

# The Natural History of Marmosets and Translational Ethology

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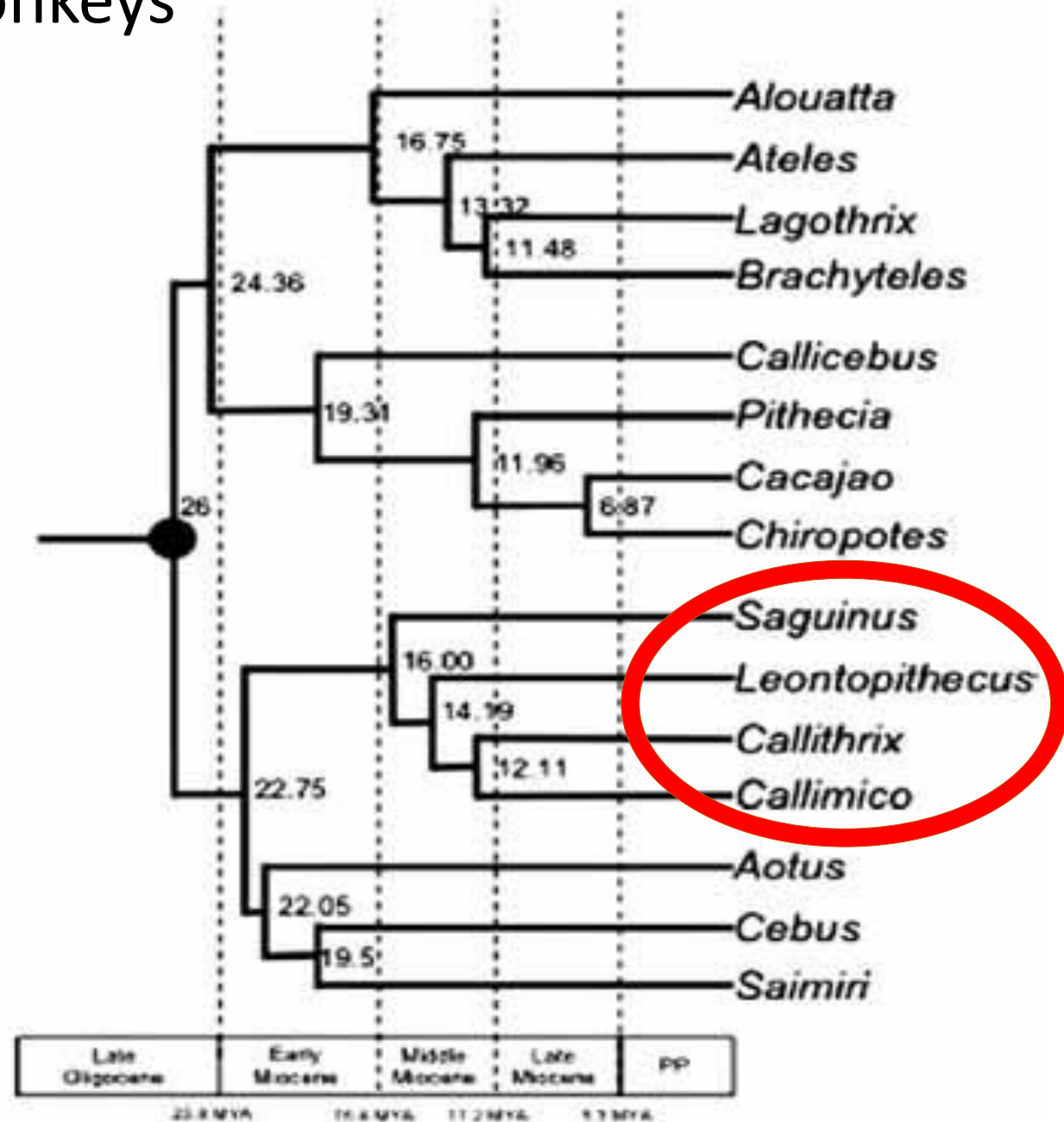
# Marmoset Natural History

- Evolution and Taxonomy
- Habitat Use
- Sleeping Sites and Pre-retirement Behavior
- Feeding and Foraging Behavior
- Predation Pressures
- Social Behavior

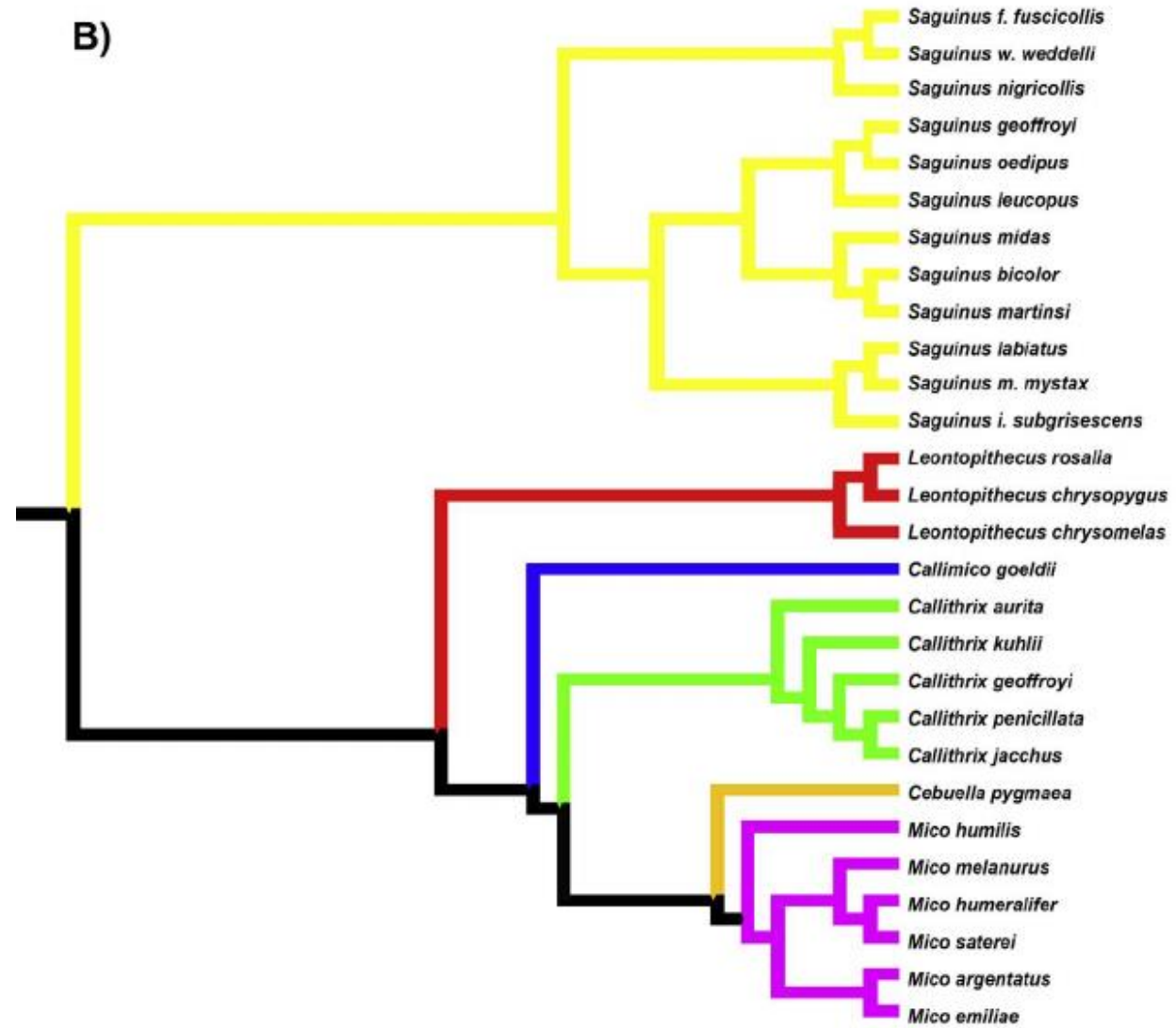


Image: <https://www.iflscience.com/plants-and-animals/the-incredible-story-of-the-monkeys-that-rafted-across-the-world/>

