

Project Update: June 2007

Forest edge effects account for complex causal mechanisms that influence variation in distribution and abundance of species due to adaptation varying intensity of light, temperature, wind and exposure to animal damage and human use. This study is part of my on-going dissertation research that aims at investigating whether and how the diversity and abundance of (1) important food trees of l'hoest's monkeys and (2) terrestrial herbaceous vegetation (THV), and (3) degree of ground cover and canopy vegetation cover differ between the edge and the interior forest microhabitats of Bwindi Impenetrable National Park (BINP) and what (4) these dissimilarities imply for the survival of l'hoest's monkeys.

I randomly sited circular vegetation plots (10m radius) in the edge and the interior home ranges of l'hoest's monkey groups (Figure 1). In these plots I inventoried trees of $\geq 5\text{cm}$ DBH (diameter at breast height). I surveyed THV in four- 1m^2 quadrats located at the perimeter of the plot at every 90 degrees from the north, noting species and ground and canopy vegetation cover (Figure 2).

Food trees were more diverse and abundant on the edge than in the interior forest microhabitat ($t = 3.744$, $df = 64$, $p < 0.001$) (Figure 3 & 4). THV were more diverse on the edge than in the interior microhabitat ($t = 6.24$, $df = 121$, $p < 0.001$). The vegetation canopy of the edge microhabitat was closed than the interior microhabitat ($t = 5.284$, $df = 71$, $p < 0.001$), whereas the ground vegetation cover was denser in the interior than in the edge microhabitats (Figure 5).

Despite the closure of all logging and mining activities in BINP in 1991, there is still some human encroachments on the forest edge, even in areas not designated as zones of multiple use. These activities degrading the edge forest zone are accompanied by the introduction of exotic and invasive species adding more species to the edge diversity and create a homogeneous canopy cover that prevents a prevalence of THV and ground cover.

L'hoest's monkeys' range, forage and behave differently in the edge microhabitat compared with the interior microhabitat. The edge group has longer day ranges compared with the interior group for finding diverse but scattered source of food. The interior group ranges more on the ground and engages more in social activities such as grooming and plying (Figure 6) than the edge group due to dense and clumped THV which they feed most on and in which the interior group hides from many attacks from eagles and other predators whereas the edge group is usually disturbed by people traveling, farming or grazing livestock. The edge group forage higher in the canopy than the interior group (Figure 7). Due to these natural predators, the interior group seems to be more vocal than the edge (Figure 8). More work is still needed to further interpret these differences and tackle human encroachment in the park and the crop raiding problem that is increasing the conflict between park rangers, farmers, l'hoest's monkeys and other wild animals on the edges of BINP.

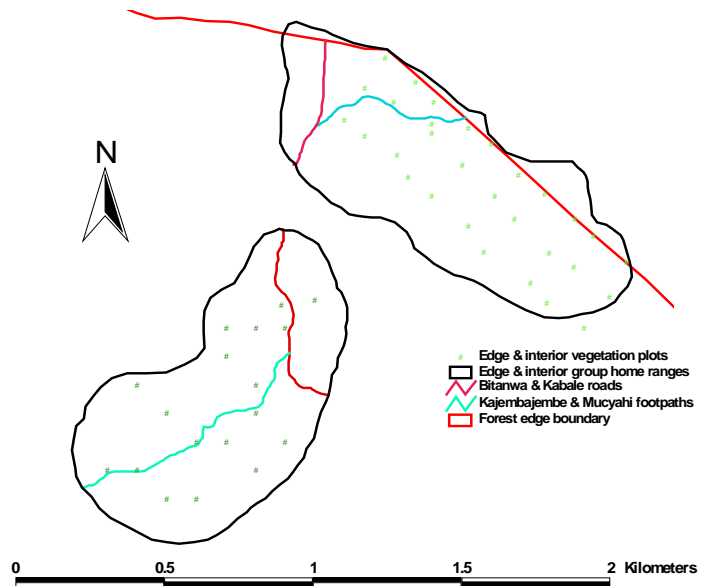


Figure 1: Distribution of vegetation plots in the edge and interior home ranges of l'hoest's monkeys in BINP

