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Presence of Daubentonia madagascariensis in Vatoharanana at Ranomafana National Park, Madagascar

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Abstract

Daubentonia madagascariensis (aye-aye) population numbers are declining across the island of Madagascar. This species evolved with truly unique adaptations such as continuously growing incisors, an unusual finger joint and use of echolocation, all supporting an early separation of the aye-aye from its closest relatives the lemurs. Habitat destruction hastens their disappearance from much of Madagascar. The goal of this study was to gather direct or circumstantial evidence with both diurnal and nocturnal transects as well as use of camera traps to locate their presence in Ranomafana National Park. Sightings are rare but their dietary habitats indicate their continued presence.

Fig 1. Aye-aye, *Daubentonia madagascariensis*. Photo courtesy Nick Garbutt.

Fig 2. Aye-aye, *Daubentonia madagascariensis*. Photo courtesy Nick Garbutt.

Introduction

- Unique Lemuriform primate living in pockets of coastal rainforests and northern region of Madagascar
- Unusual anatomy to support woodpecker niche; locate grubs utilizing echolocation, and extract larvae with rodent-like incisors for gnawing wood and 3rd hand digit with rotating ball and socket joint for piercing food
- Diet: hard fruits, coconuts, and seeds, or gnawing into wood to remove larvae but the seeds of C*anarium* tree provide bulk of diet [Erickson, 1994; Sterling *et al.,* 1994]
- Original territory of *D. madagascariensis*: prefer lower canopy rainforest 0-10 meters [Gebo, 2014], along entire eastern coast of Madagascar and all of the northern region of the island.
- Increasing loss of habitat due to degradation of rainforest habitat; in 2017 less than 10% of the coastal eastern rainforest remains due to the human population explosion and the resulting demands for more land
- Humans practices of slash and burn horticulture and dry rice farming fragment the rainforest reducing aye-aye friendly ecologies and their preferred foods
- Aye-ayes are confined to small forest fragments that are unfortunately closer to human settlements and they are killed because they are feeding on human crops; the animal is also killed for bush meat and continue to face taboos in the northern region of the island that associate the aye-aye with death [Simons & Meyers, 2001]

Fig 3. Aye-aye, *Daubentonia madagascariensis* attempting to extract food source. Photo courtesy Nick Garbutt.

Fig 4. Secondary sign in the form *Canarium scholasticum* fruit with telltale aye-aye gnaw marks. Photo courtesy Ariel Rahimzada.

Methods

- Diurnal transects covering the non-degraded Vatoharanana trail system (0.71 km^2) [Farris *et al.,* 2011] including trails A, B, F, J, K, P, S, and T were surveyed for *Canarium*
- Trails were selected on previous knowledge by local guides with specialties in primatology and botany
- Upon finding a *Canarium* tree, GPS points were taken using a Garmin GPSMAP 64s GPS
- Records we taken for: whether or not the tree was bearing fruit; and if so, if recent "aye-aye trash" was found
- Feeding sites for *D. madagascariensis* are not only *Canarium*; plants such as traveller's palm are consumed by aye-ayes as well as multiple forms of deadwood for larvae consumption
- After collecting data regarding recently consumed *Canarium* by *D. madagascariensis*, camera traps were utilized around these feeding sites to attempt to catch an individual on camera
- Ten RECONYX RapidFire RC55 camera traps were used for the two weeks of the study and ten additional RECONYX HyperFire HC500 camera traps for varying time frames during the study
- Nocturnal surveys were completed along mirrored diurnal transects for mammal species

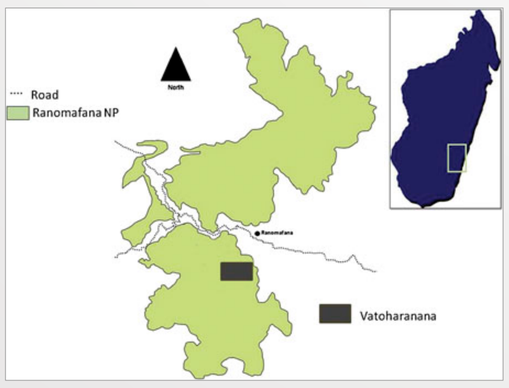


Fig 5. Map of Ranomafana National Park with highlighted location of Vatoharanana. Image courtesy Patricia Wright and Stacey Tecot.

