An Assessment of the Status of Exotic Plant Species and Natural Vegetation Types of Mgahinga Gorilla National Park, South-Western Uganda.

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Mgahinga Gorilla National Park (MGNP) is an afromontane forest region in south-west Uganda on the slopes of the Virunga volcanoes, characterised by a great diversity of habitat types associated with its altitudinal range. With a long history of human influence, it has been subjected to serious abuse over the years, which led to forest degradation and major land transformation. In the early 1990s Mgahinga was gazetted as a forest reserve, restricting access, so many degraded areas were left to regenerate.

Planting of exotic species in Uganda has been commonplace since colonial times, diminishing the variety of Uganda's forest resources. A little over half of Mgahinga is now covered by exotic woodlots, with the most widely distributed exotics being black wattle (*Acacia mearnsii*) and *Eucalyptus* spp. This study aimed to assess the status and distribution of exotic plant species and natural vegetation types in MGNP, examine the effect of exotics on the regeneration of indigenous plant species and assess the state of vegetation recovery in the degraded areas. Sampling was carried out in three habitat types: degraded area, natural forest and exotic woodlots, using GPS marking, quadrat sampling to study plant communities and soil sampling to assess soil nutrients.

Mgahinga National Park has two distinct zones, derived mainly from the numerous boundary changes that led to varying levels of human modification. Zone 1 is an area of dense original vegetation cover, whereas zone 2 is an area that was recently encroached upon, where forest cover was depleted and widely changed into agricultural land. Re-establishing diverse and productive forests on degraded lands has often proved difficult due to degraded soils and competition from undesirable species. Fast growing or nitrogen fixing exotic species are often planted in degraded areas as they conserve and enrich soils, provide timber products faster than native species, and adapt easily to the unfavourable conditions.

The vegetation in MGNP has been directly affected by past human activities, reducing cover and leading to the establishment of exotic plant species in most parts of the park. The types and patterns of exotic species suggest the values of these plant species to settlers – the abundance and wide distribution of *A. mearnsii* and *Eucalyptus* spp. indicate their importance and map intensities of past human activities. Varying levels of disturbance in zone 2 have caused slow recovery processes, affecting the regeneration of some species, and making the area vulnerable to soil erosion and leaching. The woodlots of exotic species have caused low establishment of native tree species under these woodlots, suppression of the early stages of native forest regeneration and depletion of the soil nutrients in the area, due to high uptake of soil nutrients by exotic species. These factors could lead to an ecologically and economically impoverished forest in the long run, however signs still point towards recovery.

A number of measures, such as selective removal of exotic species to encourage native tree species, would improve the forest diversity in MGNP, increasing the number of native trees and improving the ecological status of the forest. Local people should be encouraged to plant multiple-use trees to reduce illegal harvesting, and ecological monitoring should be carried out to track the progress of regeneration. As this study indicates that, although slow, recovery is occurring, natural regeneration should be allowed to take its course.

Summary written by Lucy Sangster