# The New World Monkeys



The callitrichids





## Some of the 13 species of the genus *Mico*

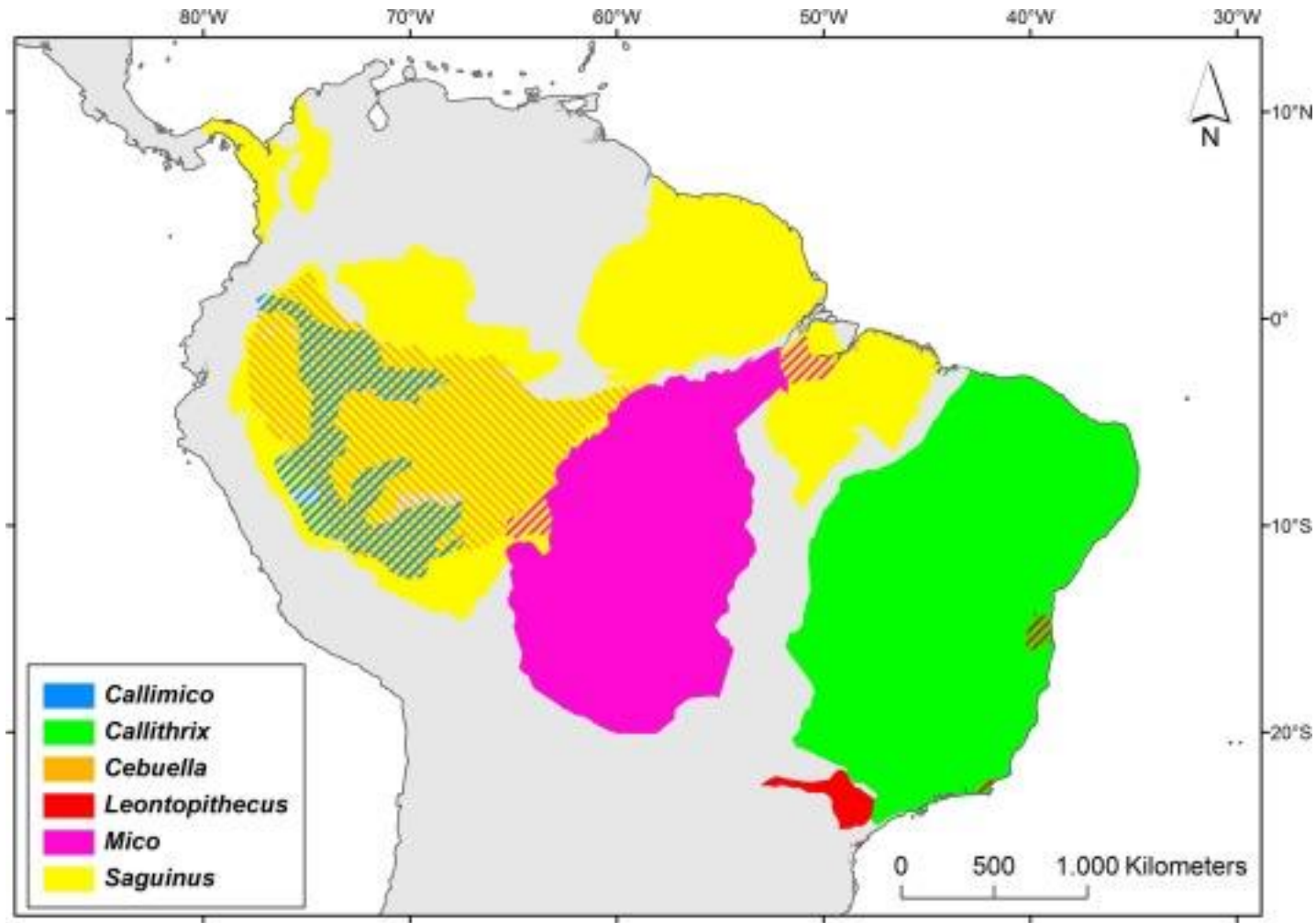




# The members of the genus *Callithrix*









# Habitat



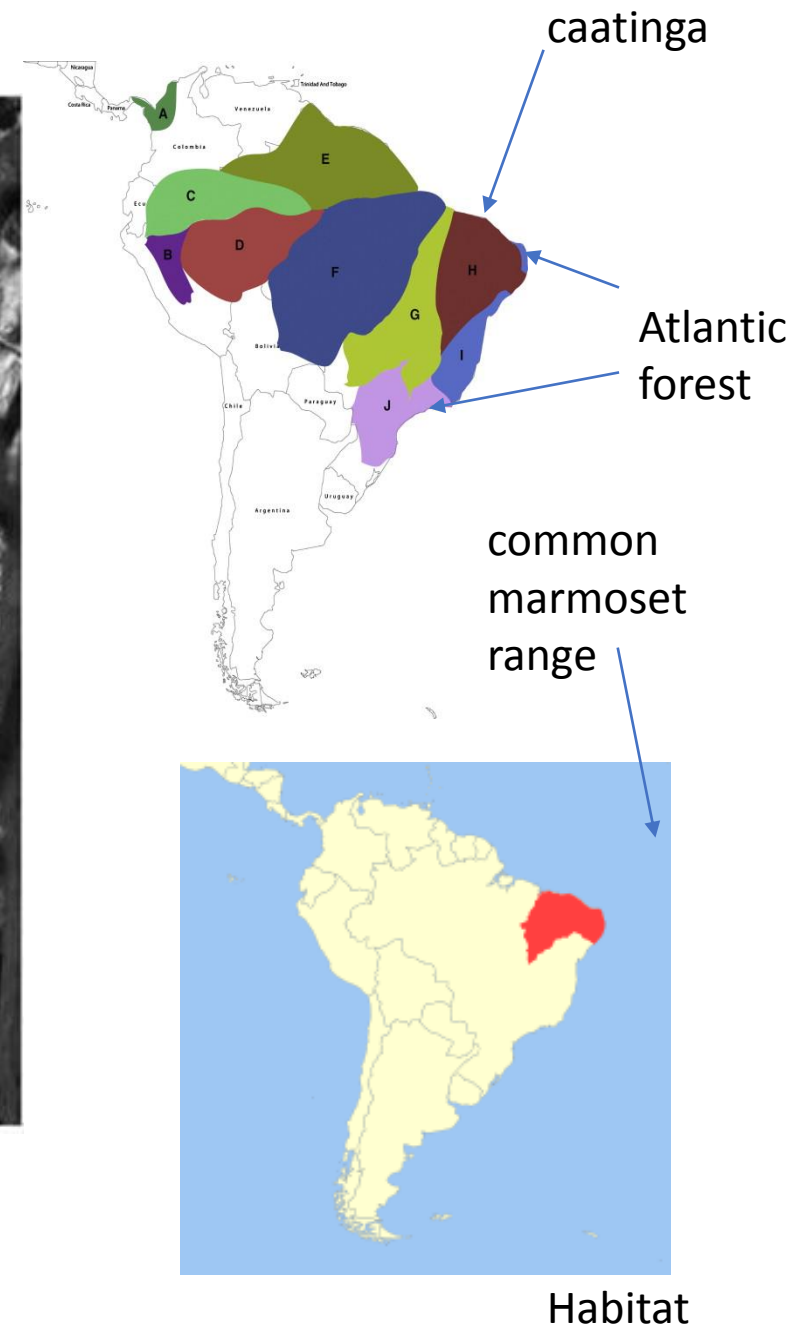
Atlantic Coastal Forest





The caatinga

(Amora et al., 2013)



