

Species Diversity and Habitat Inventory of *Puntius* sp. from Various Water Bodies of South India

Anbu Aravazhi Arunkumar^{1*}, Thirunavukkarasu Sivaraman¹ and Arunachalam Manimekalan²

¹Department of Biotechnology, Karpagam University (Karpagam Academy of Higher Education),
Coimbatore 641 021, Tamil Nadu, India

²Department of Environmental Sciences, Bharathiar University, Coimbatore 641 046, Tamil Nadu, India.

Abstract

Freshwater ecosystems contain only about 0.01% of the Earth's water and the system accounts about 45% of fish species known to date. Alteration in the micro and macro habitats in the system severely affects the aquatic life especially fishes and also complicates the fish taxonomy. Among the different kinds of fresh water fishes, the fishes grouped under the genus *Puntius*, belonging to *Cypriniformes* family, have been considered as an important protein source of daily diets of human beings in south India, in particular. The inter-genetic and intra-genetic relationships of the *Puntius* species have not yet been well understood to date and the species are reported to exist in various water bodies of peninsular India. In the present study, a total of 168 individuals of the 17 species of genus *Puntius* have been collected from 31 locations of six river systems (meandering eastward flowing rivers of Bhavani, Moyar, Chalakudy, Periyar, Cauvery and Kabini) of Southern Western Ghats. The data analyses suggested that species like *Puntius melanampyx*, *Puntius carnaticus*, *Puntius amphibious*, *Puntius fasciatus*, *Puntius mahecola* were found predominantly in the locations considered in the present study. The significances of the study and timely measures needed to protect the species have also been concisely discussed.

Keywords: Diversity, Habitat, Principal Component Analysis, *Puntius* species, Southern Western Ghats.

INTRODUCTION

Fishes have more species than all other vertebrate group the species level.

combined [1, 2] and the fishes divided into 482 families of 57 orders. These numbers are in sharp contrast to numbers of width, depth, bottom type and current. Stream depth species of amphibians (827), reptiles (449), birds (29,165) and mammals (23,122) found worldwide [3]. Nelson (1994) the small streams sampled; 0 - 5 cm corresponded to shallow suggested the number of described living fish species might edges and riffles, 5 - 20 cm to riffles and shallow pools, 20 - eventually reach about 28,500 [2]. India harbours a rich and 50 cm to pools and > 50 cm to deep pools. Bottom types diverse fish fauna with nearly 11% of the total fish species of the (substrates) were categorized into physical and biotic world [4]. Study of the distribution of fishes in particular structures [6]. History of the Indian freshwater fishes is way biosphere is very important to understand the ecological back to on the fishes found in the river Ganges and its significance of the species. Many factors such as altitude, tributaries [9]. The documentation and listing of the fishes water temperature, habitat type, food availability, predator and from different part of India was carried out mainly by [10] a ecological barrier etc. are the determining factors for comprehensive and authoritative account on the freshwater distribution in river/stream habitats. One of the pioneering fishes has been provided by [11, 12]. The further studies in the distributional ecology of stream fishes investigations on the freshwater fishes of India especially the recognized the importance of depth as the main factor Western Ghats was initiated by [13 – 17] and he enunciated influencing species diversity and showed that increasing depth the Satpura Hypothesis. These led to the new descriptions, caused addition of species downstream in Owego Creek, New enlisting with elaborate discussions on the endemism and York [5]. The stream habitats are classified into various other zoogeographical relevance and several new taxa have depths, current and substrate categories based on their been added from Kerala during this. Studies on the endemic properties [6]. Fish distribution studied along stream order and fishes from various streams and rivers in the Western Ghats longitudinal gradient in big Sandy Creek, Texas exhibits a mountain ranges have been compiled recently [18]. Fish model classification of the stream habitats [7]. Barila *et al.*, diversities in selected streams in northern Karnataka [19] (1981) has been found that species number was weakly Central Western Ghats [20] have also been reported.

correlated with stream order, though it increased regularly The genus *Puntius* has long been recognized as a “catch-downstream within orders. The influence of altitude, stream all” genus for a variety of small tropical Asian cyprinids order and various parameters like mean depth, gradient and whose inter-relationships are poorly understood [21 – 23]. maximum width on fish species richness and diversity has The genus *Puntius* belonging to *Cyprinidae* family is been observed in five stream orders of Raystown Branch, represented by a large number of species in the Asian Susquehanna river drainage, Pennsylvania and the analyses tropics [9]. The *cyprinids* species *Puntius* are small exhibited a significant correlation between species richness indigenous species (SIS) used to be abundantly available in and stream order and endorsed its use as a composite index of rivers, streams, ponds, beels, ditches, and floodplains in the habitat structure [8]. Ecologists are interested in measuring past in the South Asian countries [24]. However, review of diversity since measures of diversity are frequently seen as the literature on the diversity of fresh water fishes shows indicators of the well being of ecological systems. The that most of the study was dealt with general diversity and