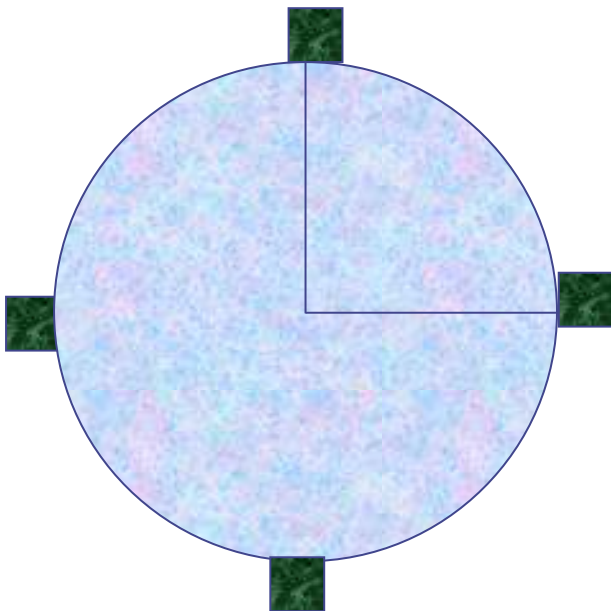


Figure 2: Location of THV quadrats on the 10m radius vegetation plot

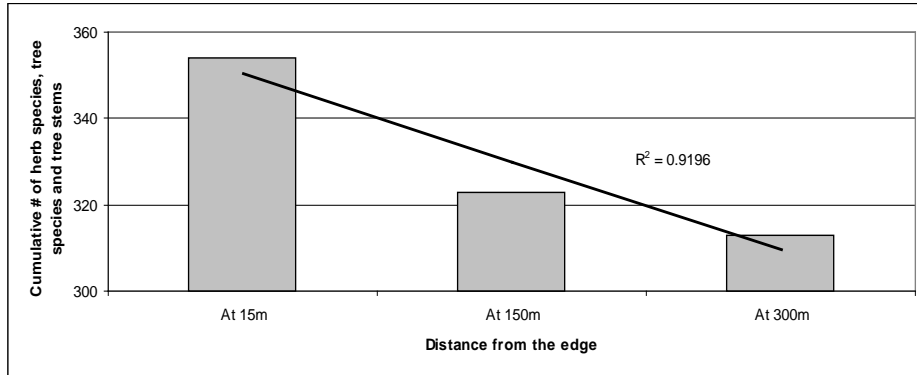


Figure 3: Species diversity from the edge towards the interior forest

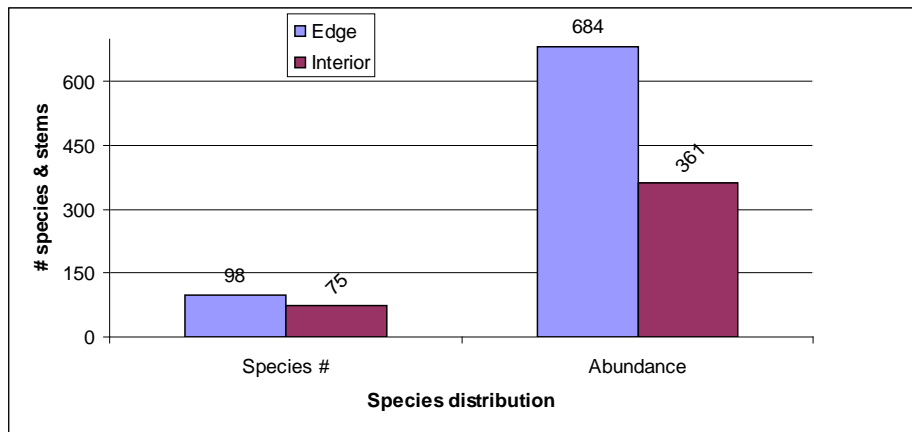


Figure 4: Species distribution and abundance between edge and interior forest

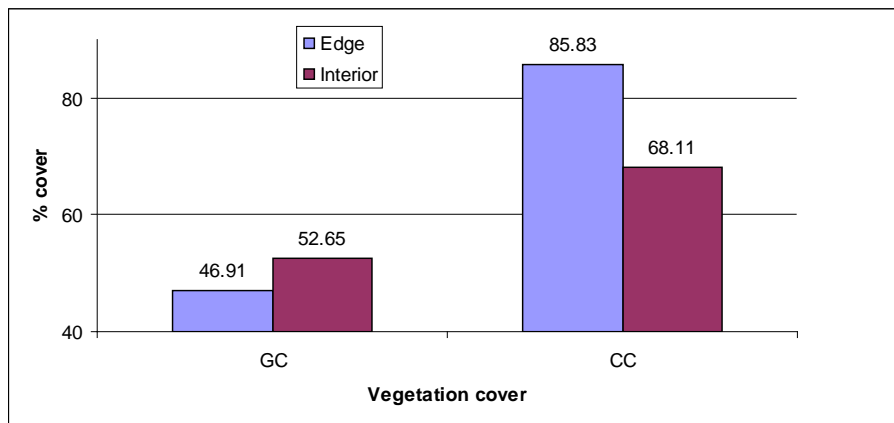


Figure 5: Percentage ground cover between edge and interior forest

