

MN265 Feeding ecology, habitat preferences and activity budgets of Coquerel's Sifaka, Madagascar

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Coquerel's Sifaka (*Propithecus coquereli*) is a medium sized lemur with a total length of 93-110cm and weight of 3.7-4.3kg (Rambinintsoa et al., 2006). They are diurnal and live in extended family groups of 2-10 individuals (Rambinintsoa et al., 2006; Mittermeier et al., 2010). This species is primarily folivorous, but are also known to eat flowers and fruits when available (Richard, 1978; Mittermeier et al., 2010). Their diet includes up to 98 different plant species (Richard, 1978), but they show a significant preference for leaves high in extractable protein and low in acid detergent fibre (Ganzhorn, 1992). These "high quality" leaves occur at significantly higher densities in dry deciduous forest than in evergreen forest (Ganzhorn, 1992). Feeding is often in a suspensory posture (Mittermeier et al., 2010).

Coquerel's Sifakas are most active in the morning and late afternoon, and travel between trees by leaping often large distances from trunk to trunk and occasional bipedal hopping similar to a kangaroo (Mittermeier et al., 2010). They favour gallery forest, but can be found in a range of habitats including degraded forests and small forest fragments (Mittermeier et al., 2010). However, detailed studies of their behavioural and dietary adaptations to forest fragmentation and degradation are lacking.

Coquerel's Sifaka have one of the most restricted ranges of all the lemurs and are only found in the lowland dry forests of north western Madagascar. Listed as an IUCN endangered species, these lemurs are severely threatened by habitat loss and hunting. For local tribes in the region it is taboo to harm the lemurs, but recent immigration had lead to hunting of Coquerel's Sifaka in some areas. There are only two protected areas where Coquerel's Sifaka are known to occur: the Ankarafantsika National Park and the Bora Special Reserve. Unfortunately there is significant hunting pressure on this species in Ankarafantsika and the forest in Bora has become considerably degraded. Coquerel's Sifaka are also found in forests outside these protected areas. Community based conservation projects in these areas are therefore extremely important for the survival of this species.

The aim of this project is to investigate the ranging, habitat preferences, feeding ecology, and activity budgets of Coquerel's Sifaka in the Mahamavo region of north western Madagascar, close to the village of Mariarano. These data will provide vital information relating to the species behavioural and dietary adaptations when living in forest fragments. The data will also be useful for the community management of the area by improving the understanding of the ecological needs and impacts of habitat disturbance on Coquerel's Sifaka.

Methods

Study Site

The project will be conducted in the Mahamavo area in Western Madagascar, close to the village of Mariarano. The habitat in this area is a matrix of wetlands and dry forest. Although globally endangered due to habitat loss within their small range, the sifakas are the most common of the diurnal lemurs in Mahamavo. There are habituated groups of Coquerel's Sifaka (*Propithecus coquereli*) that can be reliably observed every day close to the Mariarano base camp within the research area. Local people never persecute this species in Mariarano as it is taboo to harm them, so they can be approached closely and observed for long periods.

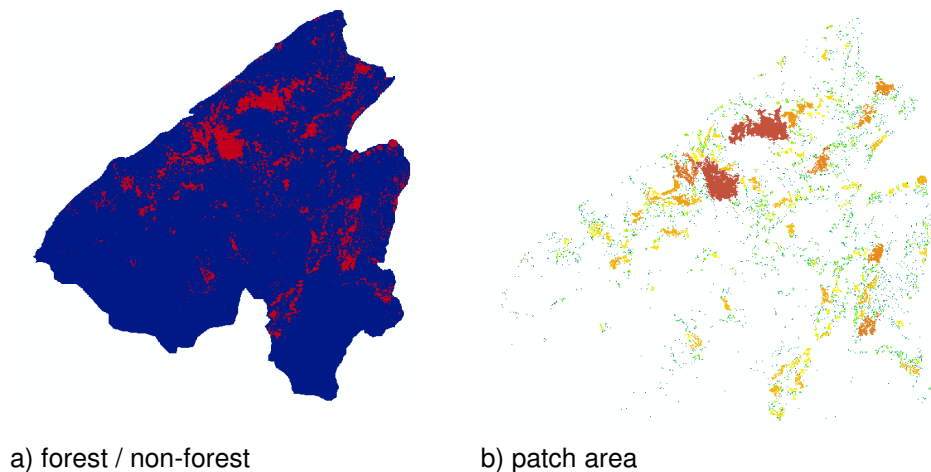


Figure 1: Maps of Mahamavo protected area showing forest patches in terms of forest versus non-forest (a) and forest patch area (b). Forest patch area was calculated using the distance of every forested pixel from the forest edge, the perimeter:area ratio of every forest patch (a measure of compactness), and the distance to the edge of the nearest neighbouring forest patch (a measure of isolation). Both maps were prepared by Dr Peter Long from Oxford University.

Data Collection

In order to investigate activity budgets, data is needed from dawn until dusk. However, such long days does not leave sufficient time for data entry and addition data collection such as habitat assessments. Depending on the ease with which the lemurs can be encountered and the length of time they can be followed each day, behavioural observations will either be conducted from dawn until dusk with occasional full days where the lemurs are not observed to allow time for data entry and other data collection, or in morning (dawn till midday) and afternoon sessions (midday till dusk) leaving half-day sessions for data entry and other data collection. The GPS location of the group will be recorded throughout the day in order to assess home and day range. Upon locating a group, the number or individuals and age-sex classification of each will be recorded.

Activity data will be collected using instantaneous scan samples (Altmann 1974). You will need to decide on the interval for these scans, either 3, 5, or 10 minute intervals. If you can easily scan the group and record data for each individual within 1 minute, then 3 minute intervals are fine, but if it takes you longer to do this (due to visibility issues or because group members are often spread out) then you need to increase the interval to 5 or 10 minutes to ensure that each scan is independent of the other. For each scan you should record the behaviour (feeding, moving, resting, social, vigilant etc) of each adult individual in the group using a pre-

defined behavioural ethogram. When feeding, the type of food (mature leaves, young leaves, fruit, flowers and bark), and corresponding plant species will be recorded where known. Where plants can not be identified in the field, photographs and samples will be taken for later identification. For each scan, the habitat type, predominant plant species, and weather conditions can be recorded.

Additional data can then be collected in order to interpret the findings of the activity and diet data. Habitat surveys could be conducted to investigate forest structure, woody plant composition and to ascertain the level of forest disturbance. Habitat data could be collected using 20m x 20m plots in which the major woody plants are identified, DBH is measured, canopy cover is measured using canopy scopes and evidence of anthropogenic disturbance is recorded. Alternatively, habitat preferences could be investigated by uploaded ranging patterns of the lemurs obtained from GPS units onto existing GIS vegetation maps of the reserve. It may also be possible to investigate how Sifakas adapt their behaviour and diet according to characteristics of the forest fragments in terms of patch area and distance to other fragments.

References

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