The University of Texas at Austin
Environmental Science Institute

Hot Science - Cool Talk # 108

Friendship and Female Power in the Lemurs of Madagascar

Dr. Rebecca Lewis
September 15, 2017

Friendship & Female Power in the Lemurs of Madagascar

Dr. Rebecca Lewis

Department of Anthropology

The University of Texas at Austin

Biological Anthropologist

Study of humans

Study of living things

Primatologist

Lemurs

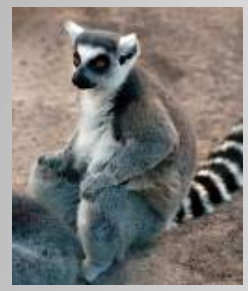
Lorises

Tarsiers

Monkeys

Apes

Primates



Lemurs

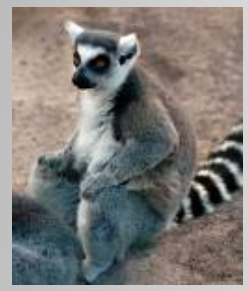
Lorises

Tarsiers

Monkeys

Apes

Primate Family Tree



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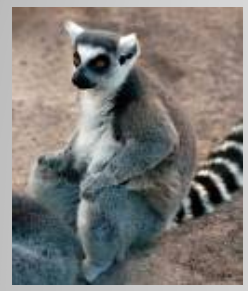

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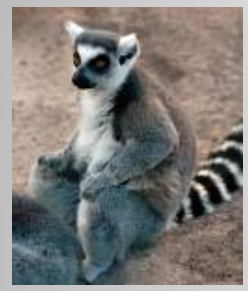

Lemurs

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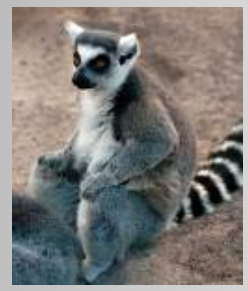
Primate Family Tree



Lemurs

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Humans

Primate Family Tree

Lemurs

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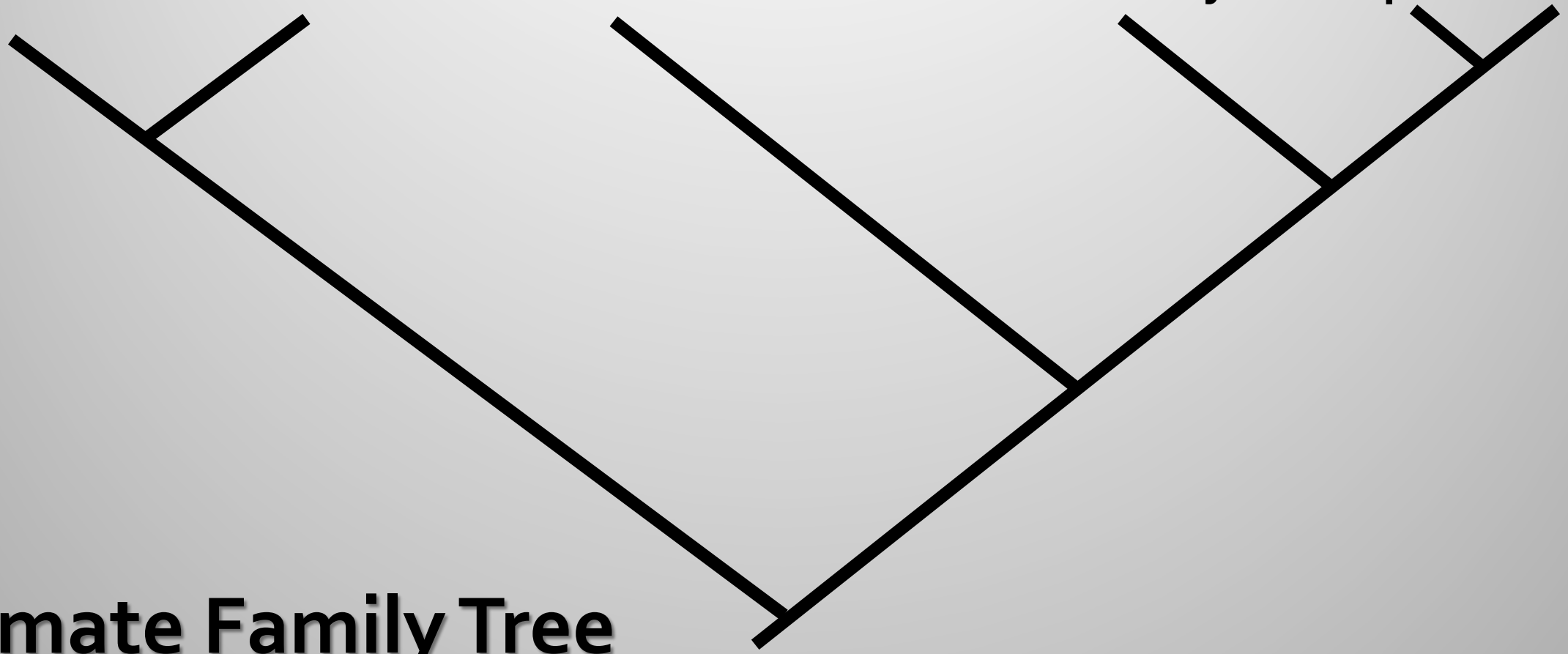
Apes

