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The current debate on biodiversity can be divided into academic versus applied goals. The academic side of biodiversity research mainly focuses on the links between biodiversity and ecosystem function/stability, using process-based analysis to set conservation strategies. Applied studies, geared towards managing biodiversity, take a more reductionist point of view, quantifying species and populations. Ecological integrity of the rivers implies there is an adaptive assemblage of fish fauna that has a definite species composition, species richness and equitability and is organized in functional groups. These functional groups can then be compared between the natural and modified riverine habitat in the region. An understanding of the aquatic system and its biodiversity will assist in making decisions to minimize adverse impacts of anthropologic activities and frame policies that lead to sustainable water use practices.

So, monitoring of the ichthyofaunal diversity of shallow river system was performed along with estimating the richness and abundance of the nonconventional, highly nutritive food fishes of the river continuum. Apart from it, studying the ecological landscape pattern beside the shallow river floodplain, and assessment of the role of agricultural matrix dividing the source and sink communities were also done. Assessing metacommunity structure of the source and the patch population, describing their feeding guilds and establishing their community structure of the habitat patches as reservoirs of piscine diversity paradigm.

Prioritization and selection of three threatened indigenous economically high-priced fishes, *Chitala chitala* Hamilton, 1822, *Ompok pabo* Hamilton, 1822 and *Anabas testudineus* Bloch, 1795 and assessing the causal factors for their natural population decline.

Habitat complexity plays a significant role in many of the processes that regulate population size, including egg production, larval dispersal, and survival, as well as post-settlement processes, such as growth, competition and predation. Thus degradation and loss of habitat are key factors in the decline of fishery resources. Such eggs and larvae play a major role in defining essential fish habitat since fish population size depends upon egg production and survival of the young. Both of these processes require specific spawning, nursery and foraging habitats that are often impacted by man's activities. So there is a mandate to restore and recover the aquatic populations that have been affected and to rectify the problems created over many decades of use. This should provide a unique opportunity to look more critically at
larval fish transport and habitat requirements, and specially such issues as the carrying capacity and the quality of the habitat. Ultimately these studies can be used to evaluate and possibly restore specific nursery habitat found to be crucial to fishing resources.

So, the objective is to a) study the life table and survivorship of early life history stages of the three fishes in varied habitat structure and analyzing mortality specific age tenure, along with their growth correlate, b) to evaluate the effect of increasing pH and salinity as environmental perturbation factors by estimating survival potentials and problems of eggs and larvae, c) to evaluate, foraging capacity of the juveniles and developing sub-adult fishes with respect to density dependant feeding in structured and open environmental condition and determine discrimination of the prey-colour preference of the predators with respect to natural food availability.

Trophic polymorphism occurs when individuals of the same species express difference in feeding bout related to differential niche use. Many fish stocks around the world are threatened by over exploitation and habitat degradation. The objective of this study was to investigate the effects of feeding levels and feeding frequencies on the growth, feed utilization and survival rate of the juvenile fishes. Knowledge of the feeding ecology of freshwater fishes is increasingly important in light of increased human impacts on the riverine systems. Impacts result from the influence of commercial harvesting, aquatic and terrestrial pollution, construction of dams and thermal power plants, etc. on local environments. Basic ecological information is critical to an understanding of how these fishes fit, functionally to the riverine communities.

Assessment of the feeding niche of *C. chitala, O. pabo* and *A. testudineus* by assessing trophic diversity, selection indices for feeding preference, prey electivity or extent of prey selection, food niche breadth and niche breadth index have been under purview of this study. Experimental analysis is directed for quantification of some of the digestive enzymes of fishes at different developmental stages for determining the digestive efficiency, estimating niche width and ontological specificity towards diet.

However, few studies have reported examples of behavioural differences in foraging tactics, where individuals exhibit no or only subtle morphological segregation. Studies in this
kind of system could allow a better understanding of conditions and mechanisms promoting behavioural specialization for feeding.

Defining the natural foraging period and determining prey selection of the respective fishes in their different ages of maturity will be the keys for their conservation. Therefore, attempts are made to observe assessment of preferred diurnal spatial distribution pattern of the vulnerable stages of the fishes, between environmental structure and light-exposed region depending on predator avoidance and availability of food and to measure the reactive distance of the juveniles and sub-adult stages of the fishes.