.036894E. Before joining the Narayani River, it flows from east to west from the Mahabharat Range and the Churia Hills. Because of its constant flow, the river offers a suitable habitat for a variety of freshwater fish and is surrounded by natural surroundings.

b) **Method:** Once our field trip was decided, our team traveled to the Rapti River using local transportation under the supervision of our class teacher and the local fisherman. To ensure an eco-friendly study, we relied entirely on the primary method of observation, using only fishing rods and angling to catch the fish specimens without using any mechanical nets. After catching the fish, we carefully examined their external features and used our Biology textbooks along with online platforms and websites to identify their scientific names and characteristics. We also took photographs of the specimens to maintain a visual record for our analysis. By comparing our live observations with these digital and printed references, we were able to complete our report using reliable data while ensuring the fish were handled safely.

4. OBSERVATION

During the study period many species were recorded. Among them the species which we can identify is listed below in table.

Table 1. Fish species, order, family and local name

S.N.	Order	Family	Genus	Species	Local Name
1	Cypriniformes	Cyprinidae	*Opsarius*	*tileo*	Faketa
2	Siluriformes	Sisoridae	*Erethistes*	*pusillus*	Bhoomi
3	Cypriniformes	Cyprinidae	*Cabdio*	*morar*	Chakale
4	Cypriniformes	Cyprinidae	*Garra*	*gotyla*	Buduna
5	Cypriniformes	Nemacheilidae	*Nemacheilus*	*corica*	Baghi
6	Cypriniformes	Psilorhynchidae	*Psilorhynchus*	*balitora*	Patharchatti
7	Cypriniformes	Cyprinidae	*Labeo*	*fimbriatus*	Boi
8	Beloniformes	Belonidae	*Xenentodon*	*cancila*	Thunge
9	Cypriniformes	Cyprinidae	*Systomus*	*sarana*	Kande

The order Cypriniformes includes the most common fish in our study area. This group includes the predominant fish species found in the Rapti River, particularly those belonging to the family Cyprinidae. Small carps and loaches made up the majority of the fish collected, while species like Xenentodon cancila (Thunge) were occasionally observed.

5. SOME OBSERVERD SPECIMENS

Photoplate I

Erethistes pusillus

Opsarius tileo

Cabdio morar

Psilorhynchus balitora

Garra gotyla

Nemacheilus corica

Labeo fimbriatus

Xenentodon cancila

Systomus sarana

6. Limitation of the study

Our field visit to the Rapti River faced several challenges that affected our data collection process. First, the limited availability of professional fishing equipment made it difficult to catch a wider variety of specimens. Second, the cold temperature of the water and the surrounding environment during the study period limited our time spent in the river. Lastly, we observed that the acidic nature of the water may have influenced the presence and activity of certain fish species.

7. Discussion

The current fish diversity research carried out in the Rapti River by our group recorded a variety of species that align with the dominant patterns found in previous studies of this region. Our data confirms that **Cypriniformes** is the most widely found order, with the family **Cyprinidae** representing a major portion of our collection, including local species like **Faketa** (*Opsarius tileo*), **Chakale** (*Cabdio morar*), **Buduna** (*Garra gotyla*), **Boi** (*Labeo fimbriatus*), and **Kande** (*Systomus sarana*). We also identified specialized species such as the bottom-dwelling **Bhoomi** (*Erethistes pusillus*) from the Sisoridae family, the **Patharchatti** (*Psilorhynchus balitora*), and the surface-dwelling **Thunge** (*Xenentodon cancila*) belonging to the order Beloniformes. These findings are consistent with past research by experts like Poudel (2006) and Jha (2018), who also noted high diversity within the Cyprinidae family in the Rapti ecosystem. Furthermore, our observations showed that while species like **Baghi** (*Nemacheilus corica*) were found across two sampling stations, the overall fish abundance remained closely tied to seasonal changes and environmental factors like water temperature and dissolved oxygen(Sagar Tamang).

8. Conclusion

We identified 19 fish specimens representing 4 orders and 6 families during our field study in the Rapti River confirming that the order **Cypriniformes** is the most dominant group in this ecosystem. Our data shows that the family **Cyprinidae** represents the majority of the diversity, featuring species such as **Faketa** (*Opsarius tileo*), **Chakale** (*Cabdio morar*), **Buduna** (*Garra gotyla*), **Boi** (*Labeo fimbriatus*), and **Kande** (*Systomus sarana*). Additionally, we recorded specialized species like the bottom-dwelling **Bhoomi** (*Erethistes pusillus*) and **Baghi** (*Nemacheilus corica*), alongside the surface-dwelling **Thunge** (*Xenentodon cancila*) from the order Beloniformes. Although our catch was considerably small compared with the sample sizes usually collected in longer-term studies, our findings agree with those of Poudel (2006) and Jha (2018), indicating dominance by cyprinids within the Rapti River. The present study has shown that even with limited gear and seasons, the Rapti River still retains a remarkable fish species diversity whose distribution is strongly determined by abiotic environmental parameters such as dissolved oxygen and water temperature.

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10. Traditional Angling on the Rapti River

Photoplate II

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

Description of Photoplate II

Photo 1: Traditional Angling for Species Collection
Photo 2: Preparation of Sampling Equipment
Photo 3: The Research Team at the Rapti River Basin
Photo 4: Species Collection