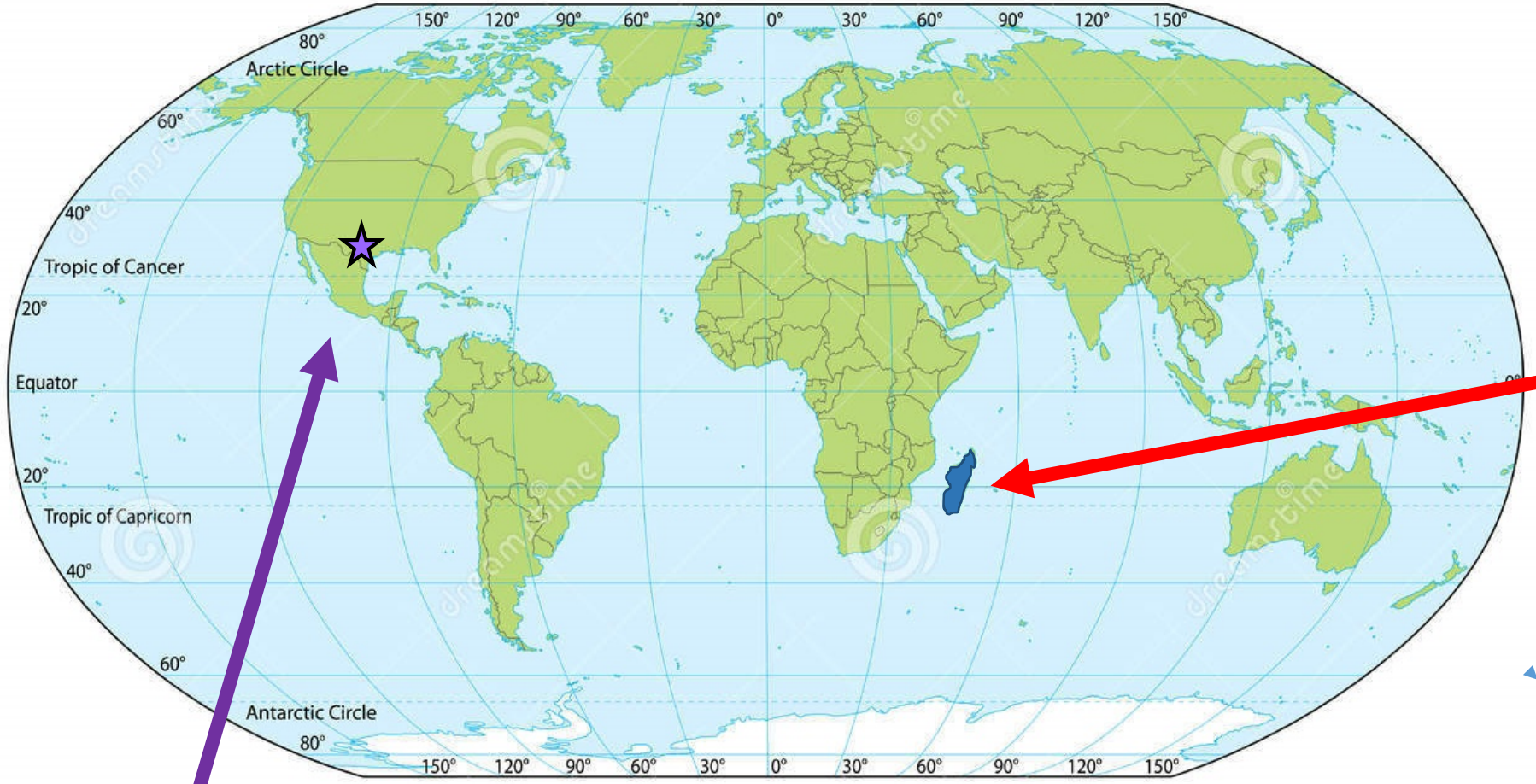
Humans



Primate Family Tree

