

# Indian Hydrobiology 24(1) 2025

## Abstracts

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### Titanium Dioxide Photocatalysts for the Effective Degradation of Water Pollutant: A Review

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#### Abstract

Industrial advancements in chemical synthesis are leading to the release of various pollutants, which significantly harm water bodies and pose serious environmental threats. Water resources are affected by various pollutants, such as organic dyes, heavy metals, and disease-causing microorganisms. These pollutants accumulating in water bodies not only harm aquatic ecosystems but also threaten the health of all living being dependent on these resources. In this context, researchers are encouraged to create affordable methods for breaking down pollutants into non-harmful by-products. The photocatalytic degradation mechanism has emerged as a promising technology, due to its cost-effectiveness and versatility, for breaking down various water pollutant. TiO<sub>2</sub> has emerged as the most widely examined photocatalyst because of its cost-effectiveness, low toxicity, and robust chemical and thermal stability. This study focuses on recent applications of TiO<sub>2</sub> nanostructures in photocatalysis for the removal of diverse contaminants in water. This article explores research on the photocatalytic degradation of various contaminants, including heavy metals, organic dyes, pharmaceuticals, pesticides, and microorganisms. This review also provides a comprehensive overview of the various aspects related to the application of titanium dioxide for the mitigation and remediation of water pollution.

**Keywords:** Photocatalysis; water resources; aquatic ecosystem; chemicals; contaminants.

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### A Short Review of Endoactinomycetes found in Marine Algae and their potentials – A Neglected Area of Research

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#### Abstract

The surge in resistance among the major human and plant pathogens along with the widespread use of chemicals and antibiotics has led to a search for novel and enhanced replacements to frontline drugs has become an inevitable. It is now a fact that soil (edaphic) is an environment that has been exhaustingly explored for actinomycetes diversity, bioactive compounds and antibiotics production. Now the world is looking for alternate and sustainable production of bioactive compounds the plant microenvironment is now considered an attractive niche because it may contain actinomycetes capable of producing novel compounds. This review highlights endoactinomycetes study and their potential of such organisms as sustainable sources of novel pharmaceuticals and biocontrol agents, offering a likely approach to discourse the current ecological and medicinal contexts.

**Keywords:** Marine ecosystem; marine algae; endoactinomycetes; pharmaceuticals; Review.

## **A Concise Review of Microalgae with Antifungal Properties**

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### **Abstract**

Microalgae represent a highly diverse group of eukaryotic photosynthetic organisms capable of thriving in varied and extreme environmental conditions. This adaptability results in the production of a wide spectrum of primary and secondary metabolites, many of which demonstrate significant biological activity. Among these, the antifungal properties of microalgae including cyanobacteria (Cyanophyceae) have garnered increasing attention as potential sources of novel antifungal agents. This review compiles information from various studies on the antifungal potential of specific microalgae and cyanobacteria species, their source locations, extraction methods, active compounds, and target fungal strains. The study highlights the need for further research to isolate and characterize the specific antifungal compounds and recommends their formulation into antifungal products.

**Keywords:** Antifungal potential; Active compound; Cyanophyceae; Microalgae; Target fungi.

## **An Updated Overview of the Cyanophyceae in Metal Nanoparticle Synthesis and their Emerging Applications**

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### **Abstract**

The green synthesis of nanoparticles (NPs) using biological systems has emerged as a sustainable and eco-friendly alternative to conventional physicochemical methods. Cyanophycean members possess exceptional potential as nanofactories due to their metabolic adaptability and presence of bioactive cellular compounds. These microorganisms have been successfully employed in the synthesis of metal and metal oxide nanoparticles, including silver, gold, copper, and zinc, with enhanced biocompatibility and functional stability. The synthesis may occur through intracellular or extracellular pathways and is influenced by factors such as pH, temperature, light intensity, and metal ion concentration. These nanoparticles have showcased their multifaceted applications across various domains: in biomedicine, they exhibit antimicrobial, antioxidant, antifungal, and anticancer activities and are being explored for use in drug delivery systems, wound healing, and targeted therapies; in agriculture, they serve as nano-fertilizers, plant growth promoters, and natural pesticides, contributing to sustainable farming; in cosmetics, their photoprotective and anti-aging properties make them valuable ingredients in sunscreens and skin care formulations; in environmental remediation, they aid in the degradation of industrial dyes, detoxification of pollutants, and removal of heavy metals from wastewater. This review provides a comprehensive overview of the recent advances and emerging applications in cyanobacteria-based nanobiotechnology. By harnessing their unique biological traits, cyanobacteria offer an eco-friendly platform for the next generation of green nanotechnology solutions.

