Restoring degraded water catchments using ecosystem-based adaptation tools for long-term benefits of downstream communities in Seychelles

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Abstract

The main threat to biodiversity on Praslin is forest fires which are aggravated during the long drought periods exacerbated by climate change. 40% of Praslin (1500ha) are affected by forest fires. Forests play a vital role in the protection of the island's water supply.The degradation of forests to contribute to droughts, and reduced river flows. To reverse the impacts, it is vital to restore the water catchments using natural solutions to ecosystem-based approaches. The research consists in rehabilitating degraded ecosystems (25 ha) to return them to a forest formation to restore ecosystem services such as healthy water catchment. The project focused on the two largest water catchments on Praslin: Fond Boffay (150 ha) and Nouvelle Decouverte (341 ha).The management approach developed focused on replanting non-native shrublands, which involved nursery-based propagation of native plants; land preparation consisting of cutting "strips"within shrublands (strip clearing) and planting these strips with native species; post-planting maintenance, data collection and reporting. New rehabilitation trials were set up to further develop knowledge on best rehabilitation practices and methods for the degraded lands of Praslin. 5.1 ha was rehabilitated during Phase 1. Rehabilitation is mostly limited by strip clearing of the land prior to planting. Considering practical constraints (workforce) and planting seasons, the maximum coverage achievable per year is ca. 5 ha. Planting density achievable is 400-500 plantings/ha, up to 1000 plantings/ha. Addition of charcoal and top soil results in more than double growth rate for plantings done on bare soil lands. Medium-term monitoring is required todetect differences in relative success between species or planting treatments. Based on previous trials, *Planchonella obovata* appears to be the most successful species. Other promising species that are are *Dodonaea viscosa*, *Ludia mauritiana*, *Intsia biguga* and *Mimusops sechellarum*. The rehabilitation work resulted in the development of key knowledge for better planning of future rehabilitation work on highly degraded lands. Although still modest (5 ha), it represents the largest rehabilitation work on highly degraded lands done since the late 20th century.

Keywords: Restoration, ecosystem, based adaptation, degraded forest, water catchment, climate change

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