



Establishment and impact of exotic *Cyprinus carpio* (Common Carp) on native fish diversity in Buxar stretch of River Ganga, India

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The catch pattern of the exotic Common Carp (*Cyprinus carpio*) and their relationship with water quality along with maturity status of fishes were assessed during 2017-2019 to understand overall establishment and impact of the species in Buxar stretch of River Ganga in West Bihar, India. A total of 64 fish species were recorded including two exotic fishes (*C. carpio* and *Oreochromis niloticus*) from the river stretch during the study period. The annual production data depicted *Cyprinus carpio* to be the most dominating fish species encountered from the study area sharing 57.07% (by weight) during the period 2017-19. Calculated average 'Invasion coefficient index (I)' of 0.25 in entire three-year study period revealed that the invasion has moderately impacted the indigenous fish diversity. Landing of Indian Major Carp (IMC) indicated severe decline (76.4 - 93.6%) in comparison to the catch data recorded earlier from Buxar. Data generated on sex structure of Common Carp indicated that the overall sex ratio showed positive recruitment within the smaller size range of 282-307 mm and thus avails a competitive breeding advantage over other carp fishes. Gut content of Common Carp from the stretch observed major share of phytoplankton (81.04%) and zooplankton (17.18%) and thus there are significant dietary overlap of Common Carp with other valuable species. The stretch has been impacted with anthropogenic loading as identified through significantly higher water specific conductivity ($580 \mu\text{Scm}^{-1}$), Biochemical Oxygen Demand (3mg l^{-1}), etc. in drastically reduced water discharge regime. Among different water parameters, river flow, Biochemical Oxygen Demand and Total Phosphate showed positive whereas specific conductivity showed negative correlation with Common Carp seasonal abundance. Future conservation management measures may be formulated keeping in view of the identified factors through the present study for reducing the impending risks of the invasive fish species in Buxar stretch of River Ganga.

Keywords: fish biodiversity, riverine health, invasive fish

Introduction

River Ganga, sustains rich fish biodiversity of more than 266 fish species (Vass et al., 2010) contributing a substantial percentage of important

ecological services to the society. Riverine fisheries contribute significantly to the livelihood as well as act as a key source of protein for the riparian community (Pathak et al., 2013). However, in recent years, alterations in river water quality (physico-