

“Interspecific communication is recurrent in nature but the mechanisms and the origins remain unclear.”

**Statistical question**

Is there a relationship between the induced vigilance of redfronted lemur and ecological and social factors?

**Mechanistic question**

What mechanisms drive different species to communicate with each other?

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## Statistical question

Is there a relationship between the vigilance and ecological and social factors?

### Outcomes

I expect a strong correlation between the call type and the occurrence of vigilance. Individual activity, percentage of canopy cover and number of conspecific neighbor should also play an important factor.

**Response Variable:** Occurrence of vigilance event

**Family:** Binomial

**Link:** Logisitc

### Data

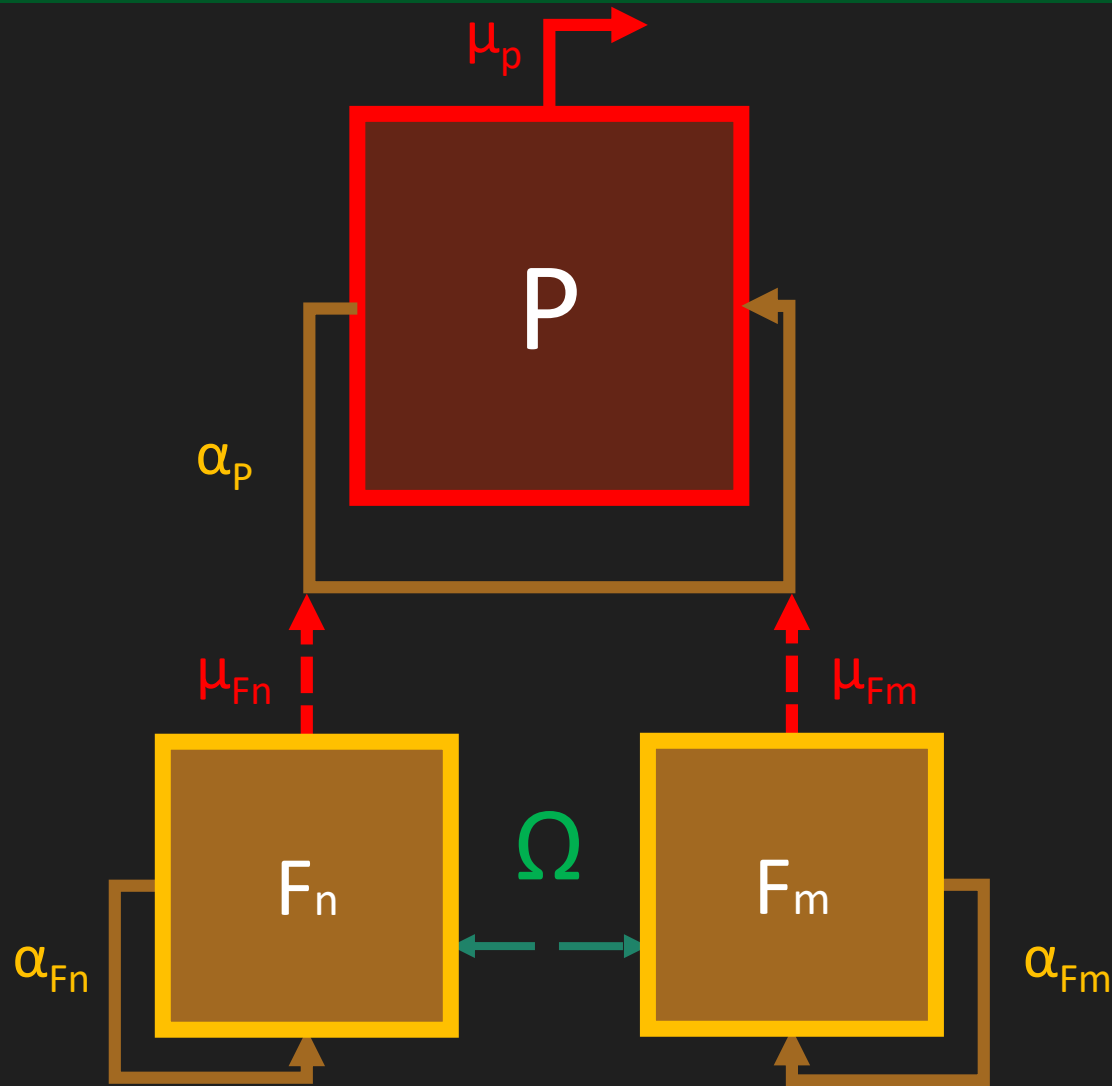
We played different bird calls to lemur in a natural environment. During the onset, we recorded their reaction, data on the social and environmental context.

### R code

```
glmer(vigilance.YN~call.type+canopy.height*canopy.density+neighbor.distance+ind.height+activity+(1|Group),family="binomial",link="logit")
```

## Mechanistic question

What mechanisms drive different species to communicate with each other?



If  $\Omega > 0$ , prey n should take advantage = eavesdropper  
If  $\Omega < 0$ , prey m should take advantage = eavesdropper  
If  $\Omega = 0$ , non-existent or mutualistic interaction

## Assumptions

The system is closed, the only causes of death in preys are by predation.

The birth rate and death rate in predators is directly related with the abundance of preys captured

P: Common Predator

Fn: Prey n

Fm: Prey m

$\alpha_{Fn}$ : birth rate of Fn

$\alpha_{Fm}$ : birth rate of Fm

$\mu_{Fn}$ : death rate of Fn

$\mu_{Fm}$ : death rate of Fm

$\mu_p$ : death rate of P

$\Omega$ : difference between prey n and m death rate multiplied by a coefficient of consumption (death rate/calory intake)

[identify preys apparent competition/mutualistic advantage]

## Next Steps

Test the world

Collect data from published papers to identify characteristics of preys-predators interaction with identified interspecific communication between species. Test the models with those results. Is it working?

Test the model on different systems with identified patterns to recognize possible interspecific communication.

Identify species dependences to optimize conservation of natural habitats and endangered species in an holistic approaches