**Keywords:** Cyanophyceae; Green Synthesis; Nanoparticles; Biocompatibility; Biomolecules.

## **Physico-chemical characteristics and ecological monitoring of the River Kankai in Eastern Nepal**

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### **Abstract**

This study examines the physicochemical characteristics and ecological status of the River Kankai in eastern Nepal, focusing on spatio-temporal changes and correlations among environmental variables. Originating from the Mahabharat range and flowing through Ilam and Jhapa districts, the river is crucial for drinking, irrigation,

hydropower, and biodiversity. Monthly water samples were collected from six stations along the river from July 2023 to June 2024. Key parameters measured include water temperature, pH, turbidity, conductivity, dissolved oxygen, free carbon dioxide, alkalinity, hardness, chloride, biological oxygen demand (BOD), nitrate, nitrite, ammonium, and phosphate. The results showed significant spatial and temporal variations in water quality, particularly in alkalinity, hardness, BOD, and CO<sub>2</sub> levels. The study records 98 fish species in the River Kankai, including 6 Near Threatened (NT) and 4 Vulnerable (VU) species as per the IUCN Red List. Station F (Gauriganj) exhibited the highest richness of fish species, with a total of 71 species, whereas Station A (Mahamai) had the lowest species richness, containing only 53 species. This study suggests moderate pollution levels, with notable differences among the stations. The study underscores the need for regular monitoring to protect the river's ecological integrity and sustain its utility for local communities. The strongest positive correlation with the Shannon diversity index was found with Phosphate ( $r = 0.73$ ), and the strongest negative correlation is with Biological Oxygen Demand ( $r = -0.56$ ). This research provides essential baseline data for future studies and policy-making to improve water quality and manage river ecosystems in Nepal.

**Keywords:** Correlation; CPCB; Diversity Index; Ichthyofauna; Pollution; River Kankai; Water Quality.

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## Acute Toxicity of Polystyrene Microplastics on Freshwater Fish: *Carassius auratus*

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### Abstract

In aquatic ecosystems, Polystyrene microplastics (PS-MPs) are among the major emerging pollutants. This is so because of small particle size, their pervasive distribution, and its toxicological effects on aquatic organisms. Their impact on freshwater species, particularly fish, has become a growing environmental concern. To understand the toxicity and potential ecological risks due to this, the present study aimed to assess the acute toxicity (LC<sub>50</sub>) of PS-MPs on the freshwater fish *Carassius auratus* (goldfish) under controlled laboratory conditions.

The Fish were exposed to varying concentrations of PS-MPs. After that a standard bioassay was conducted to determine the acute toxicity (LC<sub>50</sub>) using probit analysis. Statistical analysis, including one-way ANOVA, was used to validate the results, with significance set at  $p < 0.05$ . The LC<sub>50</sub> value was determined to be 4.26 mgL<sup>-1</sup> after 96 h of exposure. The differences in behavior and mortality across treatment groups was observed, which confirms the toxic effects of PS-MPs. These findings underscore the acute impact of microplastic pollution on freshwater organisms and highlight the necessity for further investigation into chronic exposure scenarios, aiding future regulatory and conservation efforts.

**Keywords:** Acute toxicity; behavioral alterations; dose-dependent toxicity; microplastic pollution; *Carassius auratus*.