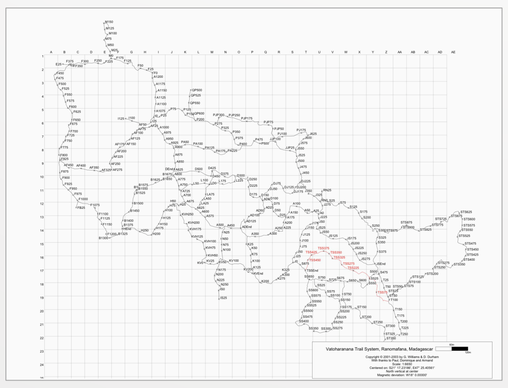
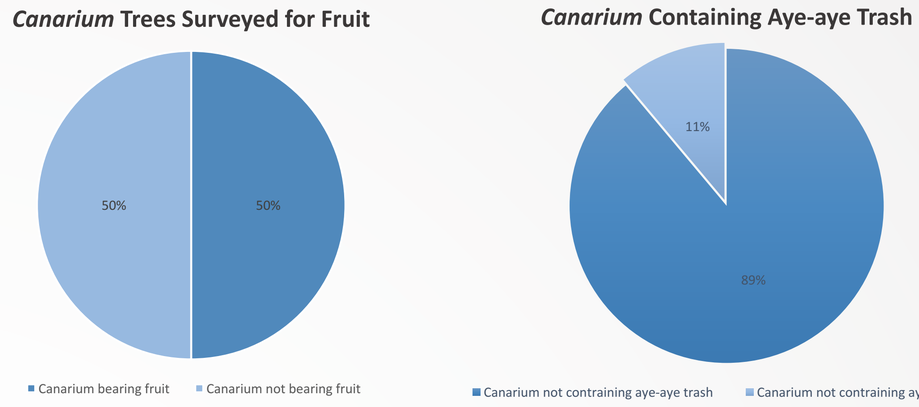


Fig 6. Map of Vatoharanana trail system; some trails surveyed have been put into place since most recent revision of map. Image courtesy Centre ValBio.

Results

- Of the 54 *Canarium* found from the eight trails surveyed in Vatoharanana, exactly half, 27, held fruit
- Within those 27 fruit bearing, only three contained "trash" which was what we considered "recent". The recently consumed fruit found ranged from roughly 12 hours old to about two months old [R. Dominique, pers. commun.]. All *Canarium* found and recorded was that of *Canarium madagascariense*
- Almost one dozen additional feeding sites were found in the form of deadwood, but because we did not adequately search for deadwood or use a standardized formula in collecting data on the deadwood feeding sites, it has been omitted from the research paper and this poster



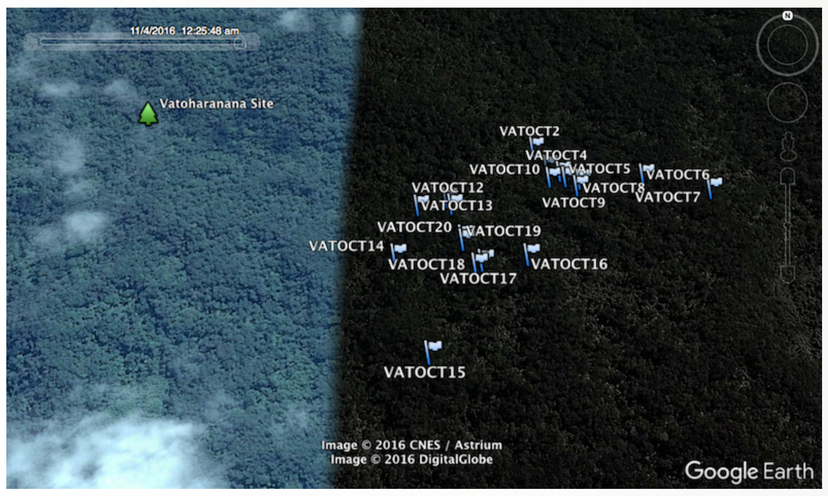


Fig 7. *Canarium* GPS points collected Nov. 5 2016.

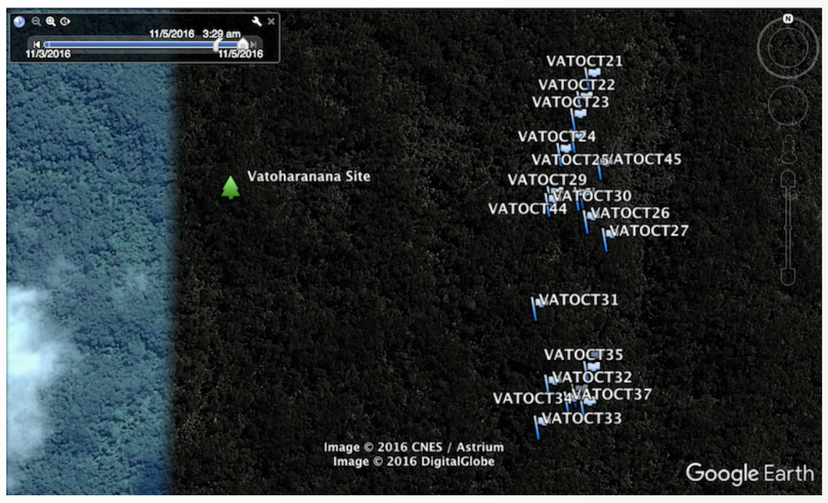


Fig 8. *Canarium* GPS points collected Nov. 6 2016.

Conclusion

- Although we did not observe Aye-ayes during our study at Vatoharanana, the fresh gnaw marks on the seeds of *Canarium* verified that they have ranged in Vatoharanana in the month of November, 2016.
- We verified 7 feeding sites; 3 from *Canarium* seeds and 4 from gnaw-holes in dead logs.
- In the future I hope to document aye-aye evidence from other sites in RNP and elsewhere.

Acknowledgements

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References

References are listed separately and are available upon request.