

Surviving on a risky diet: monitoring the effects of a devastating tropical cyclone on the diet of frugivorous black-and-white ruffed lemurs in southeastern Madagascar

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INTRODUCTION

In February 2022, the **cyclone Batsirai (category 3)** made landfall in Southeastern Madagascar, damaging forests on its way, including **Ranomafana National Park**. The island experiences a yearly cyclonic regime, but studies on the impact of these **extreme climatic events** on lemur feeding ecology remain **sporadic**.

RESEARCH QUESTIONS

1. How has the cyclone impacted the **nutritional landscape** available to *Varecia variegata*?
2. How has the cyclone impacted the **feeding ecology** of *V. variegata*?
3. What are the **characteristics of fruits** on which *V. variegata* feeds in altered nutritional landscapes?



Picture 1. *Varecia variegata* feeding on a fruiting palm tree

RESULTS

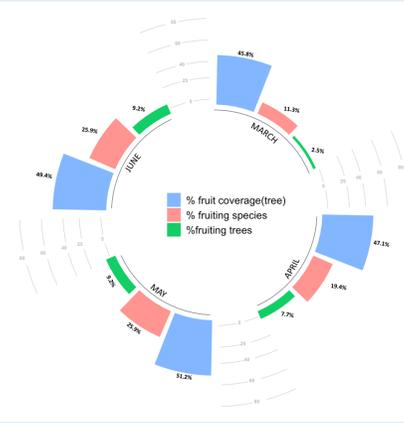


Figure 1. Fruiting intensity and diversity across 4 months post-cyclone.

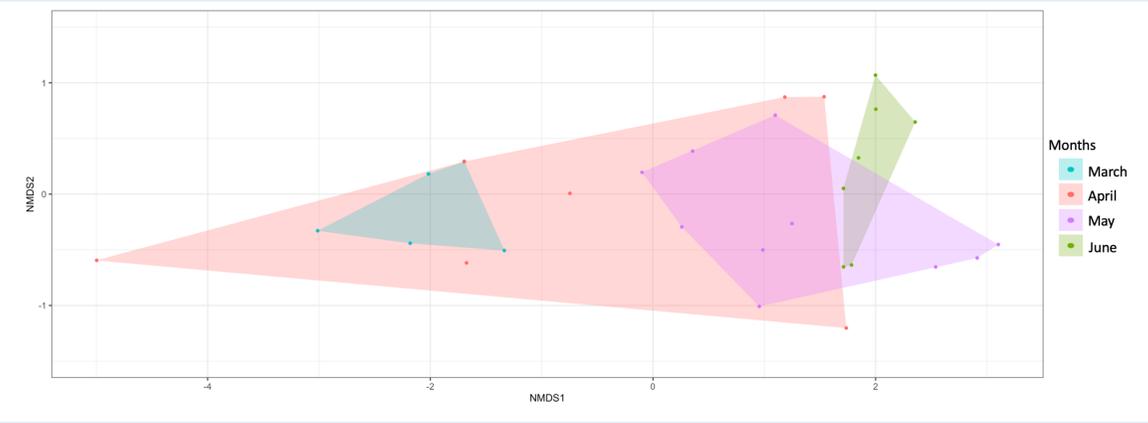


Figure 2. Non-metric dimensional scaling of post-cyclone dietary diversity of *V. variegata* across 4 months. Diet diversity differed between months ($F = 6.58$, $p\text{-value} = 0.001$).