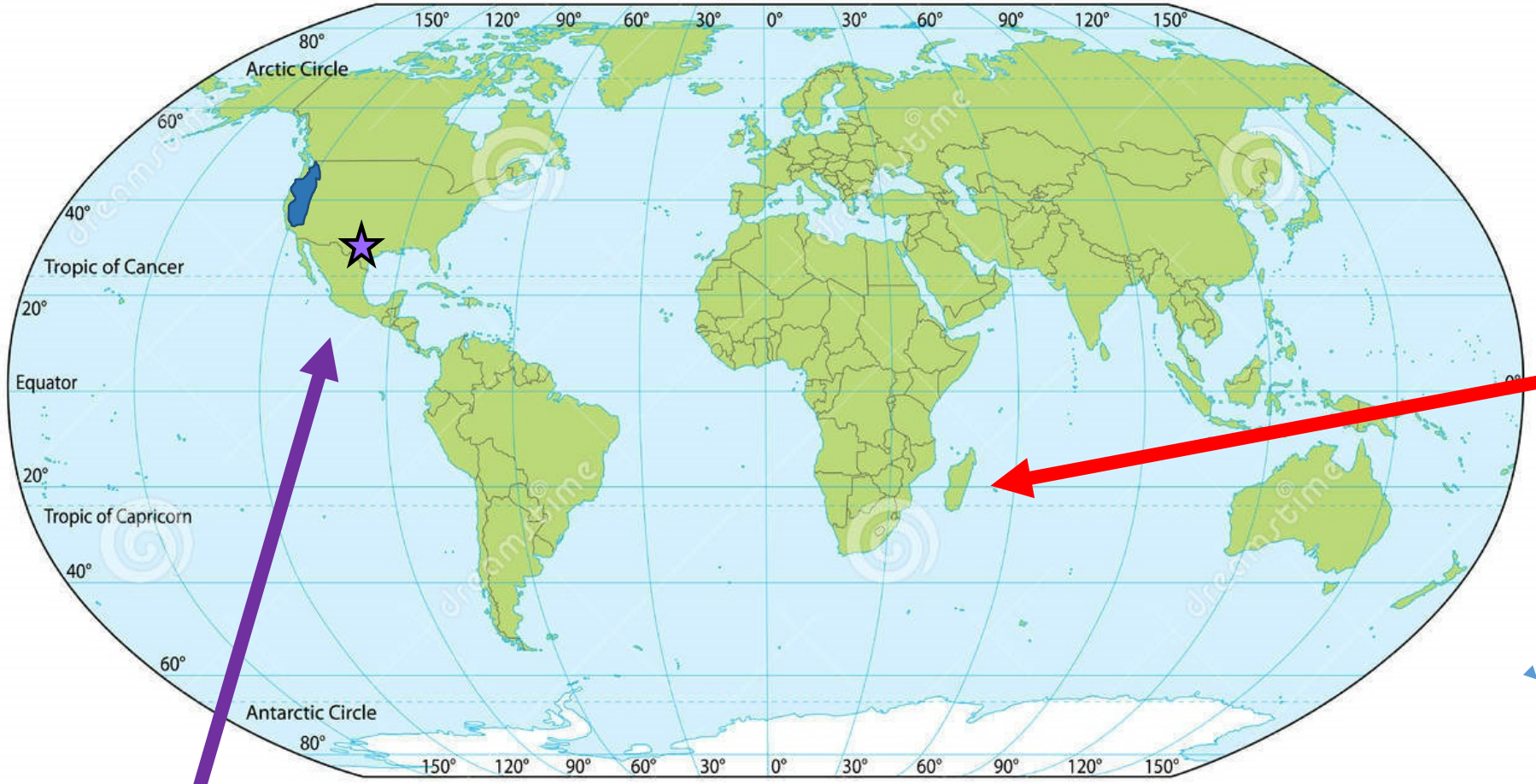
Lemurs

Lemurs are found in