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Importance of protected areas for managing freshwater fish biodiversity in Indian Himalayan rivers

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Protected Areas (PAs) are important management tools for conservation and frequently rivers run within their borders. In the Himalayan bio-zone, conservation of river ecosystems is essential due to growing human population and increased water demand. For freshwater fish, PAs in this region may protect species from anthropogenic stressors and conserve biodiversity. We evaluated the utility of PAs in northern India (Corbett Tiger Reserve and Rajaji National Park) to protect fish biodiversity. From April 2012 - January 2013, 48 sites in four rivers both inside (Ramganga, Song) and outside (Kosi, Khoh) the PAs were sampled for in-river habitat characteristics and fish diversity. Within PAs, we found lower levels of habitat degradation and higher overall habitat quality. In total, 27 taxa, including 8 near threatened, 5 vulnerable and 3 endangered species were collected. Cyprinids (16 species) represented the maximum richness, including 3 mahseer species (*Tor khudree, T. putitora, T. tor*). Within park boundaries larger individual fish were found when compared to individuals collected outside of park boundaries. Impacts to water quality and illegal fishing (e.g., dynamite, poisoning and diverting water flows) were the likely stressors to fish found outside of these PAs. Fire wood collection along with boulder and sand mining were the likely cause for degradation of riverine habitats. This work shows the importance of PAs for river ecosystems because park management prevents harmful anthropogenic activities. We suggest that designating Freshwater Protected Areas along river reaches outside of parks would provide measurable protection for Himalayan Rivers and their associated fish fauna.

Biography

Nishikant Gupta has a Bachelor's Degree in Zoology from Fergusson College, Pune and a Master's Degree in Zoology, with a specialization in Molecular Biology from University of Pune, Pune, India. His B.Sc. dissertation focused on the Genealogy of Indian Brahmins using mitochondrial DNA. Nishikant's current Ph.D. focuses on river conservation. His project seeks to investigate and quantify the anthropogenic stressors impacting rivers resources and habitats in the Indian Himalayan bio-zone.

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