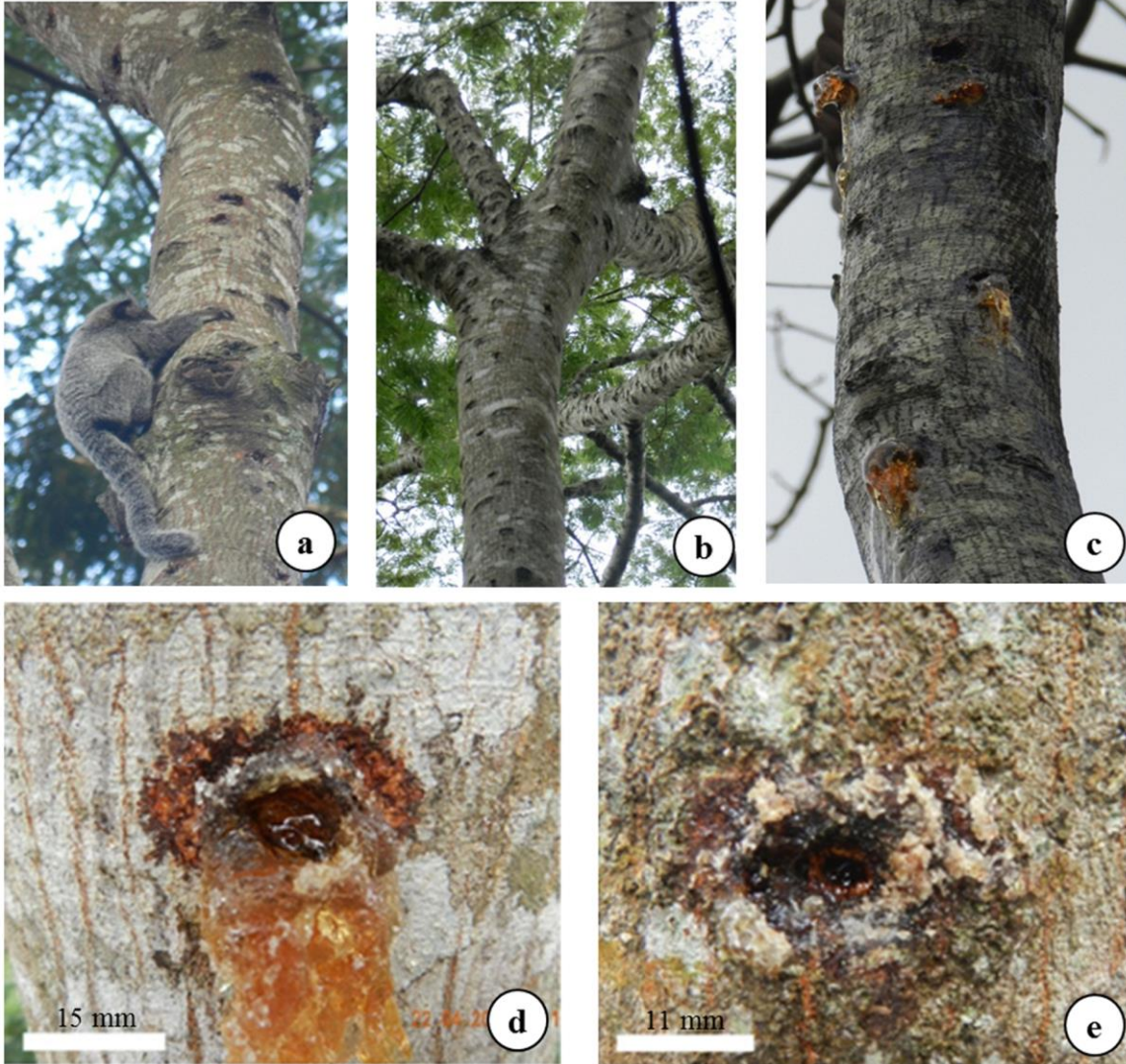
Outside of Rio de Janeiro



Habitat



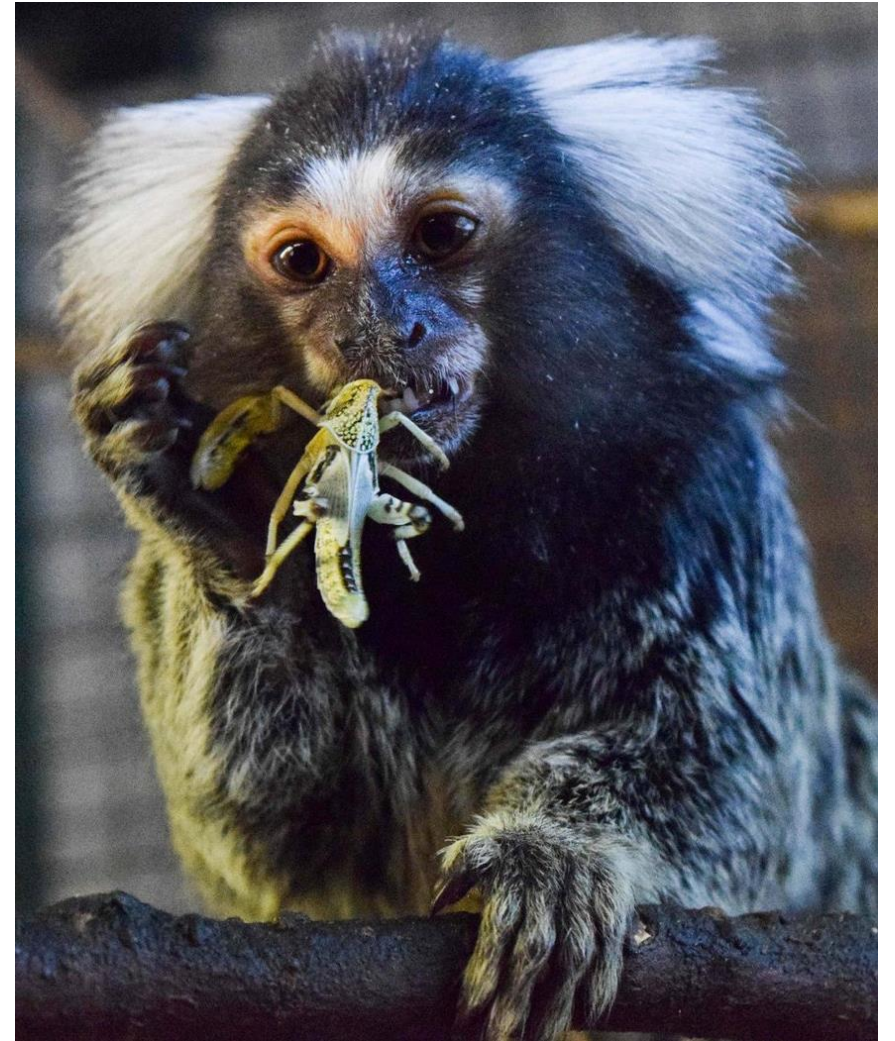
# Feeding and foraging



(Francisco et al. 2014)