Madagascar



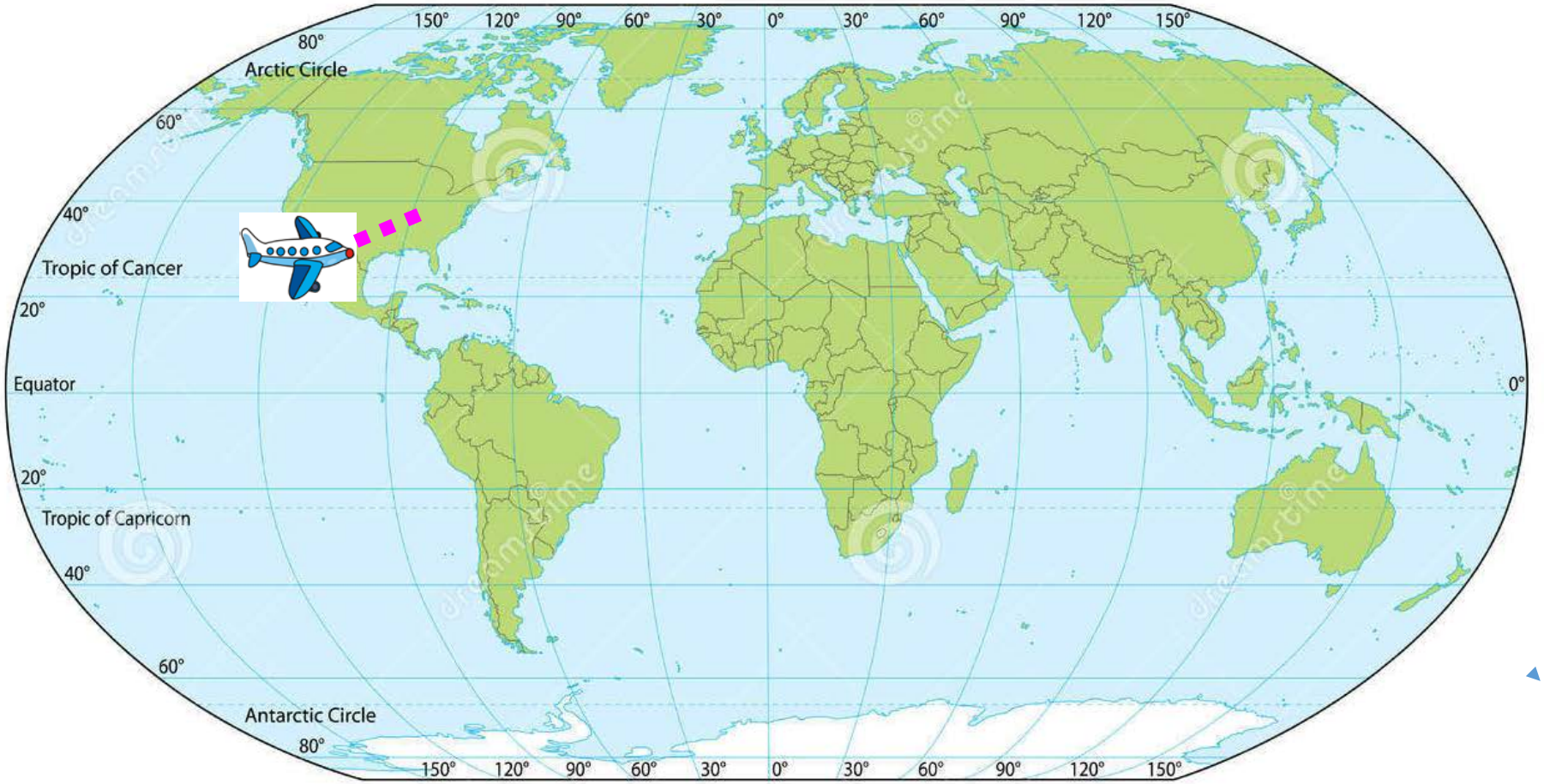
You are here.

