

**MESOCARNIVORES AS INDICATORS OF AQUATIC
ECOSYSTEM HEALTH IN SELECTED RIVERS OF THE
LAIKIPIA PLATEAU**

By

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Thesis submitted in partial fulfillment of the requirements for the
degree of Master of Science in Biology of Conservation,
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October, 2013

ABSTRACT

Humans affect wetland ecosystems by changing cover, depleting resources, introducing waste and changing natural communities. This poses a major challenge for aquatic ecosystem health in the long run. In Laikipia, local resource managers have adopted expensive methods for monitoring ecosystem health whose maintenance is not cost effective in the long term. The study therefore examined the mesocarnivores of Laikipia and their role as indicator species. It also determined their potential food resources. Six sites were selected for sampling during the period between October 2012 and April 2013. Camera traps were strategically placed on the selected foraging sites so as to obtain round the clock data on mesocarnivore frequency of occurrences. Other related riparian and aquatic fauna were sampled at each site. Physicochemical characteristics of the water were assessed using standard probes and instruments. Data was organized and later analyzed using R, STATVIEW[®] and PAST[®] statistical softwares. Comparisons of non-normal data were made using Mann-U Whitney Test for two samples and Kruskal Wallis Test for simultaneous comparisons of three or more data samples. Correlation tests of mesocarnivore parameters and corresponding riparian and aquatic parameters were carried out. Simple Linear Regression was used to confirm significant relationships between variables that were found to be significantly correlated. The results revealed 110 camera trap captures of mesocarnivore representing a 1.963% camera trap yield rate, 54.5% were found to be aquatic species and 45.5% as terrestrial species. There was a general lack of significant relationships between mesocarnivore frequency of occurrence and all riparian and water fauna parameters sampled. Food availability seemed to be the only factor that affected their frequency of occurrence as indicated by the significant regression relationship between fish biomass and

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mesocarnivore frequency of occurrence ($r^2=0.928$, $P<0.05$). Correlations tests to determine association of fish biomass and physicochemical water characteristics yielded no significant relationships. Therefore, the only environmental parameter that mesocarnivore frequency of occurrence indicates with significant accuracy is fish biomass. Mesocarnivores appeared to have limited sensitivity to environmental variability. This is because they did not respond directly but via food resources, which were directly influenced by variability in habitat conditions. However, mesocarnivores responded directly to natural and human factors that affected habitat condition and food availability. Hence can serve as indicators of external stresses, such as those caused by pollution and habitat disturbance in aquatic ecosystems. The study recommends the use of more specialized mesocarnivores as indicators of ecosystem disturbance and smaller aquatic organisms as indicators of functional changes of ecosystems such as disruption of aquatic food chains.