(Schiel &  
Souto, 2016)



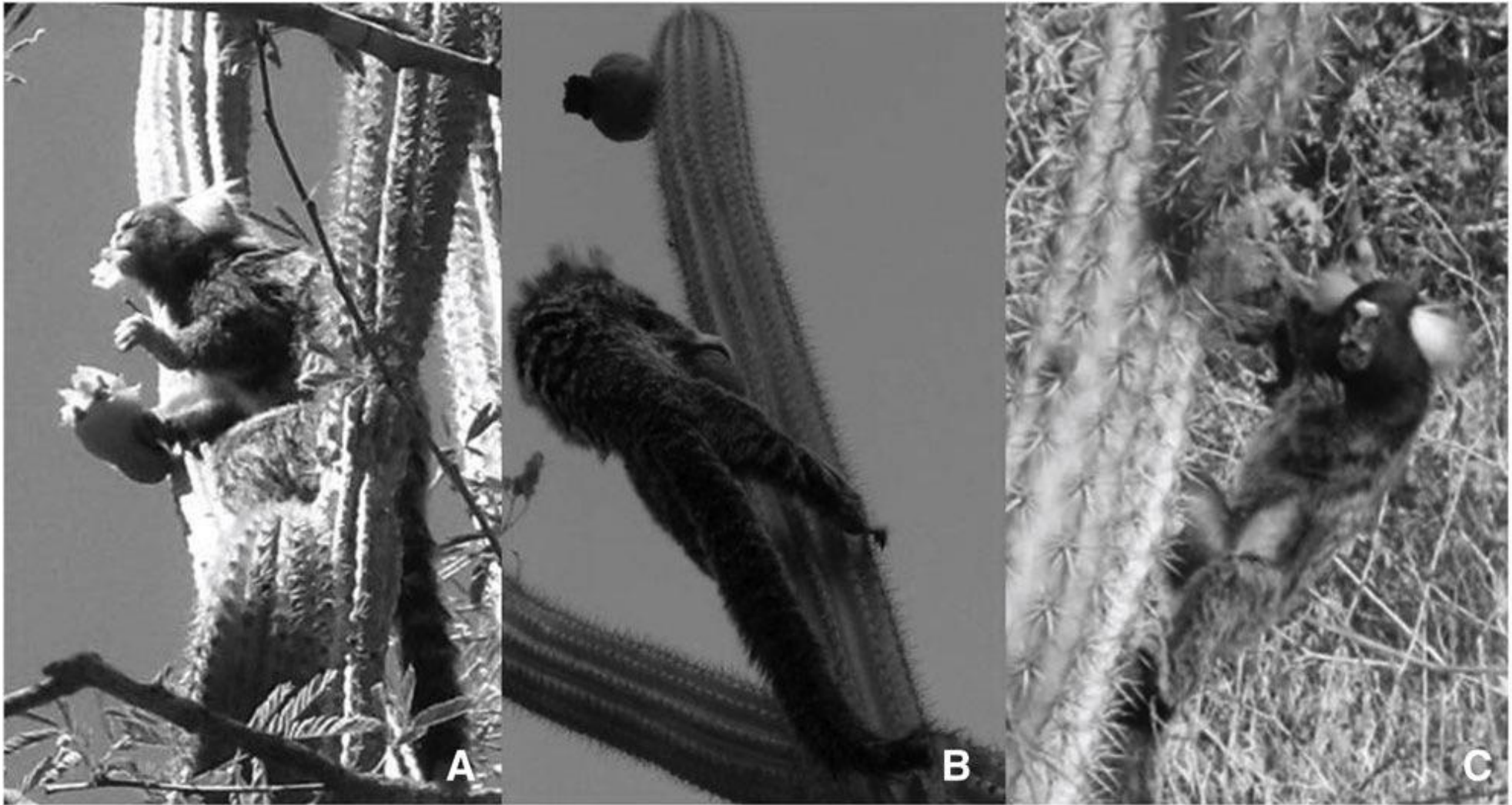
Feeding and foraging



(Amora et al , 2014)

Feeding & foraging





(Amora et al., 2013)



The two *Mycocitrus* morphospecies exploited by the *Callithrix flaviceps* group in the RBAR, Espírito Santo, Brazil. Photographs: Frederico Pereira.



# Sleeping site selection and pre-retirement behavior



Photo credit A. Karinne





# Predation Pressures



Harpy eagle  
(*Harpia harpyia*)



Roadside hawk  
(*Rupornis magnirostris*)



Oncilla (*Leopardus tigrinus*)



Ocelot (*L. pardalis*)



Tyra  
(*Eira barbara*)





*C. penicillata*  
juveniles taken by a  
*Boa constrictor*  
(Teixeira et al., 2016)





# Social behavior



Groups of 5-13 closely related individuals

Flexible demographics: monogamous, polyandrous, polygynous

Cooperative breeders: everyone cares for babies

Cohesive spatial patterns and tolerance at feeding sites

Low rates of aggression

Emigrations and immigrations

Territorial

Social behavior



(Schiel &  
Souto, 2016)





**Ethology** is the scientific study of animal behavior, usually with a focus on behavior under natural or naturalistic conditions, and viewing behavior as an evolutionarily adaptive trait.

*Translational ethology*: using our understanding of evolved adaptations to manage primate colonies.

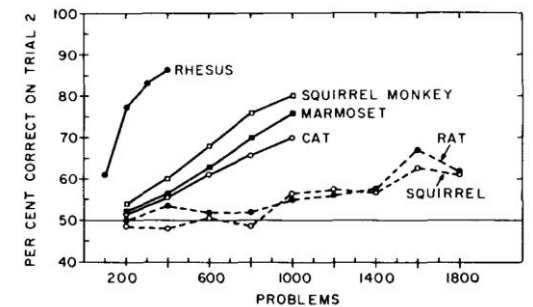
# Translational Ethology: Taxonomy and Evolution

“Marmosets are primitive.”

“Marmosets are more like squirrels or birds than monkeys.”

“Marmosets rely on smell instead of vision.”

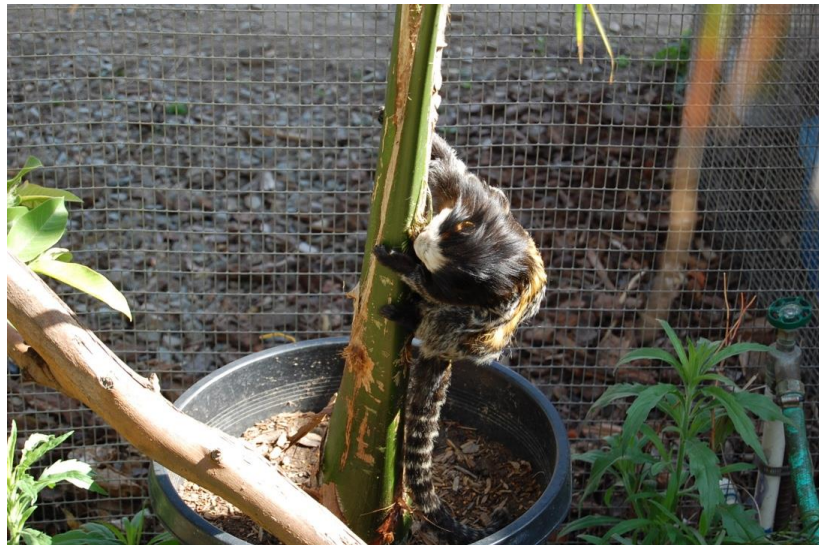
“Marmosets aren’t very smart.”