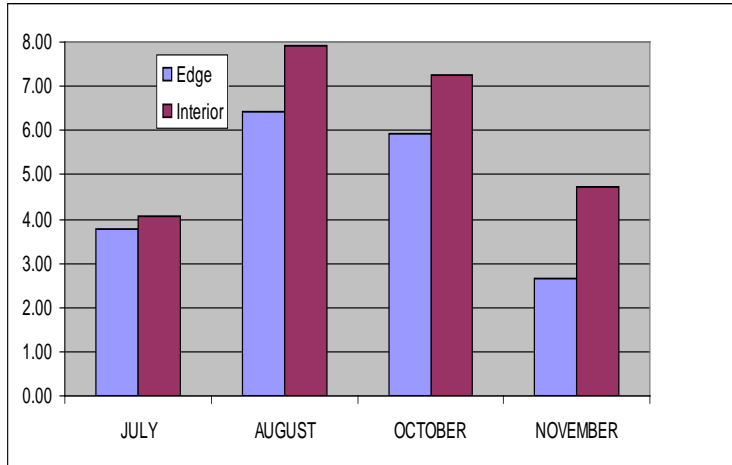


Figure 6: Percentage of occurrence of social activities (playing and grooming) between l'hoest's monkeys of the edge and the interior groups

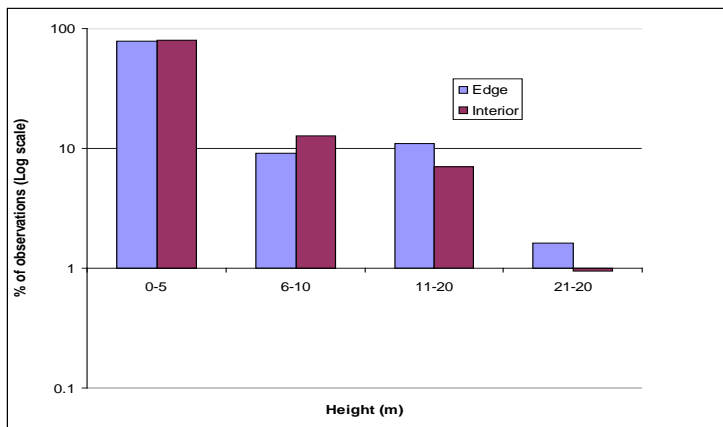


Figure 7: Proportion of vertical distribution between individuals of the edge and the interior groups

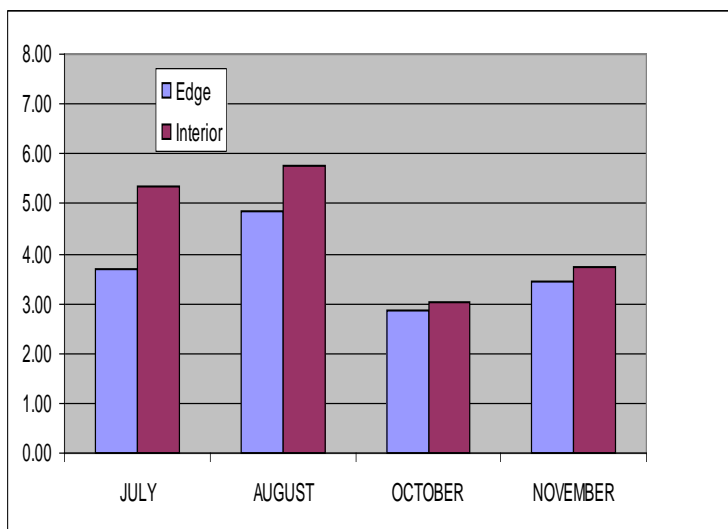


Figure 8: Percentage of occurrence of vocalization between edge and interior groups of l'hoest's monkeys