Monitoring forest structure in a community-based mangrove conservation project: A case study of Mikoko Pamoja

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Mikoko Pamoja is a community led carbon-offset initiative located in Gazi Bay, Kenya. The initiative conserves 117 ha of mangroves (out of a total of 592 ha of mangroves found in the bay). The community receives financial incentives annually through the sale of 2125 tC02 derived from avoided deforestation, forest protection and restoration. This study examines the changes in forest structure of protected mangrove forests within a three year period of the project operation (2015 to 2017). As a requirement for plan vivo payments, Mikoko Pamoja makes annual reports on forest condition, based on monitoring forest structure, growth, productivity, regeneration, mortality and illegal harvesting within the project area three times per year. Monitoring for density, regeneration and biomass estimates, was conducted in ten permanent plots (10m x 10m) established randomly within the project area in 2015. The stocking rates indicated an increase of 235 stems ha-1 from 5235 ±302 stems ha-1 in 2015 to 5470 ±655 stems ha-1 in 2017(mean ±Sd). In 2015 the number of juveniles was 17868 saplings ha-1 while in 2017 there were 23000 saplings ha-1. The biomass estimate was 249.95 ±55.96 t ha-1 (dry mass) in 2016; this had increased to 268. ±60.21 t ha-1 by 2017. Our findings on the improved forest structure and biomass accumulation indicate success in the community conservation efforts.