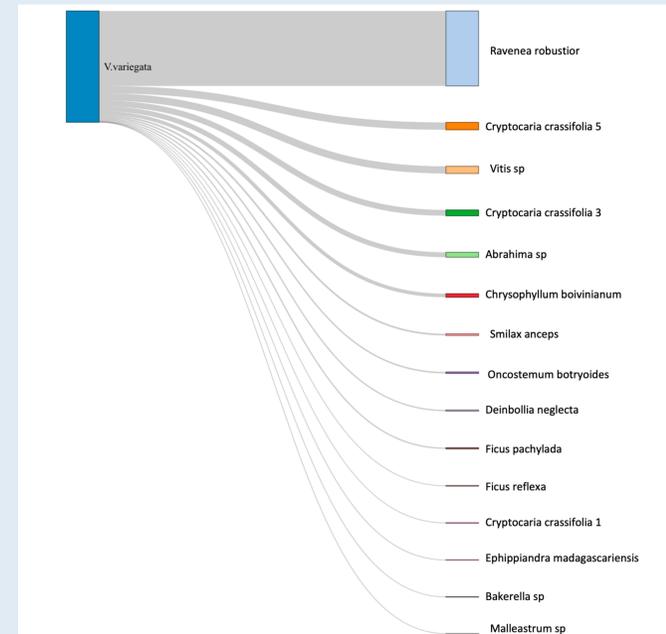


Figure 3. Interaction patterns between *V. variegata* and fruiting trees (summed across months) ($F = 9.37$, $p\text{-value} < 0.001$).

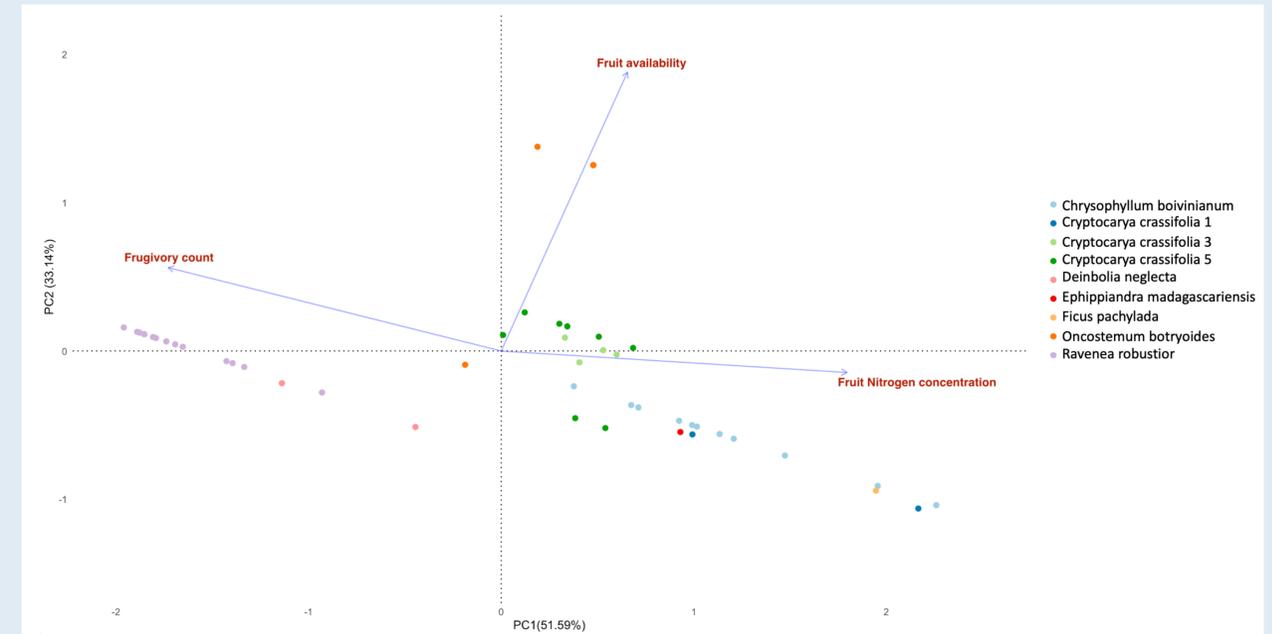


Figure 4. Principal Component Analysis plot illustrating the relative ordination of fruit species based on their abundance in the diet of *V. variegata*, site-wide availability and nitrogen concentration.

ACKNOWLEDGEMENTS



CONCLUSION

- **Fruiting patterns altered:** peak fruiting shifted to May/ June, less fruiting abundance and diversity after the cyclone
- *V. variegata* only feeds on a **subset of the available nutritional landscape** despite increasing fruiting diversity/intensity
- *V. variegata* **does not** necessarily target species with high nitrogen concentration/ relative abundance
- Individuals may be experiencing **extended periods of fruit scarcity** and **extended physiological stress**

Reference: Razafindratsima, Onja H.; Dunham, Amy E. (2019), Fruit/seed traits and phenology of trees in Ranomafana National Park, Madagascar, Dryad Dataset.

FUTURE RESEARCH

How do frugivorous lemurs **physiologically navigate** through extended periods of fruit scarcity?