

# Exploring lemur-based seed dispersal

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The common brown lemur (*Eulemur fulvus*) feeding in a fruiting canopy of *Astrotrichilia asterotricha*. Credit: KyotoU/Hiroki Sato

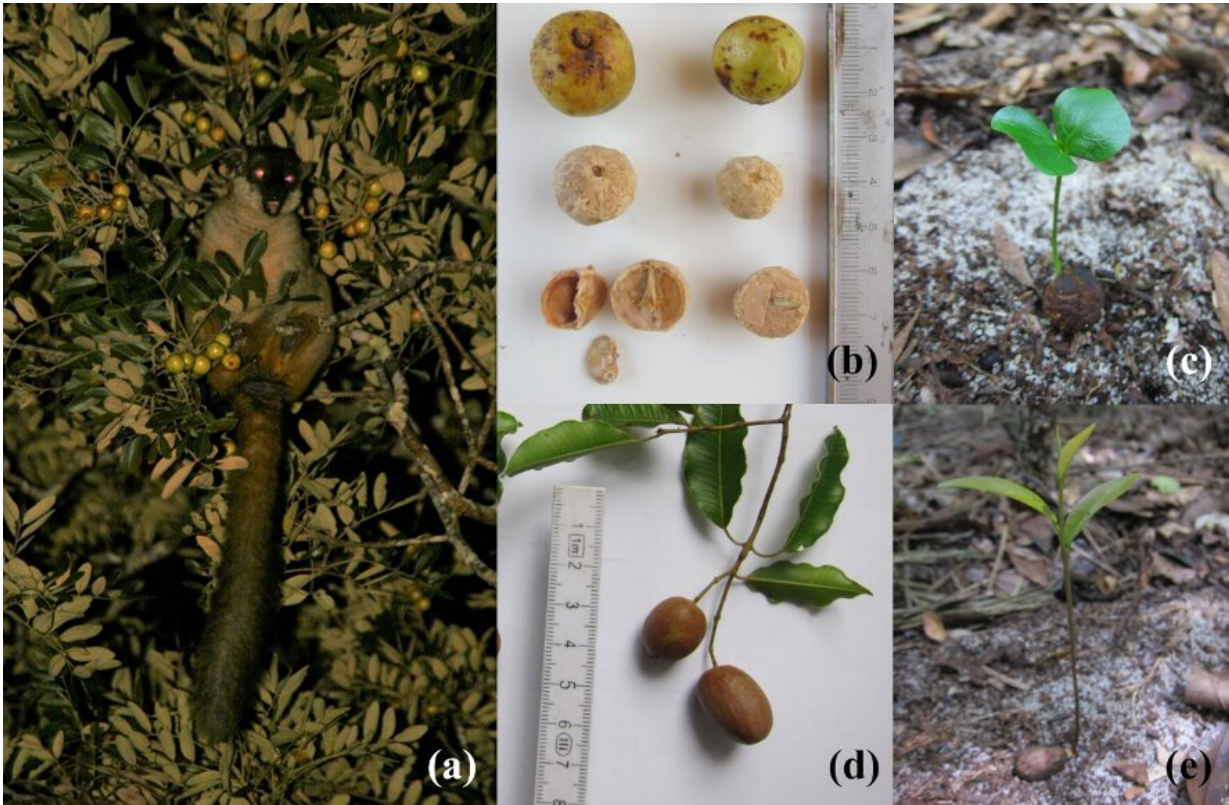
Unchecked hunting and environmental degradation in tropical forests, which previous studies have correlated with the reduction of large animals in this biome, may impede the generational renewal of large fruit and seed-producing plant species. Such degradation takes place as scientists are still figuring out how large animals contribute to plant reproductive strategies.

Now, a team of researchers at Kyoto University has found that the brown [lemur](#) is northwestern Madagascar's single largest [fruit](#)-eating animal, swallowing fruit and dispersing seeds.

"From our day and night observations of the *Eulemur fulvus*, the brown lemur fed on the fruit of two species of large trees in the tropical dry forests of Ankarafantsika National Park," explains Hiroki Sato of the Graduate School of Asian and African Area Studies.

Due to Madagascar's isolation since the Cretaceous period, the island is devoid of the large fruit-eating birds and mammals that inhabit other landmasses, except for relatively smaller Lemuridae primates.

Weighing two to three kilograms, the largest frugivorous lemurs in the study are credited with the renewal of large-fruit plants, whose seeds measure one centimeter or more in diameter.



(a) The common brown lemur (*Eulemur fulvus*) feeding in a fruiting canopy of *Astrotrichilia asterotricha* (b) Fruits and seeds of *Astrotrichilia asterotricha*. (c) Seedling of *Astrotrichilia asterotricha*. (d) Fruits of *Abrahamia deflexa*. (e) Seedling of *Abrahamia deflexa*. Credit: KyotoU/Hiroki Sato

These primates have been observed to swallow fruit whole, while repeatedly visiting the fruit-bearing *Astrotrichilia asterotricha* during the dry season when the diversity of fruiting species is low.

Sato's team followed the process from [seed germination](#) to survival for two years to elucidate the plants' lemur-assisted reproductive strategies. Large trees with high fruit yields had higher fruit removal rates due to repeated lemur visits: as much as 59% in the case of *A. asterotricha*.

Through lemur seed dispersal, 1.5% of the seeds produced by *Asterotricha* and 6.5% by its endangered counterpart, *Abrahamia deflexa*, sprouted seedlings during the first rainy season.

Additionally, lemur-dispersed seeds may have a greater chance of survival when carried far from the mother tree to areas of abundant sunlight and fewer predators. In contrast, seeds that fall under the mother tree are most likely to be eaten by rodents and insects.



Seedling of *Astrotrichilia asterotricha*. Credit: KyotoU/Hiroki Sato

"The combination of animal behavioral strategies and the functional traits of [seeds](#) and seedlings led us to a new understanding of seed dispersal and the diversity of forest regeneration," Sato says.

"By contributing to this regeneration of [tropical forests](#), the endangered frugivore is also helping to maintain biodiversity. Our study demonstrates the importance of intact plant-animal interaction in the context of maintaining healthy ecosystems."

The study is published in the journal *Scientific Reports*.

**More information:** Hiroki Sato, Significance of seed dispersal by the largest frugivore for large-diaspore trees, *Scientific Reports* (2022). [DOI: 10.1038/s41598-022-23018-x](https://doi.org/10.1038/s41598-022-23018-x)

Provided by Kyoto University

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