Warren, 1965



# Translational ethology: feeding and foraging



[marmosetcare.com](http://marmosetcare.com)





## Translational ethology: habitat use



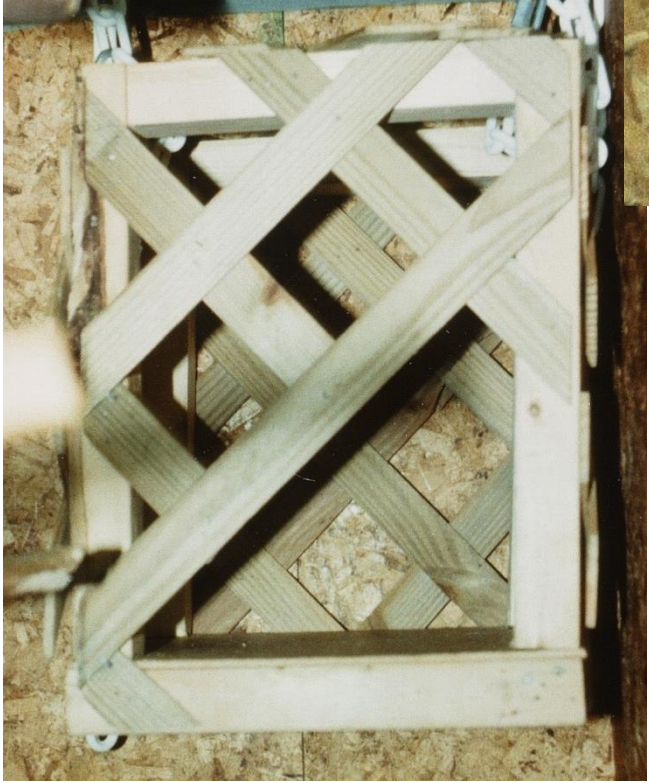


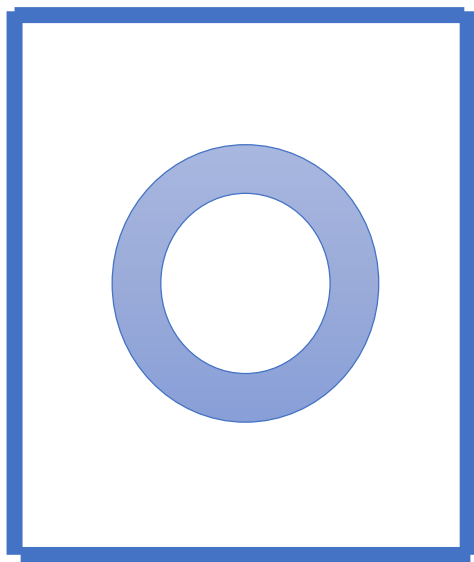


## Translational ethology: Sleeping in captivity

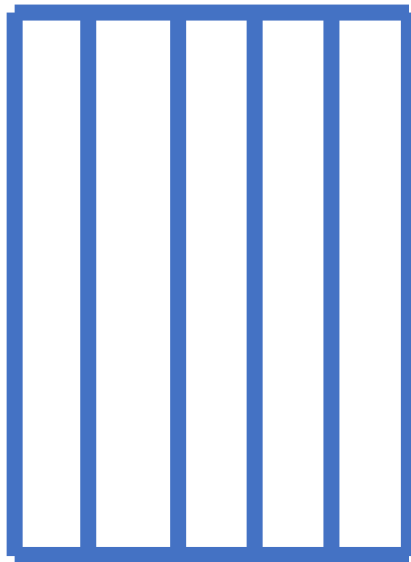




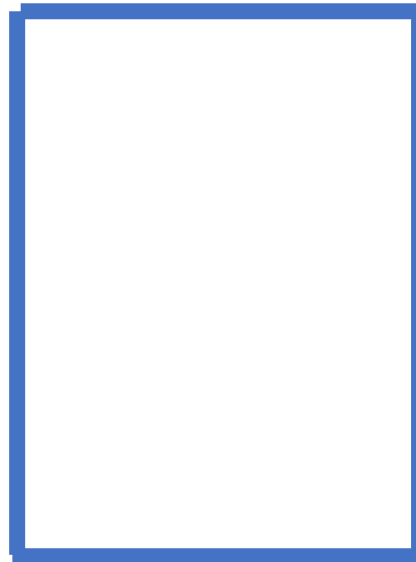




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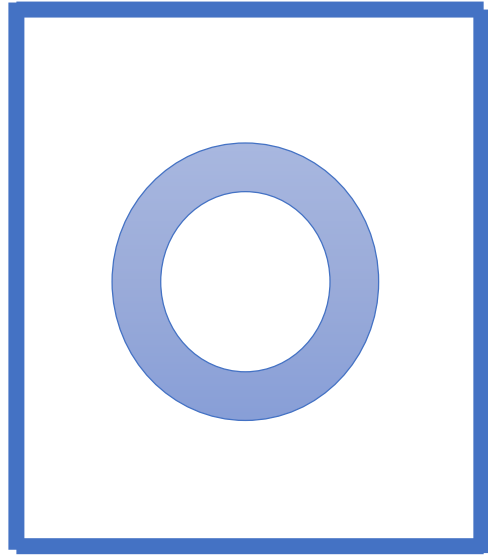
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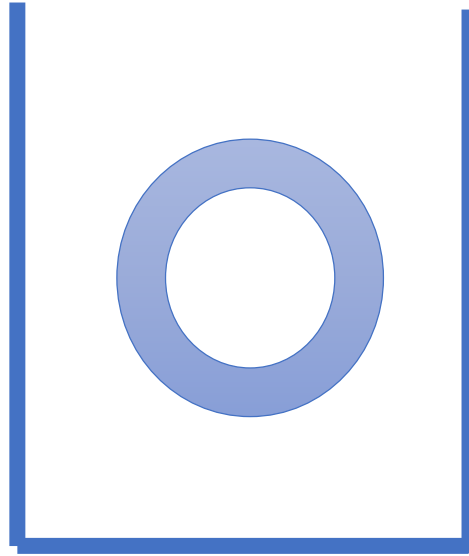
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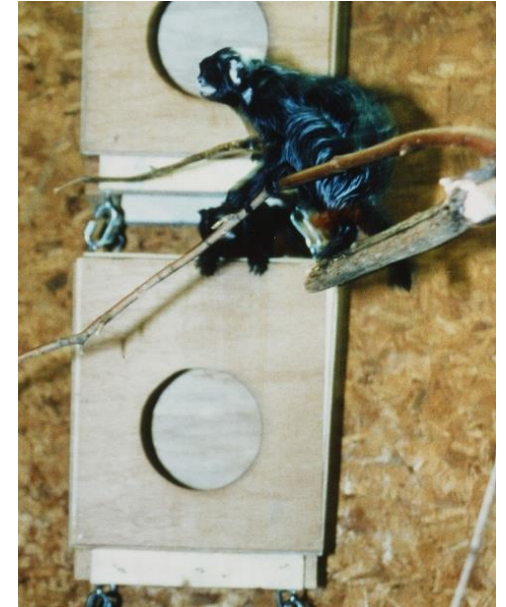
# Group-nights sleeping in covered or uncovered sleeping box