4th largest island in the world.

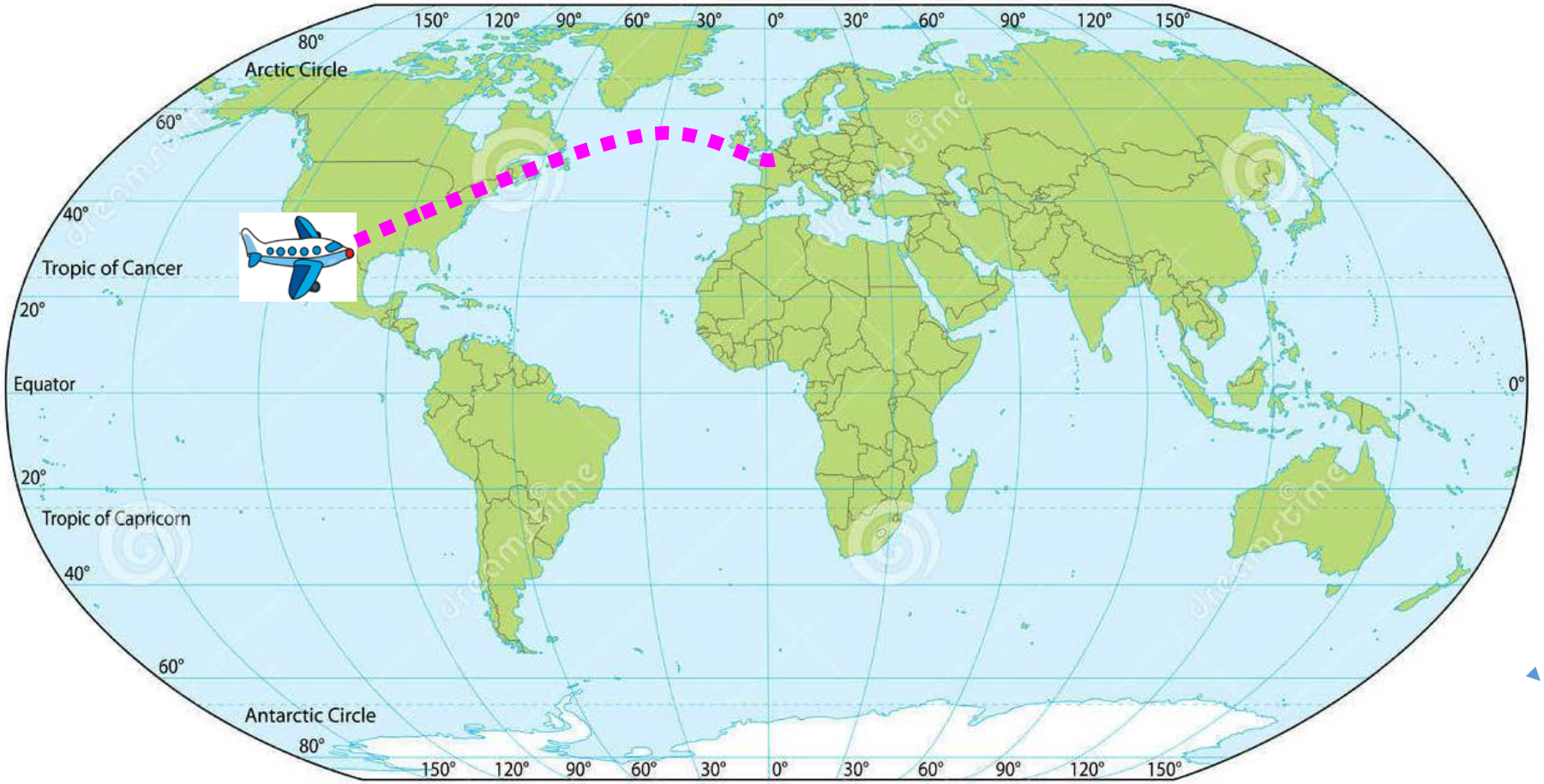


You are here.

