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Post dredging status of the Lunawa Lagoon

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Lunawa lagoon located in the Moratuwa-Ratmalana industrial area which had been heavily polluted due to anthropogenic activities was rehabilitated by dredging and opening the lagoon mouth under the Coastal Resource Management Project in 2007. The present study assesses the present status of the Lunawa lagoon, 3 years after dredging. Physico-chemical, biological and microbiological parameters in 6 selected sampling points of the lagoon were studied once a month from October 2010 to June 2011 and compared with previous data, before, during and 6 months after dredging. The comparison of present and previous data on Dissolved Oxygen (DO), Biological Oxygen Demand (BOD_5), salinity, conductivity, nitrates, sulphides, Shannon Wiener Diversity Index(SWI)-phytoplankton, SWI-zooplankton were significantly different at different time intervals of dredging ($p < 0.05$).The highest levels of DO, salinity and conductivity and the lowest levels of BOD_5 and nitrate were recorded 6 months after dredging. As at present, the conditions have degraded as indicated by high values of BOD_5 (8.88 – 10.57 mg/l), nitrates (4.49 – 8.51 mg/l) and sulphide (3.11 – 5.34 mg/l). High nitrate levels and high abundance of rotifers, *Brachionu*s sp., and invertebrates *Melanoides tuberculata, Tarebia latentia* and *Micromentus* sp. recorded in the lagoon can be considered as an indication of an eutrophication condition. Even the fish species diversity has reduced (3 species, namely, *Ophiocephalus striatus*, *Etroplus suratensis* and *Oreochromis* sp. in the present study as against 7 species of fish in 2009), indicating the degrading water quality. The dominance of phytoplanktons such as *Stephanodiscus* sp., *Closterium* sp., *Pediastrum* sp., and *Cyclotella* sp. further confirms the moderately to highly polluted water quality. Presence of cladocerans signifies a high amount of organic matter. Fecal contamination, was shown by total coliform and fecal coliform counts exceeding 1100/100 ml. The main reason for this water quality degradation is attributable to the continuity of effluent discharge. Presence of Cu (0.03 – 0.048 ppm) and Zn (0.006 – 0.006 ppm) in water in the present study shows that the factories still release effluents containing these heavy metals. Point source sampling sites which recorded higher levels of BOD_5, nitrate, orthophosphate and sulphide levels than non-point source sampling sites also indicate the direct release of effluents containing high loads of organic and chemical pollutants. In conclusion it can be said that the positive effects of dredging in the lagoon have subsided due to the continuous discharge of effluents. Therefore, interventions to curtail these sources of pollution are urgently required.

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