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Research Prospects in Western Ghats Stream Ecology: Perspective from River Sharavathi

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The Western Ghats is one of the hottest hotspots of biodiversity (Myers, *et al.*, 2000), with tremendous species richness and high levels of endemism. The region is a repository of biodiversity evident from sprawl of description of new species (Aravind, *et al.*, 2004) in recent times. Western Ghats acts as watershed for the major peninsular rivers like Tapti, Krishna, Cauvery and plentiful of small rivers in the state of Gujarat, Maharastra, Goa, Karnataka, Tamilnadu and Kerala. Most of the west flowing rivers along with their terrestrial ecosystems plays a pivotal role in maintaining the ecological balance. Recent efforts confirm that these fresh water ecosystems are the treasure trove for the description of new species. River Sharavathi is one such river rises in Ambuthirtha in Shimoga district and joins in Arabian Sea at Honavar of Uttara Kannada district of Karnataka. Biodiversity exploration in this river ecosystem reveals a vast range of algae, micro and macro invertebrates, fishes, amphibians and an array of mammal and bird species. As of date, biological records reveal about 242 species of algae, 39 species of zooplankton, 37 genera of aquatic insects, 115 species of fishes and 35 species of amphibians.

The biological exploration of this river dates as early as 1958 for algae by Iyengar, (Randhawa, 1959) followed by Gandhi during 1959 to 1970. Iyengar laid the foundation of biological exploration with a description of 4 new species of green algae (*Debarya jognsis, Zynemopsis saravatiensis, Zynemopsis jogensis, and Spirogyra jogensis*).

Subsequently Gandhi's(1958, 1959a, 1960c, 1966 and 1970) meticulous work on taxonomy heralded further with description of 22 new species of diatoms (*Ceratoneis jogensis, Cymbella rivularis, Cymbella sagarensis, Eunotia jogensis, Eunotia rivularis, Eunotia saravathense, Gomphonema sarvathense , Navicula jogensis, Neidium grandis, Neidium jogensis, Nitzschia pseudogracilis, Pinnularia mysorense, Pinnularia sagittata, Surirella capronioides, Gomphonema spiculoides, Gomphonema tenius , Navicula fridrrichii, Pinnularia balatoneis, Pinnularia pseudoluculenta, Synedra jogensis, Frustulia jogensis, Navicula subdapaliformis*). This trend got major boost with recent work of Bhat and Jayaram (2004) describing a new fish species *Batasio sharavathiensis* and by Sreekantha *et al.* (2006) with a discovery of *Schistura nagodiensis* and *Schistura sharavathiensis* and *Philautus neelanethrus* sp. nov. (Gururaja *et al*., 2007). However there are many more species yet to be explored in other taxa too, and most of them are in the verge of extinction due to large scale rampant degradation due to unplanned development initiatives. This might prove detrimental to the sustainability of this ecologically fragile and a very sensitive hot spots of biodiversity.

Deforestation has impaired hydrological regimes. River flow regulation by dams (Linganamakki and Gerusoppa Dam) and non-point sources of pollution due to agricultural activities has imposed tremendous pressure on river biota. Due to large scale land-use changes in unregulated rivers and streams lacks natural hydrological regimes (Ramachandra, *et al.*, 2004). The deleterious consequences of drainage basin misuse and forest clearance are evident throughout the region, resulting in increased runoff, sediment transport and changes in river flow. In essence, large scale changes in flow are an inevitable result of deforestation. The construction of dams to regulate the flow regime and to generate energy, appears more of short term gain options (Ramachandra, *et al.*, 2007).

Conservation efforts in the Western Ghats biodiversity are nevertheless piecemeal and reactive. Conservation action would be far more effective if we could avoid, habitat degradation and consequent species loss. The present conservation approach needs to be more focused and integrated with an ability to predict the elements of the river biota that are most vulnerable to extinction and to identify their ecological attributes. The information related to the ecological attributes needed to assess the health of the river community and to monitor changes over time. The aquatic biodiversity and ecology of these rivers has not been inventoried thoroughly and most species are probably undescribed and its time for scientific community to integrate and explores the stream and riverine biodiversity and ecology, to join hand to raise Western Ghats biodiversity and ecological information.

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