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No./Conf./Ph.D./2019/3297

Raipur, Dated: 24-07-2019

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The above Ph.D. fulfills all the criterion/Conditions of Ordinance No. 45 of the University (revised as per Ph.D. regulation - 2009 of U.G.C.)

Name of Candidate : Sneh Kumar Meshram
Name of Supervisor : Dr. Amarnath Sharma
Co-Supervisor : Dr. Ashwini Mahajan
Subject : Sociology
Faculty : Social Science
Title of the Thesis : ओशो सन्यासियों का एक समाजशास्त्रीय अध्ययन (रायपुर एवं भिलाई स्थित ध्यान केन्द्र से संबंधित सन्यासियों के विशेष संदर्भ में)
Date of Registration : 10.07.2012, Date of Submission : 07.07.2017, Date of Viva Voce : 08.07.2019.
Research Centre : Govt. V.Y.T. P.G. Autonomous College, DURG (C.G.), Enrolment No. : QQ/22326

By Order of the Kulpati

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STUDY OF ICHTHYOFAUNAL BIODIVERSITY OF KHARKHARA RESERVOIR, DISTT. BALOD, CHHATTISGARH

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The present study deals with the fish biodiversity of of Kharkhara reservoir distt. Balod, Chhattisgarh. The aim of the study is proper documentation of fish fauna of Kharkhara reservoir. Freshwater fish biodiversity is poorly studied. There is no proper documentation on freshwater fish resources of Central India especially Chhattisgarh state. Fishes are the unique creature of animal world. It is one of the good food source and able to combat problem of malnutrition. Balod district is geologically located at plain of Chhattisgarh. Kharkhara reservoir is constructed on Kharkhara river. Kharkhara river is tributary of Sheonath river both river comes under Mahanadi drainage system. In this study mainly edible fishes are found. Total 48 species from different sampling station were recorded. Recorded fish species were classified in 6 order, 15 families and 32 Genera. Order Cypriniformes comprised of 5 families Cyprinidae, Siluridae, Bagridae, Saccobranchidae and Clariidae were found as a dominant group. The main fishes found are Catla catla, Cirrhinus mrigala, Labeo rohita, Notopterus notopterus, Notopterus chitala, Wallago attu, Mastacembelus armatus, Puntius ticto, Ompok pabda, Mystus seenghala, Cyprinus carpio, Clarius batrachus and Oreochromis mossambicus.

INTRODUCTION

Fish exhibit the greatest biodiversity of the vertebrates with over 22,000 species. Of these, about 58 percent are marine, 41 percent are freshwater species, and 1 percent move back and forth between salt and freshwater.


India has rich biological heritage that qualifies it as one of the mega diversity nations of the World (Gadgil, 1996). The diversity within the fresh water ecosystem has a great importance in terms of the livelihood and the economic importance of the people living around it. Accordingly the relation between the biodiversity and human well-being is inter related.

Biodiversity is the degree of variation of life form within a given ecosystem. Biodiversity is essential for stabilization of ecosystem, protection of overall environmental quality for understanding intrinsic worth of all species on the earth. India is very rich in

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Study of Ichthyofaunal Biodiversity of Rajnandgaon town, CG, India

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Abstract

Freshwater fish biodiversity is poorly studied. There is no proper documentation on freshwater fish resources of Rajnandgaon. This study aims to prepare database of fishes found in Rajnandgaon town. Fishes are the unique creature of animal world. It is one of the good food source and is able to combat problem of malnutrition. Rajnandgaon district is basically a tribal district. This is the first study to catalogue species of fishes found in Rajnandgaon town. Rajnandgaon is centrally situated in Chhattisgarh state. Sheonath river is major river of Chhattisgarh having its origin in Rajnandgaon district. Total 45 species from different sampling station were recorded. Recorded fish species were classified in 6 order, 15 families and 32 Genera. Order Cypriniformes comprised of 5 families Cyprinidae, Siluridae, Bagridae, Saccobranchidae and Clariidae were found as a dominant group. The main fishes found are *Catla catla*, *Cirrhinus mrigala*, *Labeo rohita*, *Cyprinus carpio*, *Clarius batrachus* and *Oreochromis mossambicus*

Keywords: Biodiversity, sheonath river, malnutrition, freshwater.

Introduction

Biodiversity is the degree of variation of life form within a given ecosystem. Biodiversity is essential for stabilization of ecosystem, protection of overall environmental quality for understanding intrinsic worth of all species on the earth¹. India is very rich in Biodiversity India supports about 10 % of the world's biological diversity with just 2% of world land area.

Fishes are the important group of animals world contributing to the biodiversity of animals. Primarily fishes are used as a food source. Many vital vitamins and fatty acids are found in fishes so sometimes it is referred by doctors as a good food source.

