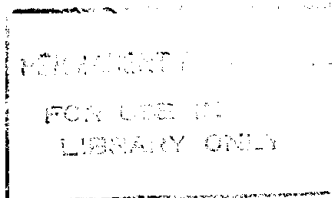


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**STUDY OF BIOACCUMULATION OF HEAVY METALS IN
AQUATIC FLORA AND FAUNA IN THE LUNAWA LAGOON**



A PROJECT REPORT PRESENTED BY

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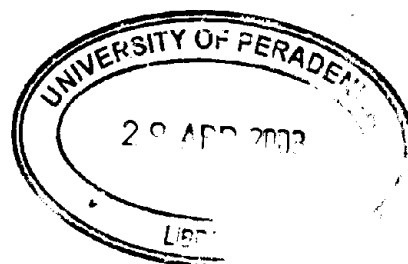
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STUDY OF BIOACCUMULATION OF HEAVY METALS IN AQUATIC FLORA AND FAUNA IN THE LUNAWA LAGOON

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A study of status of water pollution of the Lunawa lagoon and its impact on the distribution of aquatic birds has shown that the Lunawa lagoon is a highly polluted water body and also water and the bottom sludge contained heavy metals such as Cadmium (Cd), Chromium (Cr), Zinc (Zn) and Lead (Pb) (Wickramasinghe and Dayawansa 2006).

Current study was designed to investigate heavy metal accumulation in aquatic flora and fauna associated with the Lunawa lagoon. Thus bioaccumulation of heavy metals in representatives of different trophic levels of the food web of the Lunawa lagoon was investigated from August to December 2006. Nine sampling stations were selected with including canals that connected to the lagoon for the investigation. A canoe with an outrigger was used to reach the sampling stations in the lagoon. A location map of sampling points was constructed using GPS and GIS. Aquatic plants, Body parts of birds such as feathers, egg shells, bones and fish species from a food web that associated with the lagoon were used as materials for analyses of heavy metals.

Presence of aquatic plants that covered the surface of water, *Eichornia spp*, *Salvinia spp*, *Panicum spp* and *Ipomea aquatica* were used to analyze heavy metals. *Mugil spp* and *Etroplus suratensis* were used as fish species found in the lagoon for investigation. Feathers of Pond Heron (*Ardeola grayii*), White breasted water hen (*Amaurornis phoenicurus*), Wiskered Tern (*Chlidonias hybridus*) and Red-wattled Lapwing (*Vanellus indicus*), egg shells of Brahmini Kite (*Haliastur indus*) and bones of Purple Heron (*Ardea purpurea*) were used for metal analysis.

Each aquatic plant species, fish species and body parts of the birds were digested and analyzed by Atomic Absorption Spectrometry by employing wet ashing method to find accumulation of heavy metals of Cu, Cd, Pb and Zn.

Every sample that was analyzed contained four types of heavy metal ions. It was evident that aquatic plant species *Eichornia spp* contained relatively higher amounts of Zn (32.810 $\mu\text{g/g}$) and Cd (2.905 $\mu\text{g/g}$) whereas *Salvinia spp* consisted of high amounts of Zn (23.767 $\mu\text{g/g}$) and Cu (6.735 $\mu\text{g/g}$). *Panicum spp* showed high amounts of Zn (7.695 $\mu\text{g/g}$) and Cu (0.660 $\mu\text{g/g}$). *Ipomea aquatica* indicated higher values for Cu (0.985 $\mu\text{g/g}$) and Zn (7.527 $\mu\text{g/g}$). The aquatic plants acted as an important role of primary producers.

In fish samples that represents the primary consumer level and contained higher concentrations of Zn (6.920 $\mu\text{g/g}$) and Pb (1.752 $\mu\text{g/g}$).

Whereas bird feathers showed the highest values for Zn (10.837 $\mu\text{g/g}$) and Cu 8.342 $\mu\text{g/g}$). Bird egg shell indicated relatively higher values for Zn 16.425 $\mu\text{g/g}$ and Pb (14.925 $\mu\text{g/g}$) bird bone indicated Zn (38.780 $\mu\text{g/g}$) and Pb (1.640 $\mu\text{g/g}$) as the highest concentrations. Zinc metal ion was detected as the highest concentration in investigated biota. Birds used to represent the secondary consumer level of a food web.

The finding of the research project indicated that there was an accumulation of heavy metals in aquatic flora and fauna associated with the Lunawa lagoon. It was also evident that there was biomagnification of heavy metals in aquatic fauna and flora associated with the lagoon.

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