EXPLORING THE NATURAL HISTORY AND BEHAVIOR OF MINIATURE FISHES OF NORTH BENGAL, INDIA

Submitted by;

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Executive summary

Stream ecosystems play a crucial role in shaping and structuring the landscape, significantly influencing the ecological dynamics of a basin. It contributes to global biodiversity at a rate that is greatly disproportionate to its physical extent, and ranks highly among the more threatened ecosystems on the planet. Freshwater bodies altogether are home to around 10% of the world's described species, and to over 40% of global fish diversity and a quarter of the world's vertebrate species. Freshwater miniature fishes are under 26 mm in length and serve as an excellent model organism to study a broad spectrum of biological processes. In India, such information is poorly documented. Our study aims to record the miniature fish distribution and habitat of *Danionella sp*. along with its behaviours in the selected streams of Buxa Tiger Reserve, West Bengal. It is a common ornamental fish, currently listed as Data Deficient (DD) under the IUCN Red List Classification. We documented habitat parameters by stream profiling and observed behaviours using underwater cameras for four months as a preliminary survey. A total of four miniature fish species were defined. The microhabitats of *Danionella sp.* were mostly swampy-like; however, we did not see a strict habitat pattern along the two streams that we had sampled: Bamney and Bhatkhava streams. They were mostly slightly acidic (pH between 6 and 7), with variable dissolved oxygen units. *Danionella sp.* shoals mostly occurred in shallow water and a negligible flow rate around 0.0 m/s to 0.6 m/s, while when they were in schools, they were also observed in deep and slow-flowing water. We observed gravid females from the month of May to August, which indicated that its breeding season peaked during this period. Local migration-like movements of them were observed in the Bhatkhava main stream as well. Going forward, a larger distribution survey in multiple stream networks needs to be conducted for a longer duration. Like that, more rigorous habitat patterns could be generated, and behaviours at different times of day throughout multiple seasons and microhabitats could also be documented.