51



5

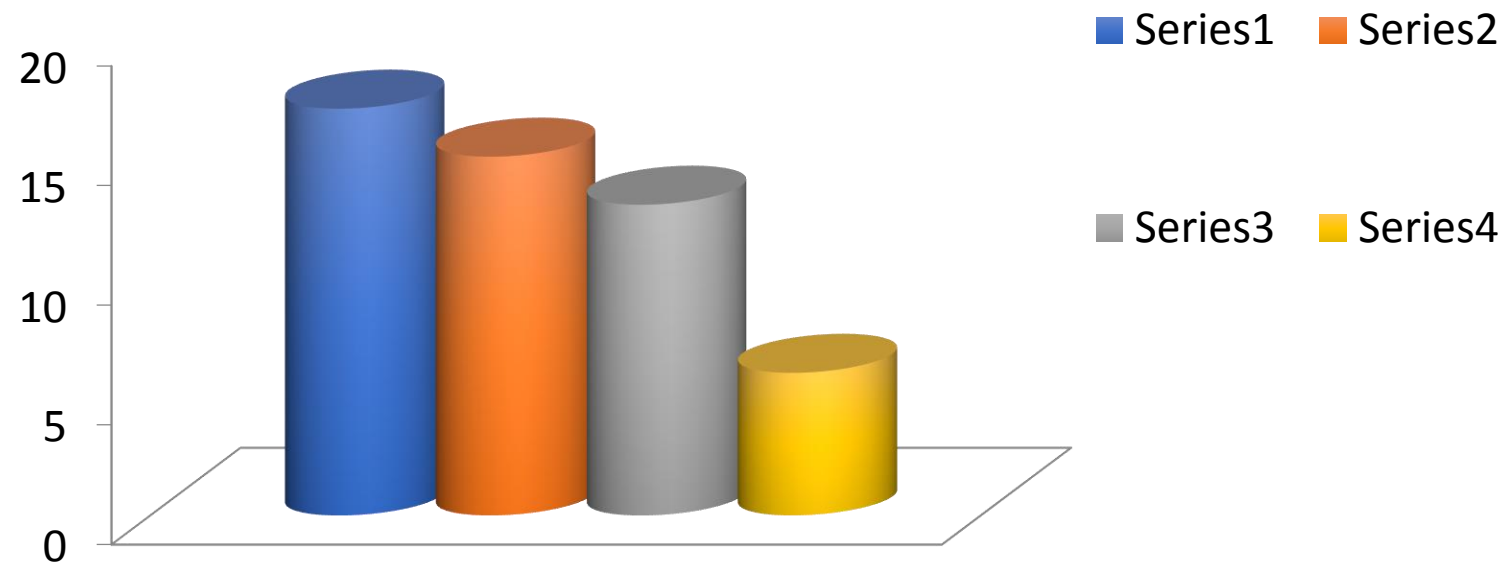


# Translational Ethology: Antipredator Behavior



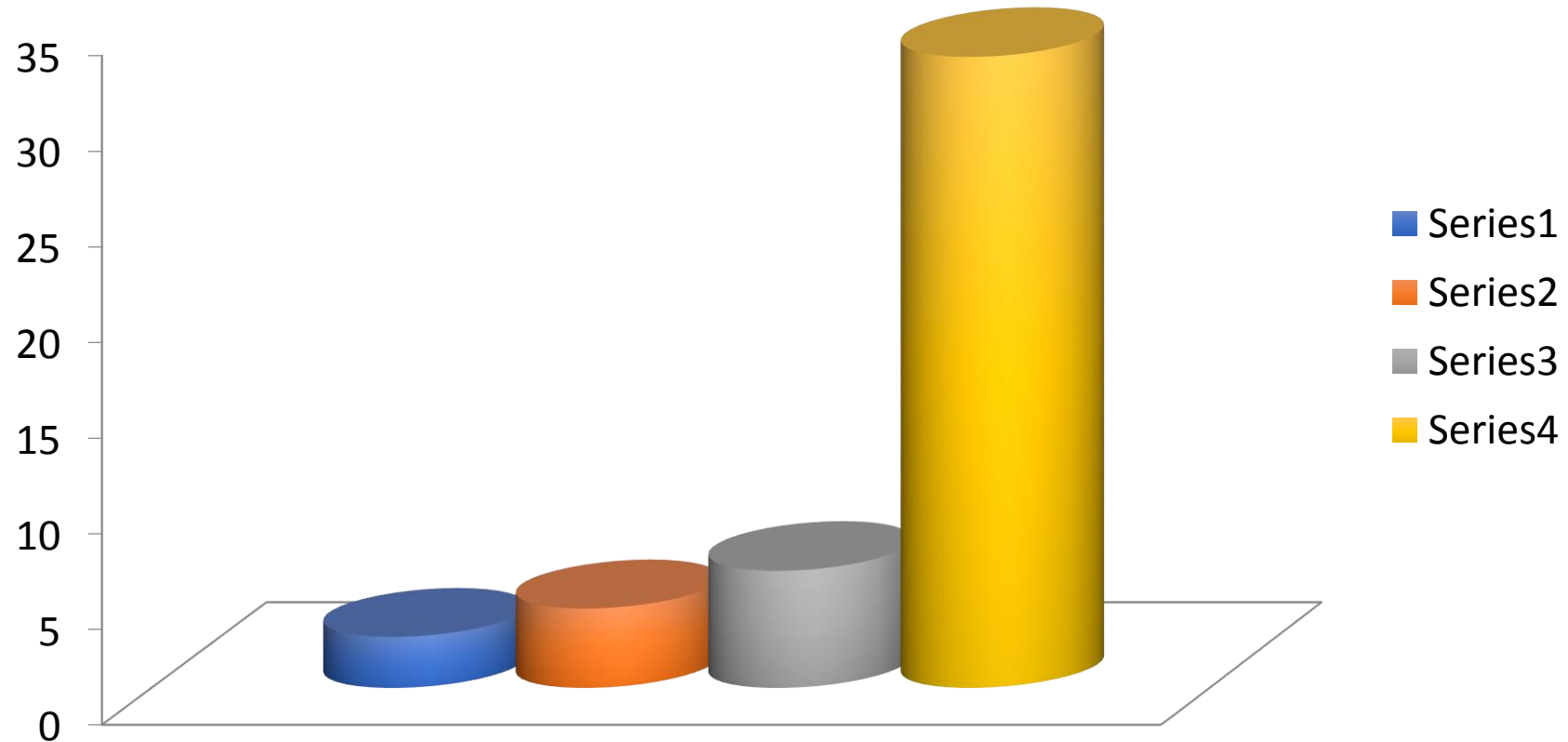


# Average duration of visits to the dowel



(Caine & Weldon 1989)

