

Assessing the importance of omnivorous animals in shaping rainforest structure

Veronarindra Ramananjato

Mention Zoologie et Biodiversité Animale - University of Antananarivo

vero.narindra@gmail.com / arysainamadagascar@gmail.com

Background

- ✓ Current studies provide an incomplete picture of the seed dispersal ecology impact on forest ecosystem.
- ✓ Omnivores have high proportion of fruit in their diet and have different movement patterns.



Espèces	Localités	Pourcentage de fruits	Pourcentage d'Insectes ou autre Arthropodes	Références
<i>Microcebus berthae</i>	Kirindy	4%	13%	Dammhahn et Kappeler, 2008
<i>Microcebus murinus</i>	Ankarafantsika	7%	3%	Radespiel <i>et al.</i> , 2006
	Kirindy	24%	12%	Dammhahn et Kappeler, 2008
	Mandena	63%	11%	Lahann, 2007
<i>Microcebus ravelobensis</i>	Ankarafantsika	0%	5%	Radespiel <i>et al.</i> , 2006
<i>Microcebus rufus</i>	Ranomafana	84%	76%	Atsalis, 1999

What is the effect of mouse lemur gut-passage on germination and growth rates?

How does mouse lemur gut-passage change the plant growth?

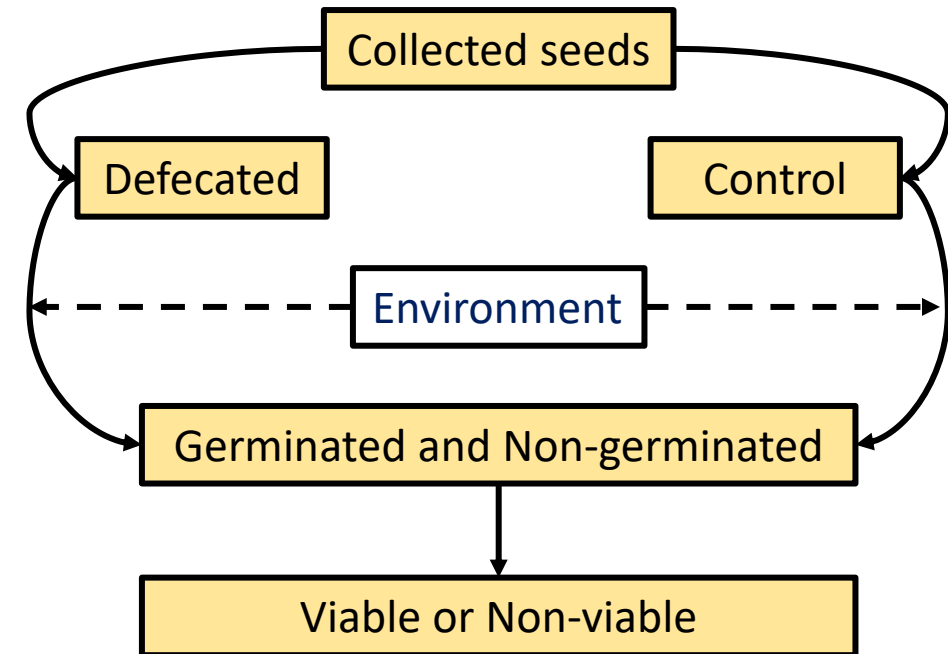
Statistical model: What is the effect of mouse lemur gut-passage on germination and growth rates?

