



HYDROLOGICAL IMPORTANCE OF SACRED GROVES OF WESTERN GHATS

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Rajasri Ray*, Chandran, M.D.S. and Ramachandra, T.V.
Energy and Wetland Research Group, Centre for Ecological Sciences
Indian Institute of Science, Bangalore – 560012, Karnataka

*rajasri@ces.iisc.ernet.in

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Sacred groves, often climax forest patches preserved in the name of god are distributed throughout the Western Ghats. Apart from their role in biodiversity conservation, groves also offer various ecosystem services which are still underexplored. Water conservation is one of the most well documented services provided by the groves although scientific studies have not done yet in this regard. Documentary evidence shows that groves support numerous perennial streams, ponds and wetlands in Western Ghats region thus maintain livelihoods of rural communities associated with this tradition. This water conservation potential also helps to maintain the rich biodiversity in the grove area by providing suitable microclimate for diverse group of organisms. We have assessed the water conservation potential of the sacred grove in comparison to non-sacred area in terms of ground water availability, soil moisture content and land use patterns with an aim to justify the age old practices of sacred grove conservation. Comparative analysis has been carried out in two associated upland forest patches in Honnavar taluk of Uttara Kannada district of Karnataka, representing a sacred and non-sacred forest patches. The sacred forest patch is associated with Karikanamman Temple, one of the famous pilgrimage centres, while the non-sacred forest patch is in the neighbouring Sambegadde. Forest composition, soil hydrology, ground water and socio-economic parameters have been considered for this study. Sampling of vegetation was carried out in three altitudinal gradients (50-200m, 201-400m, >400m) by following standard methods. Top soil (0-20cm) moisture has been measured by gravimetric method. Ground water monitoring has been carried out on monthly basis in selected wells and household survey was conducted to gather information on landholding, crop pattern and water utility details. The evergreen nature of the sacred forest patch (Karikan) is in a sharp contrast to its neighbouring forest patch (Sambegadde), where it is mostly secondary and deciduous in nature. Karikan hill side forest has shown 36.17% endemism, 92% evergreenness and hygrophilous dipterocarps are dominant there. Topsoil moisture content in pre-monsoon season has shown higher moisture retention in the evergreen primary forest patch in comparison to the Sambegadde forest patch. Household survey result has shown a distinct characteristic in water usage and crop pattern. Sacred forest downstream area is dominated by horticultural crops having higher water requirement while Sambegadde is dominated by rain fed agricultural crops due to scarcity of water during non-monsoon season. The outcome of this investigation highlights the linkages between hydrologic regime with the local ecology, biodiversity and culture. Primary evergreen forests with good canopy cover and litter layers at Karikan have significant role in moisture retention as well as in maintaining hydrologic regime evident from perennial streams and higher ground water table. Perennial water availability has a decisive role in the economy of downstream area evident from the prevalence of cash crops requiring higher quantum of water. However, long term monitoring is required to substantiate the linkages between ecology, biodiversity with hydrology at local and regional levels.

