

Effect of Water Hyacinth Infestation on the Physicochemical Characteristics of Lake Naivasha

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Abstract

Water hyacinth (*Eichhornia crassipes*) is an invasive aquatic macrophyte associated with major negative economic and ecological impacts in the Lake Naivasha region since the plant's introduction into the lake in 1986. The study hypothesized that water hyacinth had significantly affected water quality of Lake Naivasha. Field measurements were done to determine the impact of water hyacinth on water quality. Two sampling sites were selected (one under water hyacinth and another at shore line without water hyacinth) to compare the results of the measurements. At each of these habitats 10 sampling areas were randomly selected. Water quality variables from the two habitats were compared by means of one-way analysis of variance (ANOVA).

The sample analysis showed that free carbon dioxide was significantly higher ($P < 0.05$) in water hyacinth infested areas ($26.45 \pm 1.02 \text{ mgL}^{-1}$) than in open water ($12.86 \pm 1.92 \text{ mgL}^{-1}$). Dissolved oxygen was significantly lower ($P < 0.05$) in the infested areas ($1.96 \pm 0.71 \text{ mgL}^{-1}$) when compared with open water ($5.98 \pm 0.85 \text{ mgL}^{-1}$). Similarly pH was significantly lower ($P < 0.05$) in water hyacinth infested area (6.92 ± 0.04) than in open water (7.71 ± 0.05). Although the temperature was higher in the infested areas ($27.5 \pm 0.600\text{C}$) than open water ($26.7 \pm 0.520\text{C}$) the difference was not significant ($P > 0.05$). It can therefore be concluded that the presence of water hyacinth was found to have affected the ecology of Lake Naivasha and therefore its utility. Effective control of water hyacinth in Lake Naivasha is important, in order to prevent both ecological and economic loss due to loss of biodiversity.