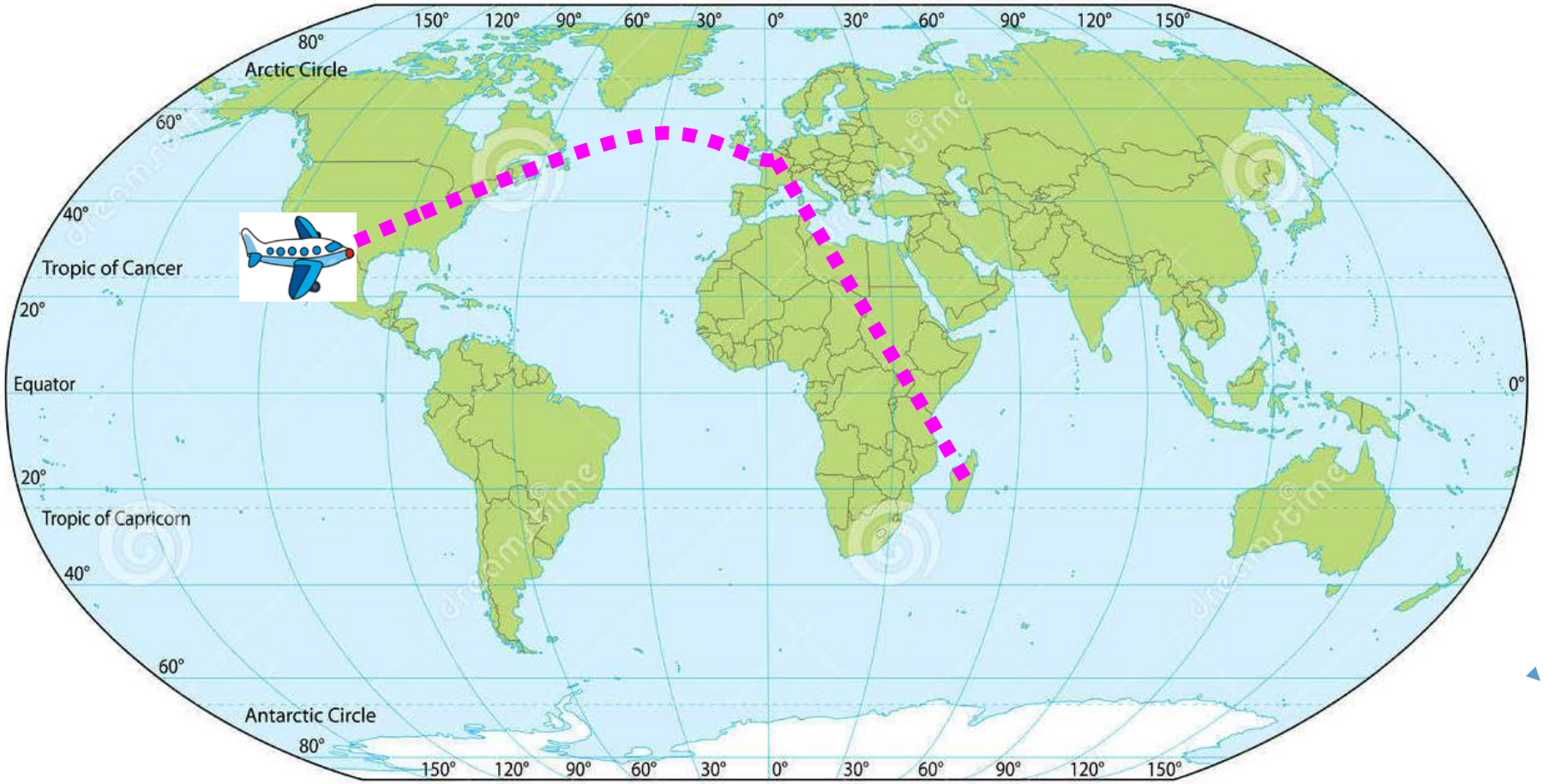
3 hr to Atlanta