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## Anti-pyretic activity of ethanolic extract of *Grateloupia filicina* (Lamouroux) C.Ag. in Manapad, Thoothukudi, Tamil Nadu, India

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### Abstract

The present study was designed to discover the anti-pyretic activity of the ethanolic extract of *Grateloupia filicina* (Lamouroux) C.Ag. collected from Manapad, Thoothukudi, Tamil Nadu, India on albino mice. Paracetamol (10 mg/kg) was used as standard drug. The anti-pyretic activity of *Grateloupia filicina* (Lamouroux) C.Ag. was determined by Brewer's yeast induced pyrexia on albino mice. Among the various ethanolic extracts tested, 400 mg/kg ethanolic extract of *Grateloupia filicina* (Lamouroux) C.Ag. showed a significant decrease in body temperature while 200 mg/kg ethanolic extract showed a lesser effect. 400 mg/kg ethanol extract exhibited closely significant ( $p < 0.05$ ) decrease in elevated body temperature compared to standard drug. From the study, it was concluded that the ethanolic extract of *Grateloupia filicina* (Lamouroux) C.Ag. can be used for anti-pyretic activity.

**Keywords:** Marine algae; Manapad; *Grateloupia filicina*; Ethanolic extract; Anti-pyretic.

## The Genus *Cosmarium* Corda ex Ralfs from Andhra Pradesh – I, India

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### Abstract

Freshwater Algal samples were collected from 15 districts of Andhra Pradesh, and examined for the Genus *Cosmarium* Corda ex Ralfs. Out of 42 species identified during the examination, descriptions of 12 species are reported in this article. They are *Cosmarium amoenum* Reinsch, *C. auriculatum* Reinsch, *C. bioculatum* Brébisson ex Ralfs, *C. cataractarum* (Raciborski) Eichler, *C. cymetopleurum* Nordst, *C. contractum* O. Kirchner, *C. impressulum* Elfving, *C. obsoletum* Hantzsch ex Ralfs, *C. ocellatum* B. Eichler & Gutw., *C. sexangulare* P. Lundell, *C. striolatum* Nägeli, and *C. variolatum* P. Lundell. Out of these, 7 species viz. *C. amoenum* Reinsch, *C. cataractarum* (Raciborski) Eichler, *C. cymetopleurum* Nordst, *C. impressulum* Elfving, *C. obsoletum* Hantzsch ex Ralfs, *C. ocellatum* B. Eichler & Gutw., *C. sexangulare* P. Lundell are the new distributional records to Andhra Pradesh.

**Keywords:** Freshwater algae; Genus *Cosmarium*; Species; Distribution; Andhra Pradesh.

## Screening of analgesic activity of ethanolic extract of *Sargassum tenerrimum* J.Ag. on Swiss albino mice

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### Abstract

The aim of the present study was to investigate the analgesic activity of ethanolic effect of *Sargassum tenerrimum* J.Ag. collected from Manapad, Thoothukudi district, Tamil Nadu, India on Swiss albino mice. The dried and powdered *Sargassum tenerrimum* J.Ag. was extracted using absolute ethanol to estimate the analgesic activity. The analgesic activity was predicted on Swiss albino mice by tail flick latency in tail immersion method. Diclofenac Sodium in the dose of 100 mg/kg was used as standard drug. Ethanolic extracts of *Sargassum tenerrimum* J.Ag. were given in the doses of 200 and 400 mg/kg. Control group received normal saline solution. All the doses administered orally. Results showed that both the doses of ethanolic extracts of *Sargassum tenerrimum* J.Ag. had potent analgesic activity. From the observations, it was concluded that ethanolic extract of *Sargassum tenerrimum* J.Ag. At 200 mg/kg was found to have more effect as compared to 400 mg/kg ethanolic extract.

**Keywords:** Brown algae; Analgesic; *Sargassum tenerrimum*; Ethanolic extract; Manapad.

## Phytochemical Screening of Chloroform Extract of *Ulva reticulata* Forsskal using FT-IR and GC-MS

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### Abstract

The study was undertaken to analyse the phytochemical profile of *Ulva reticulata* Forsskal using FT-IR and GC-MS. The results from the FT-IR studies confirmed the presence of functional groups such as halo compound, phenol, alkene, 1,2,3 trisubstituted, secondary alcohol, amine, fluoro compound, alcohol, aromatic compound,  $\alpha$ ,  $\beta$ -unsaturated ester, aliphatic ketone, carboxylic acid, alkane, amine salt, aliphatic primary amine. Sixteen compounds were detected in the GC-MS analysis. Among them, hexanedioic acid, mono (2-ethylhexyl) ester (23.02%), and hexacontane (20.04%) showed high area percentages.

