**Supplementary** **Material**

Section S1 Justification of the 500 x 500 m grid cell method

Our measure of food availability was based on sampling in 500 x 500 m grid cells. We sampled herbaceous gorilla food species in 490 transects to get estimates of herbaceous food availability. These transects were randomly placed within 500 x 500 m grid cells overlaid onto a map including the study groups’ home ranges. The chosen grid cell size was a compromise between spatial resolution and feasibility. However, using the 500 x 500 m grid cell method, we followed a protocol from a previous study investigating the spatial and temporal availability of herbaceous vegetation consumed by gorillas in Bwindi [1]. This study found that the spatial availability of gorilla food species differed significantly among habitat types [1] and hence such a grid size seems appropriate to reflect spatial variability in herbaceous food availability.

Additionally, a previous study found that the daily travel distance of Bwindi gorillas was on average 808 m (range: 547-1034 m) [2] and hence a grid cell roughly represents the area used for the daily foraging activities of a group. As we were investigating daily movement decisions, a cell size of 500 x 500 m is appropriate to reflect the daily foraging activities of a group. We based the rest of our analyses on estimates per grid cell because our estimates of gorilla food availability are per 500 x 500 m grid cell. Consequently, the all-day location data for a group within the same cell have the same food availability estimate. Therefore, we decided to do all our analyses based on grid cells.