

forests below or up to 1000 m (Blanco *et al.*, 2020b).

Ultimately, for the sifakas, mouse and dwarf lemurs of Itremo, additional surveys and the collection of biological samples will be needed for species assignments and population assessments. However, based on the information reported here and in Goodman *et al.* (2018), this site adds a fascinating piece to the biogeographical lemur puzzle. Notably, we suggest that Itremo hosts an unusual faunal assemblage that includes a “central/eastern” dwarf lemur in sympatry with a “western/southern” sifaka, with clear implications for historical habitat connectivity in Madagascar’s highlands.

As a final note, although we failed to capture any mouse lemurs in June via standard Sherman traps, we did by-catch a small (~40-50 g), tufted-tail rodent, with dark brown coat and long black tail with black hairs, likely *Eliurus minor*. Thus far, *Eliurus tanala* has been the only Nesomyidae rodent listed at Itremo.

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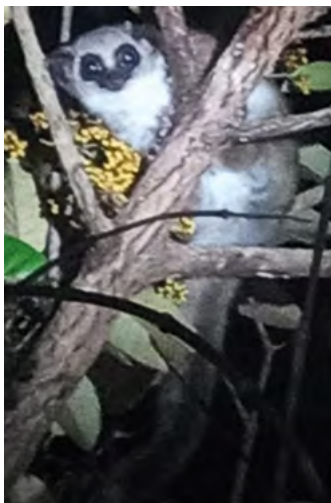


Fig. 5: Adult *C. crossleyi*-like dwarf lemur from Itremo.

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Ruffed lemurs on the edge: Recolonization of *Varecia variegata* in a disturbed forest

Nina Beeby^{1,2*}, Amanda N. Mancini^{1,2}, Andrea L. Baden^{1,2,3}

¹ Department of Anthropology, Graduate Center of City University of New York, New York

² New York Consortium in Evolutionary Primatology (NYCEP)

³ Department of Anthropology, Hunter College of City University of New York, New York

*Corresponding author: nbeeby@gradcenter.cuny.edu

Black-and-white ruffed lemurs (*Varecia variegata*) are often described as highly sensitive to habitat disturbance (White *et al.*, 1995; Balko, 1998; Ratsimbazafy, 2002; Ratsimbazafy, 2006; Herrera *et al.*, 2011). In fact, local habitat quality has been shown to be a major predictor of *Varecia* occupancy across the species’ range (Morelli *et al.*, 2020). In Ranomafana National Park, *Varecia* occupy several structurally and compositionally distinct sites. Disturbed sites—those previously subject to logging—have lower densities of shorter trees with smaller canopies and lower cover, as well as lower floristic diversity than undisturbed sites (Balko, 1998; Mancini, 2023). Resultantly, sites of lower quality habitat, particularly those with fewer large fruiting trees available, have lower population numbers of *Varecia*, with highly disturbed sites completely absent of this taxon (e.g., Herrera *et al.*, 2011). However, our recent observations of *Varecia* in a disturbed forest site in Ranomafana National Park suggests the latter is not always the case.

Talatakely (21°15'20" S, 47°25'15.3" E: Tan, 1999), is a mid-elevation secondary growth rainforest site in Ranomafana National Park, adjacent to Route National 25. This is a recovering forest previously subject to selective logging from 1986-1987, in addition to degradation along the forest edges (Balko, 1998; Tan, 1999). Talatakely has been slowly regenerating over the past few decades, but *Varecia* remained absent from this area of forest (Wright, 1997; Balko, 1998). Though the site remains structurally and floristically distinct from less degraded sites within this park (Mancini, 2023), since 2015, there have been reports of *Varecia* returning to Talatakely, with calls heard close to the park entrance and five individuals observed in the area in 2015.

In August 2022, we fitted three of the *Varecia* in Talatakely with GPS collars to begin monitoring their ranging, behaviour, and health. We have identified at least twelve animals living in five subgroups (Beeby, unpublished data), including three young juveniles which are likely offspring from the 2021 birth season. During August – November 2022, several individuals spent extended periods of time at the forest edge, as well as in banana plantations and mixed-use forest. Of the three focal subgroups, two

consistently range <100 meters from the forest edge, and frequently outside the National Park boundary. These individuals also appear to more frequently come down to the lower canopy, sometimes even to the ground, than is typical for this taxon (Tab. 1; Britt, 2000; Vasey, 2000; Balko and Underwood, 2005; Rafidimanana *et al.*, 2017; Beeby and Baden, 2021). In one extreme case, we followed an individual out of the forest and into a banana plantation to a single fruiting tree (*Ficus* sp.) beyond the continuous canopy. After feeding, this individual then travelled on the ground across an approximately 25 m patch of open grass to return to the main forest (Fig. 1). This individual spent over 6 hours of the day beyond the edge of the forest among banana plantations and crops.

These preliminary observations suggest *Varecia* may have a higher tolerance to habitat disturbance than previously thought. Though the population size is currently limited, the *Varecia* at this disturbed, forest-edge site appear to be successfully reproducing—a sign that conditions are, perhaps, not as suboptimal as we might expect. However, why *Varecia* recolonize some disturbed forest sites (e.g., Vatoharana: White *et al.*, 1995; Balko, 1998; Britt, 2000) long before others (e.g., Talatakely), remains unanswered. Resource availability and forest structure are strong predictors of this species' presence, and thus are likely driving the ability of individuals to return to areas of regenerating forest (Morelli *et al.*, 2020; Mancini, 2023).

Tab. 1: Total days observed, days observed within 100 meters and 20 meters of the forest edge, and below 2 meters from the ground, for three focal subgroups of *Varecia variegata* in Talatakely, Ranomafana National Park.

| Subgroup | Days Observed | Days <100 m from Edge | Days <20 m from Edge | Times <2 m from ground |
|----------|---------------|-----------------------|----------------------|------------------------|
| Silver | 14 | 10 | 7 | 5 |
| Pink | 14 | 8 | 5 | 4 |
| Green | 12 | 6 | 0 | 4 |

However, other factors, such as competition with other frugivores (e.g., *Eulemur* sp.) that may be less sensitive to disturbance, may also impact the ability of *Varecia* to establish in regenerating forests. Data collected on range use, feeding behaviour, phenology, and interspecific interactions at this site over the next 12 months will enable us to examine the behavioural ecology of *Varecia* inhabiting this disturbed forest site and begin to answer these questions.

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Fig. 1: Photographs of *Varecia variegata* (left) spending an extended period foraging within a banana plantation, (centre and right) travelling on the ground through open habitat outside of forest.