**Keywords:** Marine macro algae; *Ulva reticulata*; FT-IR; GC-MS; phytoconstituents; chloroform.

## Adopting Nanotechnology for Sustainable Aquaculture – A Comprehensive Review

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### Abstract

Aquaculture has undergone many obstacles encompassing disease outbreaks, water integrity issues, resource depletion and significant hardships for aquaculture industries and farmers. These challenges can be addressed through effective mitigation strategies such as less intensification, administration of vaccines and feed supplementation, for which nanotechnology applications offer innovative and effective solutions with improved status. In fish farming, Nanotechnology facilitates increased nutrient absorption, optimisation of feed formulation and preservation, assured quality control, water treatment, and effective vaccine development and delivery, thus ascertaining their productivity. Various tools continuously being developed, updated and utilised worldwide by farmers and aquaculture industries for sex reversal, better growth and health with improved water quality in the short term, leading to enduring production. This review explores the role of nanotechnology, particularly nanoparticles, in addressing the challenges and threats aquaculture faces to support its advancement.

**Keywords:** Nanoscience; Nanomaterials; Sustainability; Renewable; Durability; Aquaculture.

## Multivariate analysis of water quality parameters in three different sites at Kadinamkulam Estuary, Kerala

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### Abstract

To evaluate the water quality parameters of Kadinamkulam estuary, situated in Thiruvananthapuram district, Kerala, India. Water quality parameters were measured for one year from June 2023 to May 2024. The monthly and seasonal water quality dynamics were analyzed at three different sites such as K1, K2, and K3 using standard procedures, including temperature, pH, salinity, alkalinity, dissolved oxygen, hydrogen sulphide, ammonia-nitrogen, nitrite-nitrogen, phosphate-phosphorus, and silicate-silicon. The obtained data were statistically analyzed using multivariate analysis of variance and principal component analysis. The site-wise and season-wise analysis revealed that the site K2 was more polluted than the other two sites K1 and K3. This could be attributed to the seepage of effluents from coir retting activities in the Kadinamkulam estuary and dumping of solid waste. The research also revealed that the water samples contained high levels of H<sub>2</sub>S, which also negatively impacts the productivity of water bodies. The water quality parameters were adversely affected due to the anthropogenic activities. The outcome of the study can be applied to promote sustainable development of estuaries and evaluate the viability of brackish water fisheries within these ecosystems.

**Keywords:** water quality dynamics; seasonal variation; Kadinamkula estuary; MANOVA; PCA.

## Harnessing Microalgal Potential: A Review of Bioenergy, Environmental, and Commercial Applications

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### Abstract

Microalgae have diverse applications in bioenergy, food, feed, pharmaceuticals, and nutraceuticals, attracting commercial interest because of their rapid growth, low resource requirements, and adaptability. They provide a sustainable solution for wastewater treatment, nutrients removal, and efficient pollutants transformation. Rich in valuable compounds, microalgae are crucial in various industries and can improve soil fertility as a biofertilizers. Microalgae-derived nanoparticles have potential in medicine, agriculture, and environmental remediation, while high-value compounds, such as like lutein, astaxanthin, and PUFAs, are important for pharmaceuticals and cosmetics. However, challenges in cultivation optimization, extraction methods, and scalability necessitate interdisciplinary research to fully utilize microalgal biomass for sustainable energy, environmental conservation, and novel applications. This review explores the utilization of algal biomass and its high-value derivatives for commercial viability.

