

(101)

Biodiversity and conservation importance of Manewakanda and Danduwella isolated hills in Kala Oya basin, Sri Lanka

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Abstract

The dry zone has been commonly described as a distinct bioclimatic zone in Sri Lanka. Dry Evergreen Forests extends throughout most of the Sri Lanka, except for the southwestern quarter, the central mountain range, and the Jaffna Peninsula in the extreme north. The dry zone eco-region receives about 1,500-2,000 mm of annual rainfall during December to March, by the northeast monsoon but is mostly dry during rest of the year. Topographically, the eco-region is flat, except for scattered inselbergs and isolated low hills. Ritigala, a 766 m isolated peak in the central part of Sri Lanka, is the highest point between the central massif and the Western Ghats of India (Jayasuriya, 1983). Tropical dry forests cover most of the eco-region, but within the eco-region there are a number of distinct habitat types (of sub-regional extent). Most areas of this eco-region was settled and cultivated until about 500 years ago; therefore, the forest is secondary. However, several patches of old-growth forests remain and are included within the protected area network of the country. In order to assess the biological richness of isolated hills located in the Kala Oya basin, a preliminary survey was conducted in Manewakanda (173476 E, 324370 N; elevation 340 m), in Anuradhapura District and Danduwella (156810 E, 303200 N; elevation 560 m) in Kurunegala District during June - July, 2012.

Vegetation of the site was stratified in to different habitats before sampling. Vegetation was sampled along an altitudinal gradient, starting from the base of the foot hill up to the peak of the hill. Well established animal paths were used as transect lines. Two groups of invertebrates, namely land snails and butterflies were selected for sampling. Land snails were surveyed using 1 X 1m plots and the butterflies were sampled using point-survey method. Amphibians and Reptiles in the sites were sampled using a combination of visual encounter surveys and specialized searches in selected habitats known to be important to particular species. Point count method was used to count and gather data on birds. Fifteen minutes were taken at a single place to observe birds while moving along transects. Mammals were sampled using line transect method. Since, this is a baseline survey, visual encounters were used. Small mammals were not trapped. While walking along transect direct observation of individual species as well as signs indicating their presence (dung, tracks, browse etc.) were recorded.

Two main habitat types were recognized in the two sites, lowland dry forests and the foot hills. Dry forest generally consisted of the fairly undisturbed habitat found in the upper part of the hill while foot hill of the sites were highly disturbed, mainly due to chena cultivation. The shrub *Flueggea leucopyrus* and *Glycosmis angustifolia* were the most abundant species in the foothills. Abundance of shrubs and small trees in this habitat indicate a relatively high disturbance of the area where large trees have been selectively removed. *Croton laccifer* (43.42%), *Glycosmis angustifolia* (19.17%) and *Drypetes sepiaria* (15.47%) were the most abundant species in the upper parts of the Danduwella hill. The upper part of the Danduwella hill is relatively undisturbed when compared with the foot hill and hence the upper

regions support some canopy forming tree species. Floral survey in Manewakanda was not done due to lack of resources.

Faunal survey of Manewakanda yielded land snails ($H' = 1.68$), butterflies ($H' = 2.73$), reptiles ($H' = 2.04$), birds ($H' = 3.757$) and mammals (presence of dung was also determined). One species of an amphibian was recorded during the survey of Manewakanda. Whereas in Danduwellawa, land snails ($H' = 1.313$), butterflies ($H' = 2.637$), reptiles ($H' = 0.9432$), birds ($H' = 2.8876$) and mammals ($H' = 0.7623$) were recorded. Of the two invertebrate groups sampled, butterflies were more common than the land snails in both sites. Vertebrate group is dominated by the birds in both hills. Forested area in the hill of Manewakanda supported only four endemic species (one bird and three mammals) during the survey. Amphibians were not well represented in the area. Since sampling was carried out in the dry season smaller number of the amphibians was encountered. This is a common phenomenon in the dry zone. Fourteen species of mammals were recorded from the forested hills (11 from Manewakanda and three from Danduwellawa). Undisturbed forest in the hill also supports three endemic mammal species which were not recorded from the disturbed foothill area.

Manewakanda and Danduwellawa are isolated hills surrounded by settlements and chena cultivations. Therefore, the hill serves as refugia for many plant and animal species. Protection of this hill from further disturbance is essential for the survival of these species. Although the foothill region of the two sites are heavily disturbed due to human activities, the upper forested area still support a good patch of Lowland dry forest which are the typical forests of this region. Since the human disturbance are relatively low in the upper regions of the hill most of the mammal species which are sensitive to disturbance have moved to the upper region of the hill, thus making this area as the only refugia for the survival of these species. Therefore, these isolated hills should be protected further by disturbance to save the remaining biological diversity in the area.

Key words: Biodiversity, hill Forest, Kala Oya basin, conservation, habitat, endemic