# Percent of time spent sniffing





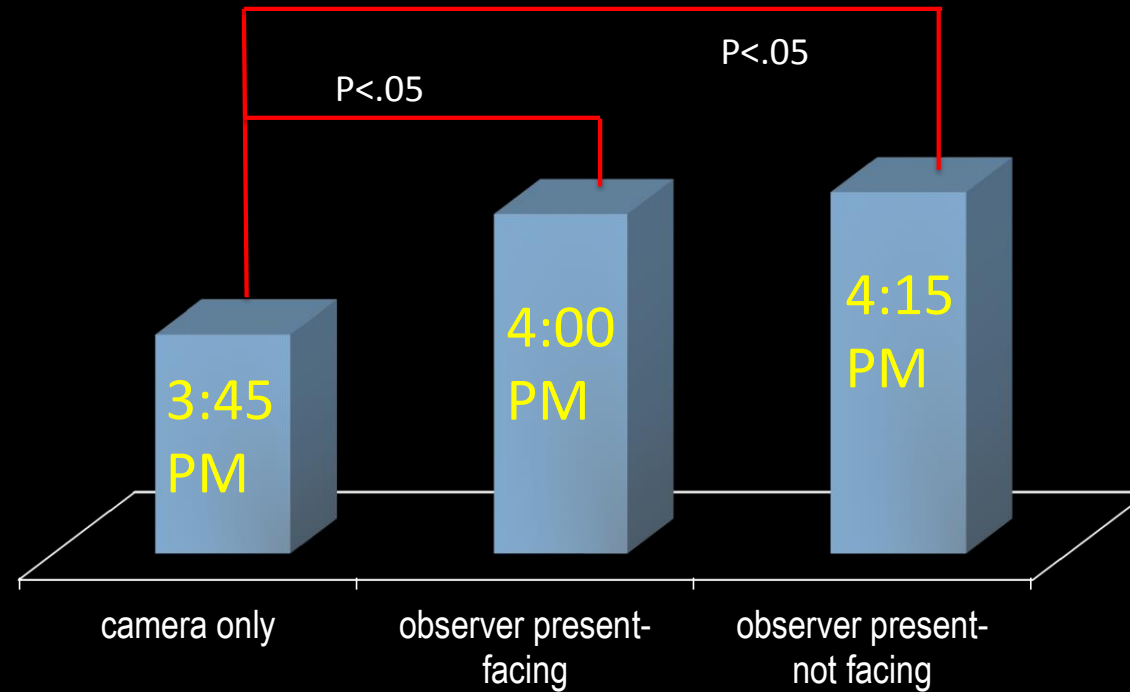




Antipredator behavior



But our monkeys are habituated to us  
(... aren't they?)



(Caine, 1990)

## Translational Ethology: Social behavior

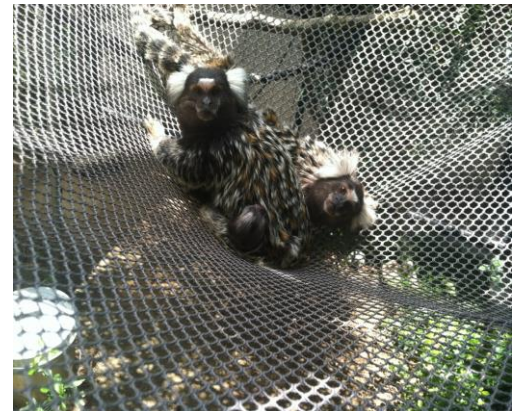






# Take-Away Points

- Marmosets are complex primates that are not "primitive" or "simple" in any way.
- The social, dietary, and habitat adaptability of marmosets is in stark contrast to the notion of a "fragile" species.
- Marmosets' eclectic diet in the wild lends itself well to enrichment .
- Marmosets are adapted to exploit many different habitats and niches within habitats and thus benefit from varied physical environments in captivity.
- Marmosets are highly vigilant and may see threats through a different lens than humans.
- Marmosets living alone are not marmosets.







