Social tolerance of the dominant female *Propithecus diadema* during feeding

Background: Foraging strategy affect social structure in primates.

- **Statistical question :**

What factors determine the tolerance of the dominant female during feeding?

- Dynamical question:

How does group abundance influence female lemur cortisol levels which can define agressive behavior?

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What factors determine the tolerance of the dominant female during feeding?

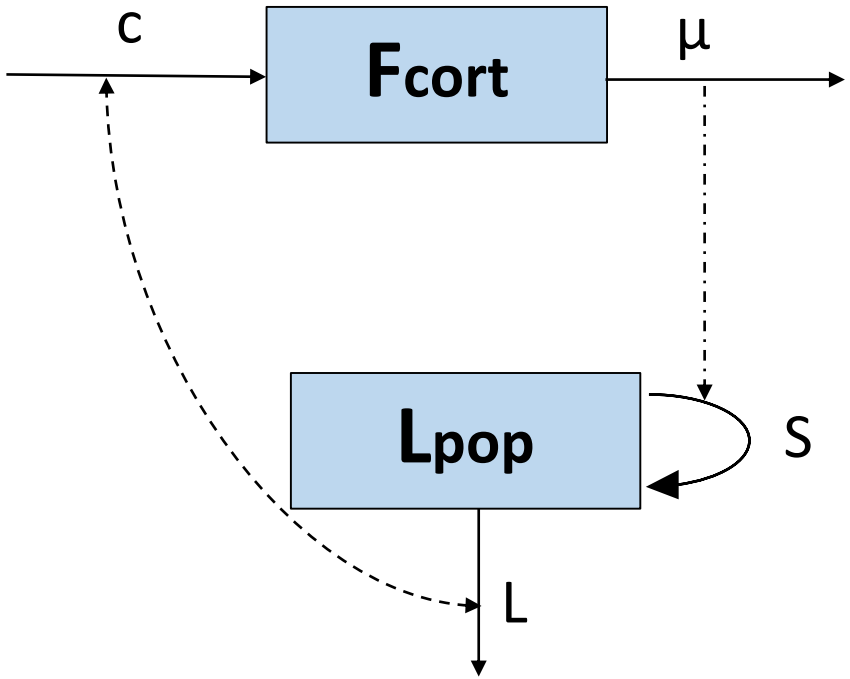
- Response variable: Tolerance (Yes/No) ≈ (TOLERANCE≠AGRESSION)
- Predictor variables: Crown Volume, Distance, Same Patch, Habitat Type, Group Size, Sex and Age
- Distribution: Binomial
- Link: Logit

- R Function:

```
glmer(Tolerance~CrownVolume+Distance+SamePatch+HabitatType+GroupSize+Sex+Age(1|femaleID); family=‘’binomial,data=lemur.dat)
```

- **Hypothesis:** The crown volume influence the tolerance in dominant female of *Propithecus diadema*

How does group abundance influence female lemur cortisol levels which define agressive behavior?



States

Fcort: Female cortisol level

Lpop: Population of lemur

Processes

c: consumption rate

μ: natural decreasing

S: stay rate

L: leave rate

$$\frac{dFcort}{dt} = c\ Fcort\ Lpop\ - \mu\ Fcort$$

$$\frac{dLpop}{dt} = S\ Lpop\ - Lpop\ Fcort$$

Next step

- More data collection
- Fecal samples of the dominant female before and after agression
- Cortisol level analysis

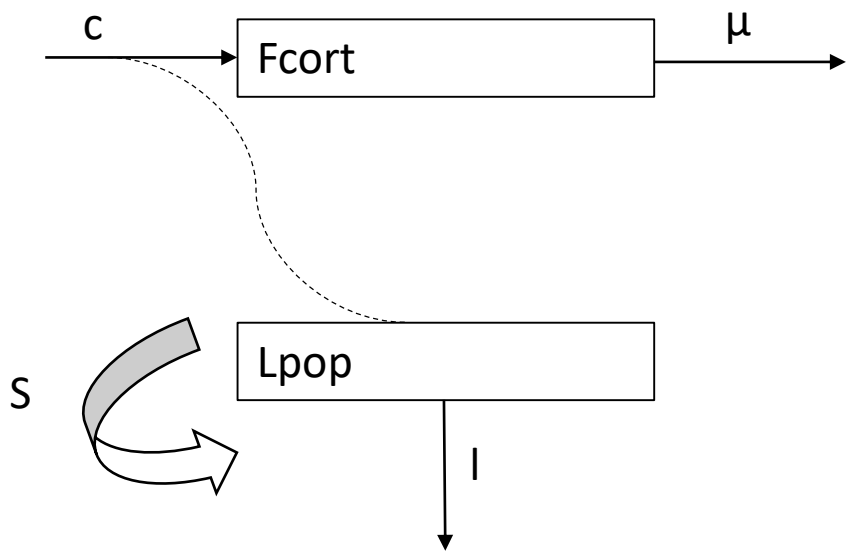
THANK YOU

Next step
Mechanistic model
Data collection
Fecal samples of the dominant female before and after agression
Analysing the cortisol level before and after agression

4. Slide 4 has:
a. Up to three next steps that will help answer your questions.
To help you prepare for Monday, please complete the following tasks on your own time:

Mechanistic model

How does group abundance influence female lemur cortisol levels which define agressive behavior?



States

Fcort: Female cortisol level

Lpop: population of lemur (individual who fed with the dominant female)

Processes

c: consumption rate

μ: natural decreasing

S: stay rate

l: leave rate

$$\frac{dFcort}{dt} = c\ Fcort\ Lpop\ - \mu\ Fcort$$

$$\frac{dLpop}{dt} = S\ Lpop\ - Lpop\ Fcort$$

3. Slide 3 has:

a. Your dynamical model question

b. Your dynamical model diagram, with all states and processes defined.

This will be an edited extension of the first half of the assignment you brought to the “Model Telephone” activity on Wednesday.

Statistical model:
What factors determine the tolerance of the dominant female during feeding?|
Response variable: Tolerance (Yes/No)
Predictor variables: crown volume of the feeding tree, distance between the female dominant focal and the individual who fed with her, same patch feeding (yes/no), habitat type (fragmented/continuous), group size, sex and age of the individual who feed with her
Distribution: Binomial
Link: Logit
R Function: glmer(Tolerance~crown volume+distance+patch+habitat type+group size+sex+age(1|female ID|); family=''binomial,data=lemur.dat)
Hypothesis: crown volume of the feeding tree, distance between the female dominant focal and the individual who fed with her, same patch feeding (yes/no), habitat type (fragmented/continuous), age of the individual who feed with her can be related to the tolerance of the dominant female
Results

d. A graphical representation of your plan for data collection or analysis
and/or a brief summary of the data you will use.

- Foraging strategy affect social structure in primates
- In Propithecus diadema, female dominant - Understanding feeding behavior related to social context of species who lived in fragmented and continuous forests the female dominant

- Statistical model : What factors determine the tolerance of the dominant female during feeding?|
- Dynamical model How does group abundance influence female lemur cortisol levels which define agressive behavior?

: explain the cause of the level of cortisol in the female which can make her agressive or not and may affect the lemur population (individuals within group member)