Research Paper:

Riparian vegetation analysis along Tungabhadra River

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SUMMARY

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March, 2011 Accepted : *April*, 2011 The present study examined the variation in riparian vegetation communities along the Tungabhadra River, Karnataka, India. Direct sampling of 0.3 ha, by quadrat method for the study of plant communities and quantification of vegetation, documented 26 species and 87 individuals. Quantitative analyses on species diversity in addition to phytosociological attributes were conducted. The plant communities were determined in percentage of frequency, abundance value, relative density and importance value. The phytosociological studies revealed that in most part of area, the vegetation was characteristically dominated by *Pongamia pinnata* species followed by *Acacia nelotica*, which were also recorded as the most abundant and frequent species of the study area. The study also emphatically revealed that increase in the anthropogenic pressures within the river basin and surrounding landscapes have persistently stressed the riparian ecosystem structure adversely, besides altering its composition. The results indicated that the mean density and basal area of trees per plot were higher in the upstream of river than downstream. The Shannon–Weiner diversity of upstream was found to be 3.6, which was higher than downstream. The results of the present study clearly brought out the need for preparing and implementing site-specific conservation plans for riparian ecosystem.

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The word "Riparian" itself means along the river margin. Plant communities seen along the river margins are commonly referred to as the riparian vegetation. From the beginning to the end of a river, the riparian zone is highly influenced by the quantum and flow of water in the river channel. Usually altitude, total rainfall, duration of rainy season, wind, and temperature along with soil characteristics, influenced by climatic factors determine the nature of plant communities (Nair, 1994). The riparian wetlands are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstance do support a prevalence of vegetation typically adapted for life in saturated soil conditions (James et al., 1992). Variations in the environmental conditions provide a diversity of inhabitants, for both aquatic and terrestrial animal community (Cairns and Pratt, 1995).

The unit characteristics of riparian system result from the spatial allocation and configuration. The plant communities in these systems are likely to be affected by both longitudinal (*i.e.*, upstream-downstream) (Vannote et al., 1980) and transversal (i.e., stream- floodplain or floodplainbasin) (Newbold et al., 1982) linkages for species recruitment and species diversity (Tabacchi, 1995). Riparian zones have been reported as some of the most species rich and most productive systems and they are also some of the most sensitive to human influence and potentially threatened ecosystems (Malanson, 1993). The riparian canopy regulates stream temperature through shadowing and provides organic matter via litter fall, while their root systems stabilize the bank and filter lateral sediment and nutrient inputs, thereby controlling stream sediment and nutrient dynamics.

The surfaces of submerged leaves are sites of primary and secondary production by micro algae and bacteria, which can be rival that of phytoplankton and bactereophils in water column. The community serve as food for grazing invertebrates and protozoa,