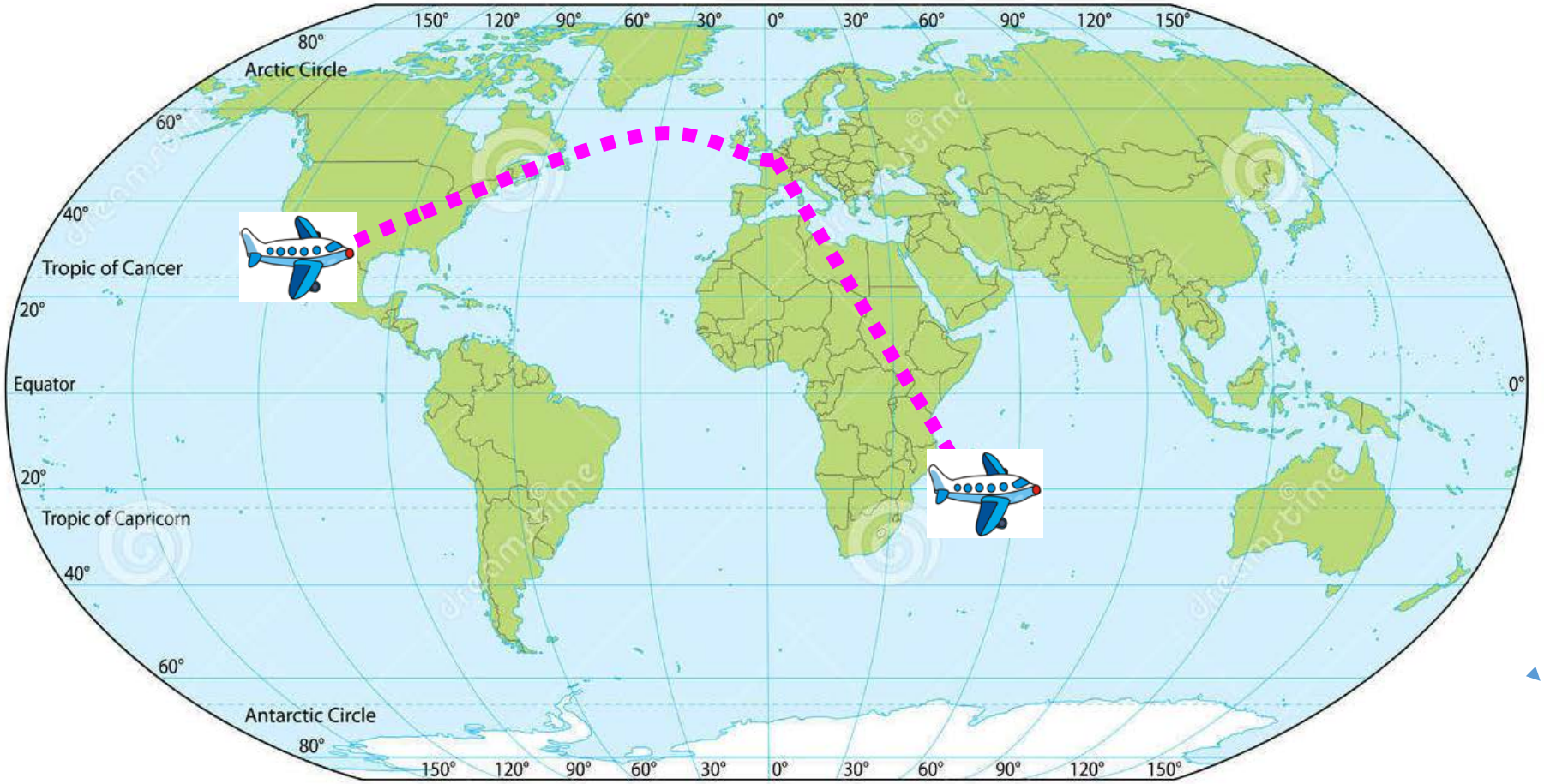
3 + 10 hr to Paris