Hypothesis: Gut-passage increases the probability of germination and growth

Dataset: collected in Ranomafana and Kianjavato



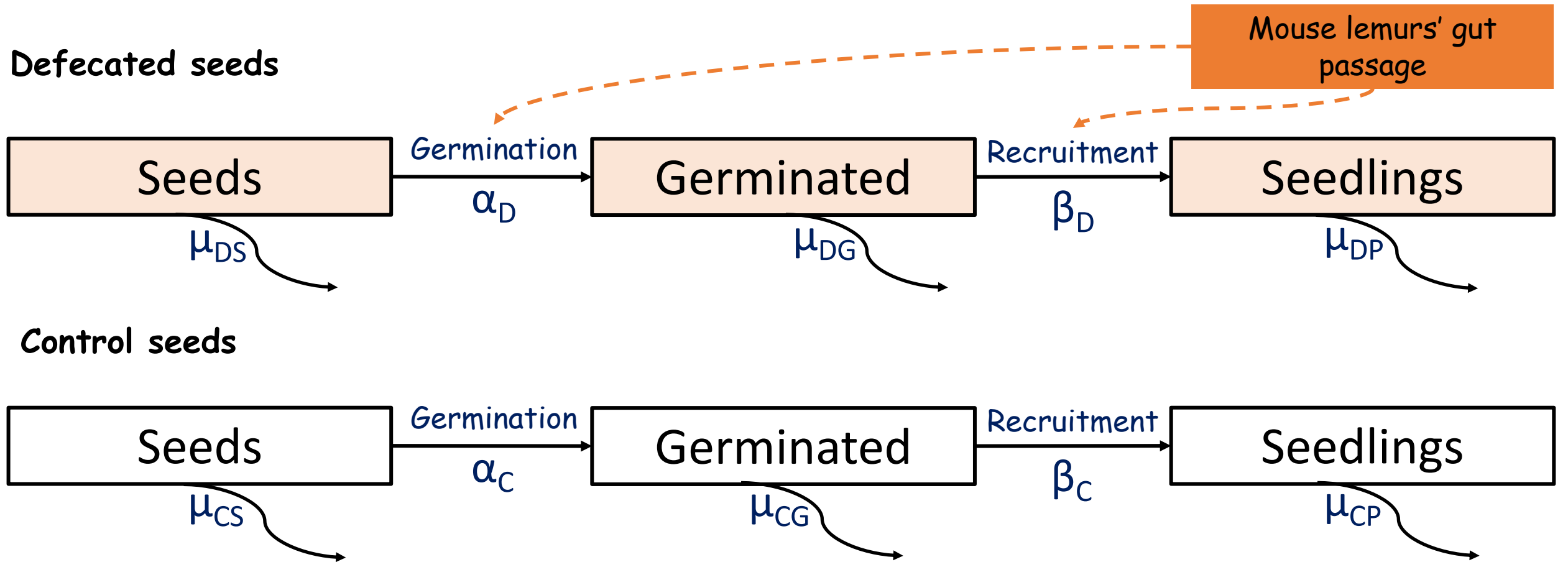
	A	B	C	D	E	F	G	H	I	J
1	local.name	species	sp.family	sp.iucn	sp.nat.stat	sp.type	sd.length	sd.width	sd.g.shape	color
221	kalamasin	embelia	primulace	NYA	native	liana	3,2	2,5	round-flat	dark brow
222	kalamasin	embelia	primulace	NYA	native	liana	3,2	2,5	round-flat	dark brow
223	kalamasin	embelia	primulace	NYA	native	liana	3,3	2,3	round-flat	dark brow
224	kalamasin	embelia	primulace	NYA	native	liana	3,2	2,0	round-flat	dark brow
225	kalamasin	embelia	primulace	NYA	native	liana	3,1	2,3	round-flat	dark brow
226	kalamasin	embelia	primulace	NYA	native	liana	3,3	2,7	round-flat	dark brow
227	kalamasin	embelia	primulace	NYA	native	liana	3,5	2,3	round-flat	dark brow
228	kalamasin	embelia	primulace	NYA	native	liana	3,2	2,7	round-flat	dark brow
229	kalamasin	embelia	primulace	NYA	native	liana	3,5	2,5	round-flat	dark brow



#germination rate

```
germ=glmer(germination~treatment+environment+(1|species)+(1|habitats)+(1|seasons),  
          data=mydata, family=binomial(link="logit"))  
summary(germ)
```

Mechanistic model: How does mouse lemur gut-passage change the plant growth?



States

S: seeds; G: germinated; P: seedlings; D:

Processes

α : germination rate; β : recruitment rate; μ : death rate

N

E

X

T

- ✓ Quantify mouse lemur dispersal service
- ✓ Examine phylogenetic relationships between mouse lemur species and plant they disperse
- ✓ Predict the impacts of mouse lemur population decline on forest habitat dynamics

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