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Comparison of physico-chemical parameters of Uma Oya and Badulu Oya sub catchments of the Mahaweli Upper Catchment with special reference to water pollution

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Uma Oya and Badulu Oya sub catchments represent a diverse hydrological environment and considerable land use in the Mahaweli upper catchment area. These two catchments are located in the Badulla District which is in the intermediate zone. The objectives of this study were to assess the present status of water quality in relation to the following physico-chemical parameters; temperature, pH, electrical conductivity, dissolved oxygen levels, total suspended solids, turbidity, ammonia, phosphate, nitrate, nitrite and chlorophyll a, and to compare the pollution status of Uma Oya and Badulu Oya.

Monthly variations in water quality parameters were studied from April to October 2007 at 13 sampling locations which were within the two sub catchments. Nitrate, nitrite, phosphate and ammonia concentrations in Uma Oya and Badulu Oya sub catchments were in the range of 0.001 - 2.634 mg/l, 0.004 - 0.421 mg/l, 0.003 - 0.122 mg/l and 0.015 - 1.463 mg/l respectively. Electrical conductivity values ranged from 61.4 - 318 µS. However, turbidity and total suspended solids, were high during the rainy season in the Bogahamadiththa sampling location of the Badulu Oya sub catchment. Turbidity values ranged from 1.46 - 706 NTU whereas total suspended solids ranged from 1.50- 025 mg/l. Dissolved oxygen levels were between 2.80 - 8.90 mg/L. Chlorophyll a values obtained were in the range of 1.18 - 42.07 mg/m^3 and the surface water temperature values in the sub catchment ranged from 15.7 - 30.0 ^oC. The results revealed that the sampling locations from the two sub catchments except Borgahamadiththa, Welimada, Ettampitiya, and, Thaldena were within the Sri Lanka limit for fish and aquatic life.

Keywords: water quality parameters, Uma Oya , Badulu Oya, water pollution