

Bio-physical-chemical studies of swamps in the Nilgiris, Tamil Nadu

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Abstract: Wetland ecosystems play a key role in maintaining water quality. Twelve swamps of Nilgiris district were selected based on altitude and land use to study the physico-chemical properties of swamp soil, water and the adjoining stream water which fed the swamps. The *Scirpus* spp. was the dominant species in all swamps followed by *Cyperus* spp. and *Kyllinga* spp. Soils were strongly acidic, free from salinity, rich in organic carbon (1.5 - 2.8 %), low to medium in available nitrogen (224 - 476 kg ha⁻¹), high in available phosphorous (39 - 67 kg ha⁻¹) and low in available potassium (11 - 197 kg ha⁻¹). Both the swamp and adjoining stream water quality was determined as being of adequate quality for drinking and irrigation as evidenced from the hydrochemical parameters. Agriculture and habitation land uses contribute higher nutrient load to the stream as well as swamp water as compared to the tea plantation, mixed forest and shola forest. Swamp water was more than three times higher in nutrient load than the streams which fed them because of temporal stagnation of water in the swamps which favors slow accumulation of nutrients. The effect of land use to govern the swamp water quality outperformed the altitude effect. A blend of policy, social and institutional mechanisms is needed for their conservation and making management priorities for ecological protection of Nilgiris Biosphere Reserve.