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Variation in leaf litter production and resorption of nutrients in abundant tree species in Nyungwe tropical montane rainforest in Rwanda

Brigitte Nyirambangutse (1,2), Eric Mirindi Dusenge (1,2), Donat Nsabimana (2), Elias Bizuru (2), Håkan Pleijel (1), Johan Uddling (1), and Göran Wallin (1)

(1) Department of Biological and Environmental Sciences, University of Gothenburg, Gothenburg, Sweden., (2) Department of Biology, University of Rwanda, Huye, Rwanda.

African tropical rainforests play many roles from local to global scale as providers of resources and ecosystem services. Although covering 30% of the global rainforest, only few studies aiming to better understand the storage and fluxes of carbon and nutrients in these forests have been conducted. To answer questions related to these issues, we have established 15 permanent 0.5 ha plots where we compare carbon and nutrient fluxes of primary and secondary forest tree communities in a tropical montane forest in central Africa. The studies are conducted in Nyungwe montane tropical rain forest gazetted as a National Park to protect its extensive floral and faunal diversity covering an area of 970 km2. Nyungwe is located in Southwest Rwanda (2o17′-2o50′S, 29o07′-29o26A′E). The forest is ranging between 1600-2950 m.a.s.l. and is one of the most biologically important rainforest in Albertine Rift region in terms of Biodiversity. Nyungwe consists of a mixture of primary and secondary forest communities supporting a richness of plant and animal life. More than 260 species of trees and shrubs have been found in Nyungwe, including species endemic to the Albertine Rift. The forest has a climate with a mean annual temperature of 15.5oC and annual rainfall of ca 1850 mm yr-1, with July and August being the only months when rainfall drops. A part of this study is focusing on the dynamics of nutrients through leaf turnover. This turnover of leaves is regulated to maximize the carbon gain through canopy photosynthesis and resource-use efficiency of the plant. It is known that about half of leaf nitrogen is invested in photosynthetic apparatus and that there normally is a strong correlation between the photosynthetic capacity and leaf nitrogen per unit area. Hence leaf nitrogen is an important factor for canopy photosynthesis. However, leaves are produced, senesce and fall. Some nitrogen in the leaf is lost when leaves senesce but other is resorbed. The resorption of nitrogen, phosphorus and other nutrients is being studied to analyse the nutrient saving efficiency of different species within the primary and secondary forest communities. This is made by analyzing the nutrient content within fresh and fallen leaves of most abundant pioneer and climax species. Results from litterfall patterns as well as foliar, litter and soil carbon and nutrients are currently being compiled and will be reported.