Rajnandgaon district is situated between 20.07" North to 22.2"9 North latitude and 80.2 East to 81.2"4 East longitude. Sheonath river which is major river of Chhattisgarh is originated from Panabaras hills of Mohla tehsil of Rajnandgaon district. Major part of Rajnandgaon district is connected with Mahanadi river system flowing towards east to bay of Bengal. Sheonath river is major tributary of Mahanadi river. It is longest river of Chhattisgarh, total length is 290 K.M. It confluences with Mahanadi river at sonlaharsi of Distt Janjgir Champa.

Material and Methods

The fishes were collected from Sheonath river at mohara station and from local fisherman and also from local cooperative societies operating in different ponds of Rajnandgaon town. Fisherman generally use many types of nets like gill nets, cast net, drag net etc.

Fishes were preserved in 10 % formalin solution and identified with the help of standard keys and books²⁻⁴.

Study period: This study was conducted between Oct. 2011 to Sep. 2012.

Results and Discussion

As per the available records no scientific study on the Fish fauna availability has been conducted here so far. In India, few studies have been initiated to document the fish diversity and assemblage⁵. Much has been stated about declining fish biodiversity and its conservation issues in Indian River systems⁶⁻⁹. Fish fauna of Chhattisgarh is scarcely studied and needed to be thoroughly studied¹⁰⁻¹³.

During the entire study period, total of 45 fish species belonging to 15 families and 32 Genera were recorded, Cyprinidae was the largest dominant family contributing 20 species (44.44%); Bagridae formed the subdominant family contributing 5 species (11.11%) and the rest of the families followed order of abundance (table-1 and table-2).

As far as IUCN conservation status¹⁴ is concerned 34 species (75.5 %) comes under least concern (LC) category, 6 species (13.33 %) are nearly threatened (NT), 2 species (4.44 %) are vulnerable (VU) and 2 species are (4.44 %) not evaluated (NE).

Conclusion

The result of this study shows that Rajnandgaon town is prosperous in biodiversity of fishes. Fish culture is mainly carried out by the cooperative fisheries societies. Carps are the major group which is cultivated, practice of composite culture of *Labeo rohita*, *Cirrhinus mrigala* and *Catla catla* is generally followed. Fish culture is only source of income generation for



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X ray diffraction (XRD) analysis and evaluation of antioxidant activity of copper oxide nanoparticles synthesized from leaf extract of *Cissus vitifolia*

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ABSTRACT

Nanoparticles have a diameter of up to 100 nm and a higher surface-to-volume ratio, enabling more active surface atoms to contribute to implementations and improve material properties. In nanoparticle preparation, the ability to control particle size, shape, and morphology is important. The most important tool for studying nanomaterials is XRD, it is a vital characterization tool in solid-state chemistry and materials science. For any compound, XRD is a simple method for determining the unit cell's size and shape. This study explains how copper oxide nanoparticles are formed in *Cissus vitifolia* leaves. The antioxidant function and XRD study of the synthesized CuONPs were also investigated. According to the XRD results, the copper oxide nanoparticles formed by reducing Cu²⁺ ions by *Cissus vitifolia* leaf extract are crystalline in nature. CuONPs have an average crystalline size of ~32.32 nm, according to the Debye-Scherrer formula. CuONPs have higher antioxidant activity than plant extract and are closest to ascorbic acid in terms of standard.

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1. Introduction

Nanoparticle biosynthesis offered an appealing alternative to chemical synthesis methods. They predict that dyes will be used to treat contaminated water sources in the future, and they are also a promising candidate for a variety of medical applications Fig. 1.

A bottom-up 'green' route can be used to make silver nanoparticles (AgNPs). They are spherical in shape and range in size from 20 to 30 nm. Several pathogenic bacteria were demonstrated by antibacterial and synergistic activity with conventional antibiotics. Nanoparticles can enhance the antibiotic potential and also treat bacterial infections. The photosynthesis of *U. dioica* extract AgNPs

is found to be cost-effective, straightforward, and environmentally friendly [1].

Green synthesized AgNPs were tested for antimicrobial activity against a variety of microorganisms. This research demonstrated that biomaterials could be used to synthesise silver nanoparticles using green chemistry principles.

A new electrolysis of silver nanoparticles using AgNO₃ for metal precursors, which is economical and environmentally friendly, is mentioned in this review. Ag nanoparticles were detected in microbiology experiments to be effective against *E. coli* and *B. megaterium* bacteria. The actual surface area (SSA) is 24 m² per gramme. The particles measure 24 nm. Bacterial SSA studies show that antimicrobial agent reactions have a major role to play. This method provides for the synthesis without the need of additional agents of nanopowder tunable particle size at room temperature to be safe, non-toxic, environmentally friendly and effective. Two

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