**Keywords:** Microalgae; Carbon sequestration; Biomolecules; Bioenergy; Nutraceuticals.

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## Assessment of Edible Fish Diversity in the Karuvatta Region of the Pamba-Achankovil River Basin, Kerala

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### Abstract

The Pamba-Achankovil river basin in the Kuttanad region of Kerala, India, harbours a moderately diverse assemblage of freshwater edible fish with ecological and socio-economic importance. This study assessed the edible fish diversity of the Karuvatta region between October 2024 and March 2025, documenting 26 species across 12 taxonomic Orders through traditional and modern fishing techniques. Cypriniformes (30.4%) and Cichliformes (30.2%) were the most dominant, while Orders such as Beloniformes (0.69%) and Mugiliformes (1.02%) showed minimal representation. The Simpson's Index of Diversity ( $1-D = 0.6884$ ) reflected a moderate diversity with uneven species distribution across taxa. The findings highlight the ecological significance of dominant species like *Labeo dussumieri* and *Etroplus suratensis*, and stress the importance of targeted conservation strategies to sustain less abundant Orders. This study provides essential baseline data for conservation planning and sustainable management of freshwater fisheries in the Karuvatta region of the Pamba-Achankovil river basin.

**Keywords:** Pamba-Achankovil river basin; Karuvatta region; fish diversity; ichthyofaunal; Kuttanad.

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## Studies on Molecular Docking of Quercetin with Anticancerous Properties from *Chaetomorpha antennina* (Bory de Saint-Vincent) Kützing against EGFR and VEGFR-2

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### Abstract

Seaweeds have gained attention for their potential in diverse applications. This study focuses on the bioactive compound, quercetin extracted from *Chaetomorpha antennina* (Bory de Saint-Vincent) Kützing. Molecular docking analysis was performed with quercetin against the key receptors involved in lung, breast, and prostate cancers called Epidermal Growth Factor Receptor (EGFR) and Vascular Endothelial Growth Factor Receptor-2 (VEGFR-2). By targeting the proteins EGFR and VEGFR-2, molecular docking studies reveal how quercetin extracted from *C. antennina* interacts with these proteins. Using AutoDock 4, protein and ligand preparations were carried out to achieve optimal docking results. Docking outcomes suggested that quercetin has moderate to high binding affinities to EGFR (–6 kcal/mol) and VEGFR-2 (–7.5 kcal/mol), indicating its potential to inhibit these cancer-related receptors. Results revealed the potential anticancer properties of quercetin, positioning *C. antennina* as a promising resource for cancer treatment and contributing to advancements in Bioinformatics.

**Keywords:** *C. antennina*; Quercetin; Molecular Docking; Binding affinity; Anticancerous property.

## Molecular Docking Analysis to Check the Effects of R-Phycoerythrin Pigments in *Gracilaria corticata* (J. Agardh) J. Agardh to Treat Alzheimer's Disease

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### Abstract

Alzheimer's disease is a complex neurological disorder that gradually impairs cognitive function and causes memory loss. The R-phycoerythrin's binding affinity and possible inhibitory effect on the p53 Kinase and EPHA4 receptors—two important players in the pathogenesis of Alzheimer's disease were evaluated using molecular docking experiments. R-phycoerythrin binds efficiently to the ATP-binding site of EPHA4 and the phosphorylation sites of p53-related kinases, according to the docking studies, which implies that it may alter signalling pathways linked to neurodegeneration. R-phycoerythrin pigments from *Gracilaria corticata* have strong binding affinities with the p53 kinase receptor and the EPHA4 receptor, with binding energies of  $-9.6$  kcal/mol and  $-8.2$  kcal/mol, respectively, according to the molecular docking analysis. These results imply that R-phycoerythrin may be able to modulate the activity of these proteins, which are important players in the pathophysiology of Alzheimer's disease, and thus could be a promising component of future research as a therapeutic agent.

**Keywords:** *Gracilaria corticata*; Molecular Docking; Alzheimer's Disease; Binding Energy; Therapeutic agent.

## Probiotic Potential of *Candida tropicalis* ONG7 Isolated from Nile tilapia: Characterization and Safety Assessment

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### Abstract

A comprehensive evaluation of the Nile tilapia gut-derived yeast isolate was conducted to determine its suitability as a probiotic for aquaculture. This study encompassed *in vitro* analyses of acid and bile tolerance, auto aggregation, hydrophobicity, enzyme production, and safety aspects, along with an *in vivo* assessment of its impact on tilapia fingerlings. The yeast isolate demonstrated high acid and bile tolerance, strong auto aggregation and hydrophobicity, lipase activity, no hemolytic activity, and resistance to antibacterial agents but sensitivity to antifungal agents. *In vivo* challenge tests showed 100% survival of tilapia fingerlings and successful gut colonization. Molecular identification confirmed that this isolate was *Candida tropicalis*. These findings suggest that the *C. tropicalis* ONG7 strain has favorable probiotic characteristics, including gastrointestinal survival, adhesion potential, and safety for the host. This study contributes to expanding knowledge on non-Saccharomyces yeasts as aquaculture probiotics and highlights the potential of host-associated yeast strains to improve the health and immunity of aquatic species.

