

README

Title: Distribution and diversity of benthic macroinvertebrates in the selected Myristica swamps of Kulathupuzha and Shendurney

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General Introduction

This dataset contains data collected during 2021–2023 at the University of Kerala as part of Niji Joseph's PhD thesis project. The study aimed to assess the population dynamics, diversity, and ecological indices of benthic macroinvertebrates in the Myristica swamps of Kulathupuzha and Shendurney, with a focus on the influence of environmental factors such as water and sediment quality, forestry activities, and seasonal variations. Macroinvertebrates were collected from various sampling sites, and their population quantities were assessed using Principal Component Analysis (PCA), indicator analysis, and correlation analysis to explore the relationship between macroinvertebrate distribution and physicochemical parameters, including dissolved oxygen, water temperature, pH, and nutrient levels. This dataset is being shared publicly to provide supplementary data for Niji Joseph's PhD thesis and publications, as well as to support other researchers in utilizing this data for their studies. This research was made possible by a grant from the Kerala University Research Fellowship.

Purpose of the test campaign

The study aimed to taxonomically distinguish the macroinvertebrate fauna of the Myristica swamps in Kulathupuzha and Shendurney while assessing the population quantity of benthic fauna across various sampling sites. It also sought to investigate the influence of seasonal variations on the abundance of microbenthic fauna and analyze the diversity, evenness, and similarity indices of macro benthic fauna. Additionally, the research focused on examining the physico-chemical characteristics of both water and sediment samples from the study sites. Finally, the study aimed to evaluate the current threats faced by these unique ecosystems and propose effective conservation and management strategies to ensure their sustainability.

Research Methodology

Water samples were collected bimonthly from eleven sites during pre-monsoon, monsoon, and post-monsoon seasons (2021–2023) in sterile 1000 ml bottles and stored at 4°C for analysis. Parameters such as temperature, pH, conductivity, turbidity, solids, dissolved oxygen, BOD, nutrients (nitrate, nitrite, phosphate), and major ions (calcium, magnesium, sodium, potassium) were analyzed using standard methods (Wetzel & Likens, 1991; APHA, 2012). Sediment samples (0–10 cm depth) were collected bimonthly, stored in polythene bags, and analyzed for pH, organic carbon, nutrients, and heavy metals using AAS (APHA, 2005).

Benthic macroinvertebrates were sampled using a standard net (200 mm × 200 mm), sieved (0.2–0.5 mm), and identified using field guides and taxonomic keys.

Description of the data in this data set

The data shows the distribution of various macroinvertebrate species across different sampling sites in the Kulathupuzha and Shendurney regions. For Kulathupuzha, the sites include Mottal Mood (S1), Marappalam (S2), Perum Padappy (S3), Plavu Chal (S4), Pullu Mala (S5), and Poovanathu Mood (S6). The Shendurney sites consist of Kattila Para (S1), Munkuthu (S2), Man Chal (S3), Onnam Mile (S4), and Irrikappara (S5). The species composition and their abundance vary across these sites, reflecting the differences in the environmental conditions and ecological health of these freshwater ecosystems.