

**The Availability and Distribution of Fruit and Non-Fruit Plant Resources in Bwindi:
their Influence on Gorilla Habitat Use and Food Choice**

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Gorillas (*Gorilla gorilla*) are the largest extant apes, whose 2 species and 4 subspecies are all highly endangered. Relatively little is known about the mountain gorillas (*Gorilla beringei beringei*) of Bwindi Impenetrable National Park (BINP), which are thought to be distinct from the Virunga populations. This study, focussing on the Kyagurilo research group, sought to investigate the diet and food resources of Bwindi's gorillas, to better understand the relationship between gorillas and their habitat. Specifically, it aimed to document their diet, determine spatial and temporal availability of plant resources within their home range, measure and map home range size, measure daily journey length and analyse how spatial and temporal variation in diet influenced gorilla ranging patterns, habitat use and food choice, then compare these with other gorilla populations at different ecological sites.

Combining indirect (feeding remains, faecal analysis and data from gorilla monitoring teams) and direct observation methods, Kyagurilo group was found to eat at least 109 plant species. Their diverse diet was predominantly composed of non-fruit herbaceous plants, from terrestrial vines to herbs and shrubs. Various parts, including leaves, bark, pith, flowers and dead wood were consumed, along with fungi, soil and occasionally insects. Fruit was also important and was consumed whenever available. Like other wild gorilla groups, they have flexible diets, however they were found to be quite choosy- only a few plants were eaten in large quantities as dietary staples.

Kyagurilo's diet differed from that of gorilla populations elsewhere, based on differences in levels of frugivory. They appeared to be more frugivorous than mountain gorillas in montane areas of the Virunga region and the *Gorilla gorilla graueri* (Eastern lowland gorilla, now *G. beringei graueri*) in the highland sector of the Kahuzi-Biega region (Democratic Republic of Congo), but less frugivorous than both eastern gorillas at lowland sites in Kahuzi-Biega area and western lowland gorillas in central and eastern Africa. The predominantly herbaceous diet of the gorilla's in Bwindi was related to the high abundance and diversity of non-fruit herbaceous food plant species; varying levels of folivory and frugivory in different ecological sites is likely determined by resource availability.

At 34 km², Kyagurilo's home range was larger than that of their counterparts in Virunga and comparable with that of eastern lowland gorillas at Kahuzi-Biega (DRC). It also varied in vegetation types with four habitat types (open, mixed, mature and swamp forest) identified. Habitats were used selectively; two core areas were identified, and open forest (the most common habitat type) was selected over others due to the higher diversity and abundance of non-fruit herbaceous food species. Kyagurilo tended to travel approximately 814m/day, which is more than mountain gorillas in Virungas, less than western gorillas in lowland forests (*Gorilla gorilla gorilla*) but closer to eastern gorillas in highland sites. The temporal

distribution of foods also affected their ranging behaviour as they travelled further per day in response to fruiting seasons.

This study increases knowledge of the foraging strategies of gorillas in general, by adding information from a unique and relatively understudied ecosystem. Effective management of BINP requires deeper understanding of the effect of differential spatial and temporal distribution of foods in the whole park, so further study of other gorilla groups is essential for long-term management and conservation efforts of gorillas in Bwindi.

Summary written by Lucy Sangster