**Keywords:** Probiotics; Yeast; *Candida tropicalis*; Aquaculture; Nile tilapia.

## Study of Monthly Zooplanktons Diversity in a Gandhisagar Lake of Umrer, District Nagpur, Maharashtra, India

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### Abstract

On Earth, zooplankton are the most prevalent animals. They are tiny animals that drift in water columns playing vital role in aquatic ecosystems. They are act as water quality indicators sensitive to environmental changes. The

current research was conducted over a one-year period, from October 2022 to September 2023. This research examines the variety of zooplankton found in Gandhisagar Lake, situated in Umrer, Maharashtra. The investigation assessed various types of zooplankton and found that they were depicted by various groups, such as rotifers, cladocerans, copepods, and ostracods. In total, 24 distinct species of zooplankton were identified across these four classes: rotifera, cladocera, copepoda, and ostracoda. The results indicated that rotifers were the most prevalent group, followed by copepods, cladocerans, and ostracods in terms of diversity and population density. All four classes exhibited a greater crowding during the summer months and reduced population levels during the monsoon season. The annual composition of these groups was found to be 50% rotifera, 18% cladocera, 26% copepoda, and 6% ostracoda.

**Keywords:** Zooplanktons; Gandhisagar lake; Umrer; Rotifera; Monthly variations.

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## Evaluation of seasonal fluctuations in the water quality of the Morar River, Gwalior, Madhya Pradesh, India

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### Abstract

Morar River is the part of cultural, economical, and recreational life of Gwalior city. It is facing multifold pressure due to urbanization, domestic and industrial waste discharge, washing, agricultural practices, Idol immersion and city encroachment. The study was carried out for a period of two years. After collecting the required samples from desired sites, the samples were brought to laboratory within three hours and analyzed for physico-chemical parameters like, odor, color, transparency, water temperature, depth, conductivity, total dissolved solids, pH, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, free carbon, total alkalinity, chlorides, sulphates, sodium, potassium, nitrate, turbidity, phosphates, total suspended solids. Morar River exhibited seasonal and inter-site variations in physico-chemical parameters of water. Results indicate the river is polluted and eutrophic due to anthropogenic activities.

**Keywords:** Physicochemical parameters; Morar River; Pollution; Jaderua Dam; Urbanization.

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## Macrobenthic Communities as Bio Indicators of Water Quality in the Mangrove Ecosystem of Ayiramthengu, Kerala, India

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### Abstract

Macrobenthos are the most popular and commonly used group of freshwater organisms in assessing water quality. Macrobenthic assemblages in mangrove ecosystems are relatively understudied, and much of the existing information remains poorly documented or interpreted. The present study investigates the macrobenthic community structure in the Ayiramthengu mangrove ecosystem along the west coast of India. The present study investigates the macrobenthic community structure and diversity across three sampling stations. The bivalve *Mytilidae* sp. emerged as the numerically dominant species at all stations, with the highest density observed at Station II (279 No/m<sup>2</sup>), followed by Station III (128 No/m<sup>2</sup>) and Station I (102 No/m<sup>2</sup>). In contrast, several taxa including *Marphysa* sp., *Exogene* sp., and *Idoteidae* sp. at Station I, as well as *Tibia curta*, *Perna viridis*, and *Turritella communis* at Station II, and multiple rare species at Station III were recorded at minimal densities (1 No/m<sup>2</sup>). Diversity indices indicated spatial variation, with Station III exhibiting the highest biodiversity (Shannon-Wiener Index  $H = 1.619$ , Simpson Index  $\Lambda' = 0.6489$ , Margalef's Index  $R = 3.846$ ), while Station II recorded the lowest values across most indices. Evenness was relatively higher at Station I ( $J = 0.2337$ ) compared to Station II ( $J = 0.2131$ ). Statistical analysis using ANOVA revealed significant differences in species diversity ( $p < 0.000$ ), dominance ( $p < 0.001$ ), evenness ( $p < 0.011$ ), and richness ( $p < 0.000$ ) among the stations, confirming heterogeneity in benthic community structure across the sampling sites. The identified species, with their varied

sensitivities and ecological roles, serve as effective bio indicators for assessing and monitoring the health of the aquatic ecosystem.

