

Role of western lowland gorilla (*Gorilla gorilla gorilla*) to dispersal and regeneration of commercial trees in South-East Cameroon.

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³Projet Grands Singes (PGS) of the Royal Zoological Society of Antwerp (RZSA), Koningin Astridplein 26, 2018 Antwerp, Belgium.

Plant diversity and dynamics of tropical forest ecosystems are strongly influenced by animals through seed dispersal; however many dispersers are declining in population size, such as the western lowland gorilla (WLG). In order to preserve ecosystem services, effective agents of natural regeneration should be identified and efforts should be made to conserve them. This is especially relevant in a logging context, where managers have interests to maintain the long lasting productivity of their lands. In turn, WLG-friendly practices in logging concessions would play a significant role in the conservation of the critically endangered WLG because more than half of its range falls within logging concessions. From October 2009 to September 2011, WLG seed dispersal was studied in South-East Cameroon through faeces content analysis (N = 446), characterisation of seed deposition sites (N = 391), calculation of retention time (N = 1211) and germination trials. Among the seeds of 41 tree species identified in WLG faeces, seven are exploited for the quality of their wood, including the highly valuable commercial tree *Erythrophloeum suaveolens* (Tali) which was previously thought to be autochorous, suggesting that WLG is an invaluable dispersal agent for this species. Similarly, *Chrysophyllum lacourtianum* (Longhi abam) and *Antrocaryon klaineum* (Ozanbili K), may be dependent on WLG for dispersal and subsequent regeneration, due to the size of its seeds; only large-capacity guts would be able to process them. As ingested seeds can remain in the digestive tract for a period as long as eight days (mean RT = 54.7h ± 28.9) and on average WLG walks 1.9 km per day [498 – 2904 m], WLG may disperse the seeds of these commercial species to potentially long distances from the parent trees. Furthermore, seeds receive high quality treatment in the mouth and gut as only 0.78% get damaged and they maintain an unchanged or even enhanced germination success (4 of 8 species tested; Chi-squared, p<0.05). Although WLG uses every kind of habitat type in the study site, there is a much higher probability that seeds are dispersed in sites characterized by an open canopy. This is due to their preference for open canopies for nest sites (85% of nest sites are found in tree-fall gaps and secondary forest in early stages of succession) and nest sites are where about half of all faeces are produced. Thus seed dispersal by WLG may strongly benefit heliophilous species, a common trait of tropical trees and concerning most commercial species. Conservation of WLG is therefore highly relevant to ensure ecological and commercial function of the concerned forest ecosystems; a consideration which should encourage forest managers to strengthen WLG conservation in their concessions.

Keywords: western lowland gorilla, seed dispersal, forest regeneration, logging.

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