## **The Team**

### **Graduate students**

Meg Potter

Michele Petracca

Sarah Neal

Jessie Wombolt

Megan Rice

..and many more

### **Husbandry staff**

Ernie Craven

CRES staff

Sarah Stuck

...and many more

### **Collaborators**

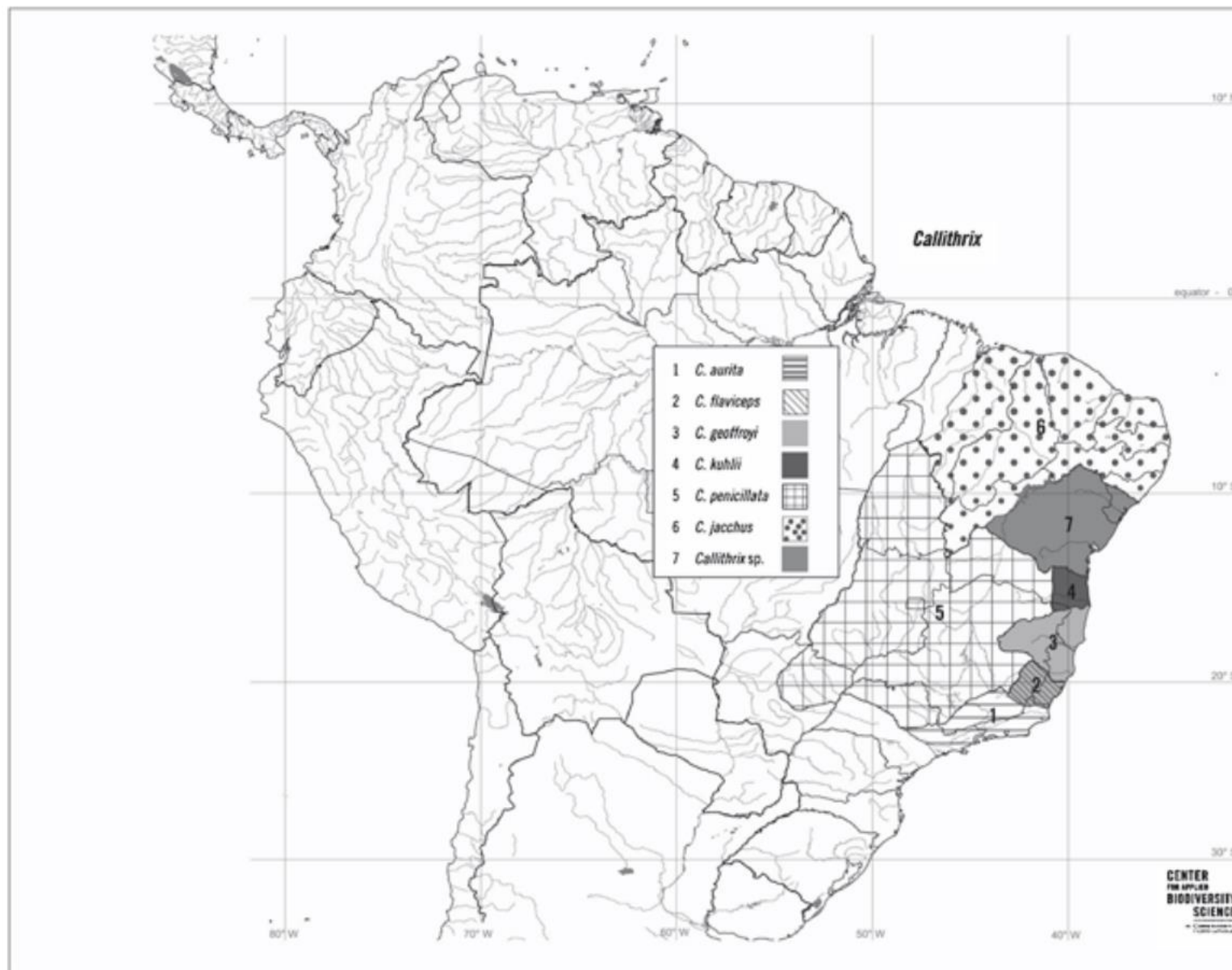
Anthony Rylands

Nick Mundy

Amanda Melin

Paul Weldon

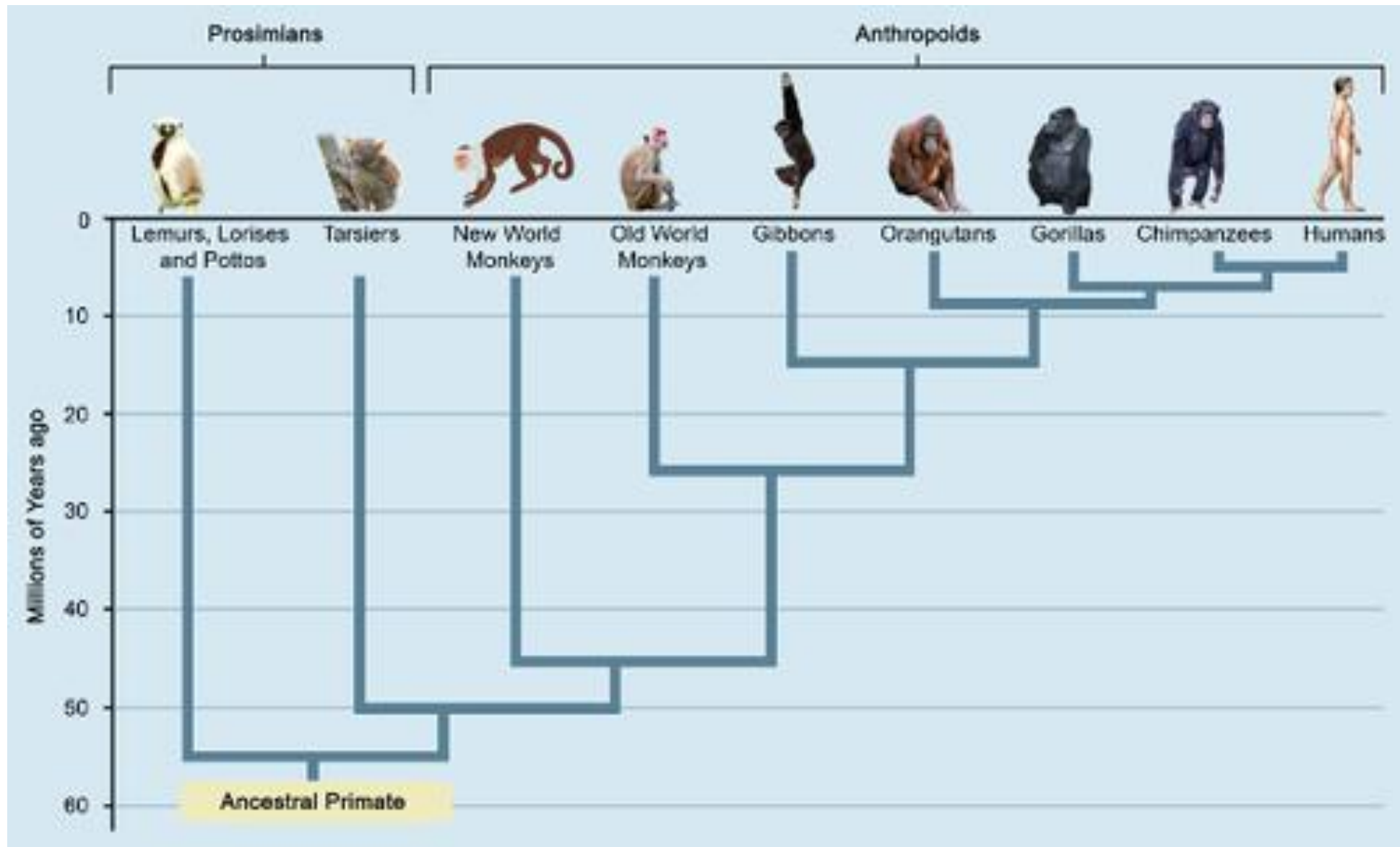
...and others



**Fig. 2.1** The distributions of the Jacchus-group marmosets: *Callithrix jacchus*, *C. penicillata*, *C. kuhlii*, *C. geoffroyi*, *C. aurita*, and *C. flaviceps*



# Evolution and Taxonomy



Artist's rendering of  
*Perupithecus ucayaliensis*

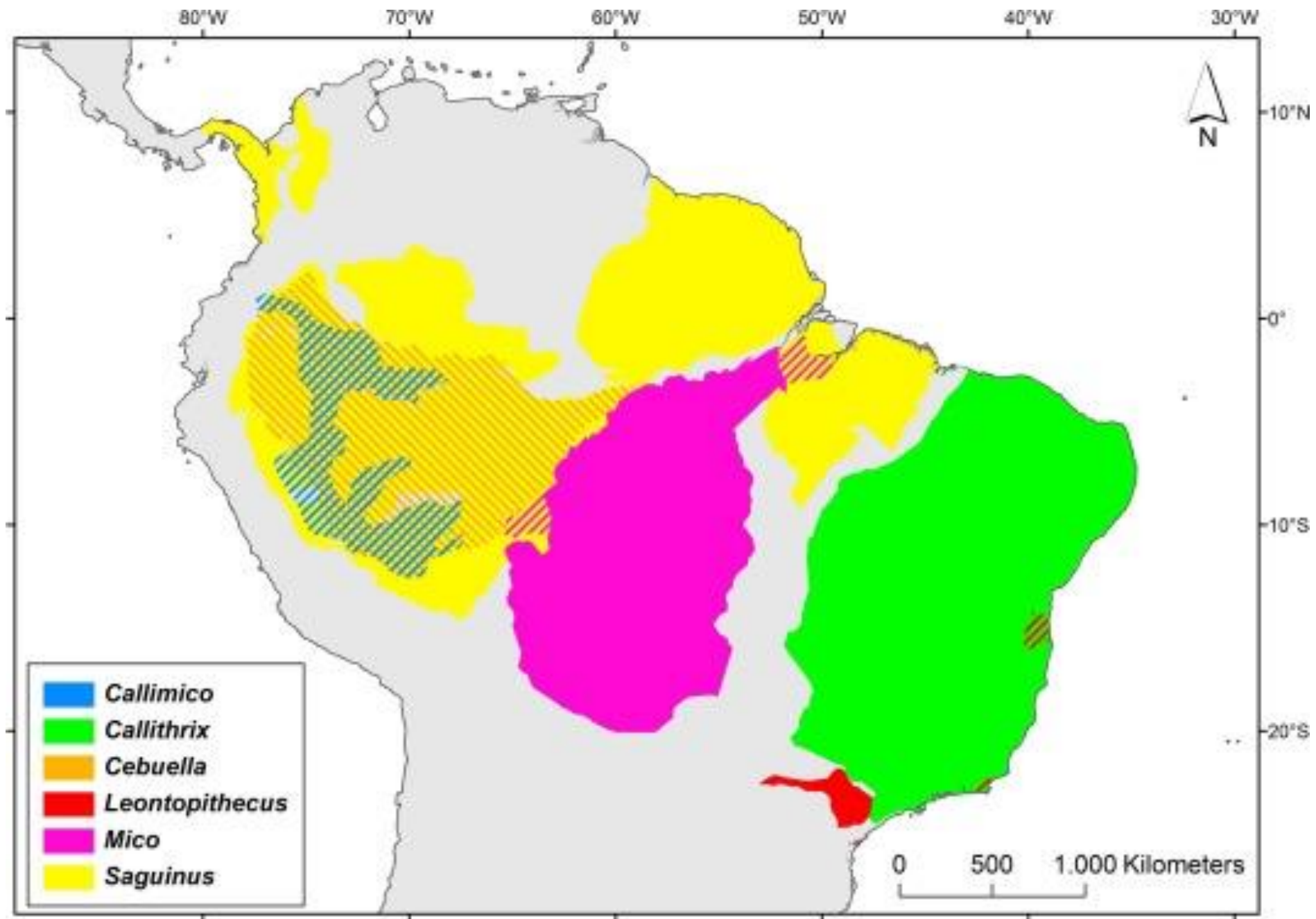
Image  
credit:  
Jorge  
Gonzalez





# Some of the 12 species of genus *Saguinus*









Tyra  
(*Eira barbara*)



Predation pressures

# Percent of visits that included sniffing