**Keywords:** Macroinvertebrates; Diversity indices; Mangrove Ecosystem; Numerical Abundance; Bio indicators.

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## Identification and documentation of aquatic macrophytes in legendary ponds of Mudigere Taluk of Central Western Ghats

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### Abstract

Aquatic macrophytes are photosynthetic organisms that grow on, below, or through the water surface either permanently or sporadically. Pteridophytes, bryophytes, and aquatic angiosperms are all included. The present work was done in three legendary ponds of Mudigere Taluk in Chikkamagaluru District of Central Western Ghats to enumerate aquatic macrophytes. Altogether, 21 aquatic plants have been recorded from this region, of which 13 species belong to dicotyledons and 8 species belong to monocotyledons. The dominating family among dicotyledons is Convolvulaceae and among monocotyledons is Araceae. Among these hydrophytes, few are familiar to the local people and some are not known to them. Few species of hydrophytes are used as a source of food, like the roots of *Colocasia esculenta* and the petiole of *Nelumbo nucifera*, which is used as a vegetable. Some hydrophytes that are commonly occurring in all types of water bodies are *Alternanthera philoxeroides*, *Eichhornia crassipes*, *Jussiaea repens*, *Pistia stratiotes*, and *Nelumbo nucifera*. *Polygonum glabrum*, *Nymphoides indica*. Some others are restricted to particular type of water bodies, like *Myriophyllum spicatum* and *Potamogeton crispus*. *Blyxa aubertii*, *Hygrophila costata*, *Ludwigia peruviana*. The present research confirms the quality productivity of the lake surface. Research aimed at characterising unidentified taxa of hydrophytes.

**Keywords:** Aquatic Macrophytes; Mudigere; Central Western Ghats; *Myriophyllum spicatum*; *Ludwigia peruviana*.

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## First record of *Desmonostoc persicum* Kabirnataj et al from Marathwada region of India

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### Abstract

A previously undocumented species of cyanobacterium was successfully isolated from a soil sample collected near Aurangabad caves road Chhatrapati Sambhajnagar district Maharashtra, India. Morphological examination revealed isopolar filaments, heterocysts, and akinetes enclosed in a mucilaginous sheath. Molecular identification through 16S rRNA gene sequencing confirmed the species as *Desmonostoc persicum*. Phylogenetic analysis placed the isolate in a distinct clade within the *Desmonostoc* genus, clearly separated from related genera like *Nostoc*. Marks the first record of *D. persicum* in the Marathwada region of Maharashtra, emphasizing its ecological importance in the area's terrestrial environment.

**Keywords:** Cyanobacteria; *Desmonostoc persicum*; Phylogeny; Taxonomy; 16S rRNA.

## **Seasonal Study of Hydrological Parameters of Gauri Sarovar Pond, District Bhind, Madhya Pradesh, India**

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### **Abstract**

Maintaining the standard of water quality of a water body necessitates continual assessment of its physicochemical properties. The purpose of this study was to evaluate physicochemical properties and to discuss the causes of spatiotemporal variability in various hydrological parameters of Gauri Sarovar Pond of Bhind district, M.P. Water samples were collected for physicochemical analysis at four different locations of Gauri Sarovar Pond in early morning. Polyethylene coated wide mouth double stopper capped bottles were used for water sample collection and then transported the samples as soon as possible to laboratory for further analysis. Various standard methods were followed for physicochemical analysis. Present investigation indicated the seasonal variation among the few water parameters.

**Keywords:** Hydrological parameters; Biota; Gauri Sarovar Pond; Bhind District; Water quality.