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A Forest Restoration Success: Public-Private-People Partnership Driven Five-Year Intensive Restoration Methodologies for a Heavily Degraded Rainforest

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Abstract

Deforestation and degradation of tropical forests is a significant contributor to the loss of biodiversity. Restoration could potentially mitigate the impacts of deforestation, yet the identification of best restoration methodologies and the allocation of adequate financing for restoration is a huge challenge. IUCN in collaboration with Biodiversity Sri Lanka and the Forest Department successfully completed a five-year pilot project in partnership with 14 private sector companies to overcome this challenge. The overall aim of the project was to restore 12 hectares of degraded rainforest patch in the Kanneliya Conservation Forest, Galle District, using principles of restoration ecology to enhance its biodiversity and ecosystem services. The site selected for restoration was invaded by *Dicranopteris linearis* (Burm. f.) Merr. herbaceous fern. This type of vegetation is characteristic of disturbed habitats having poorly drained, infertile soils on steep slopes in lowland wet zone of Sri Lanka. The new intensive restoration methodology has been developed to restore degraded *D. linearis* invaded area based on the progress achieved through the adaptive approaches introduced between second to fifth years of project period. Key interventions included, total removal of *D. linearis*, establishment of soil conservation measures, application of organic and inorganic fertilizers, maintenance of an on-site plant nursery, collection of locally available seeds and seedlings, plant acclimatization, establishment of dry season watering mechanism, increasing of planting hole size, physical protection of plants using barriers, introduction of native legume species and other nursing plants and continuous monitoring of plant growth. Two native shrub species (*Melastoma malabaricum* and *Hedyotis fruticans*) are naturally proliferating wherever *D. linearis* is removed. These shrubs play a major role in restoration as they provide initial shade and enrich soil carbon in degraded sites. The sudden emergence of saplings of native species were observed in the intensive restoration areas. Twenty-one native plant species have been naturally colonised, in addition to 69 species of planted species. Planted native tree species showed 253% growth attainment of height within the 18-month time gap observed in the intensive restoration area compared to that of general restoration area where the height attainment was 196%. Sixty-seven new faunal species which were not recorded at the site previously, have colonised the restoration site. Intensive restoration methodologies developed for this restoration project accelerated the growth of adopted native trees and increased the plant survival rate. Buildup of social capital including trend in the private sector for restoration is an offshoot of the project.

Keywords: Biodiversity, *Dicranopteris linearis*, Kanneliya, Intensive forest restoration