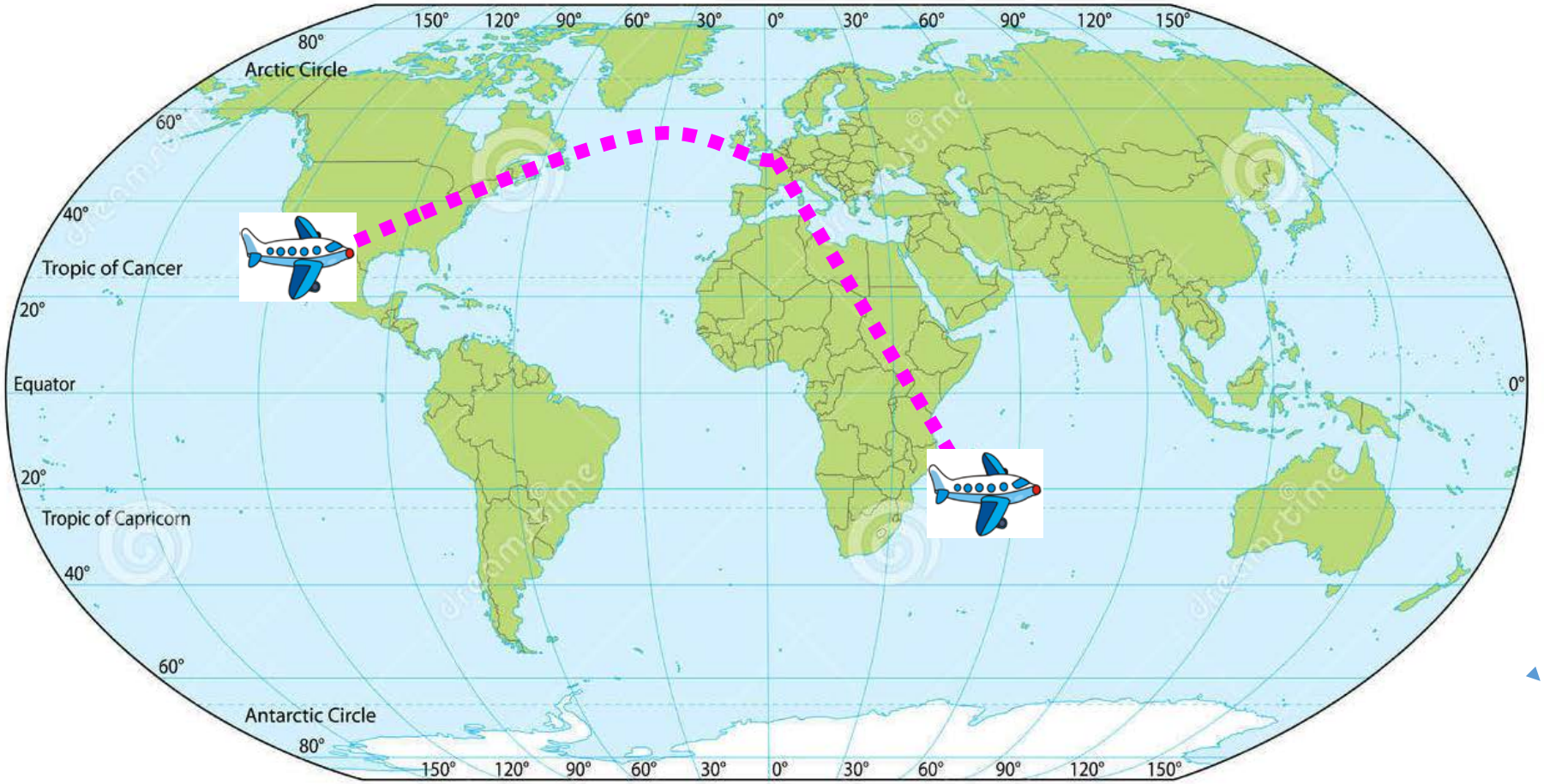
3 + 10 + 11 hr to Madagascar

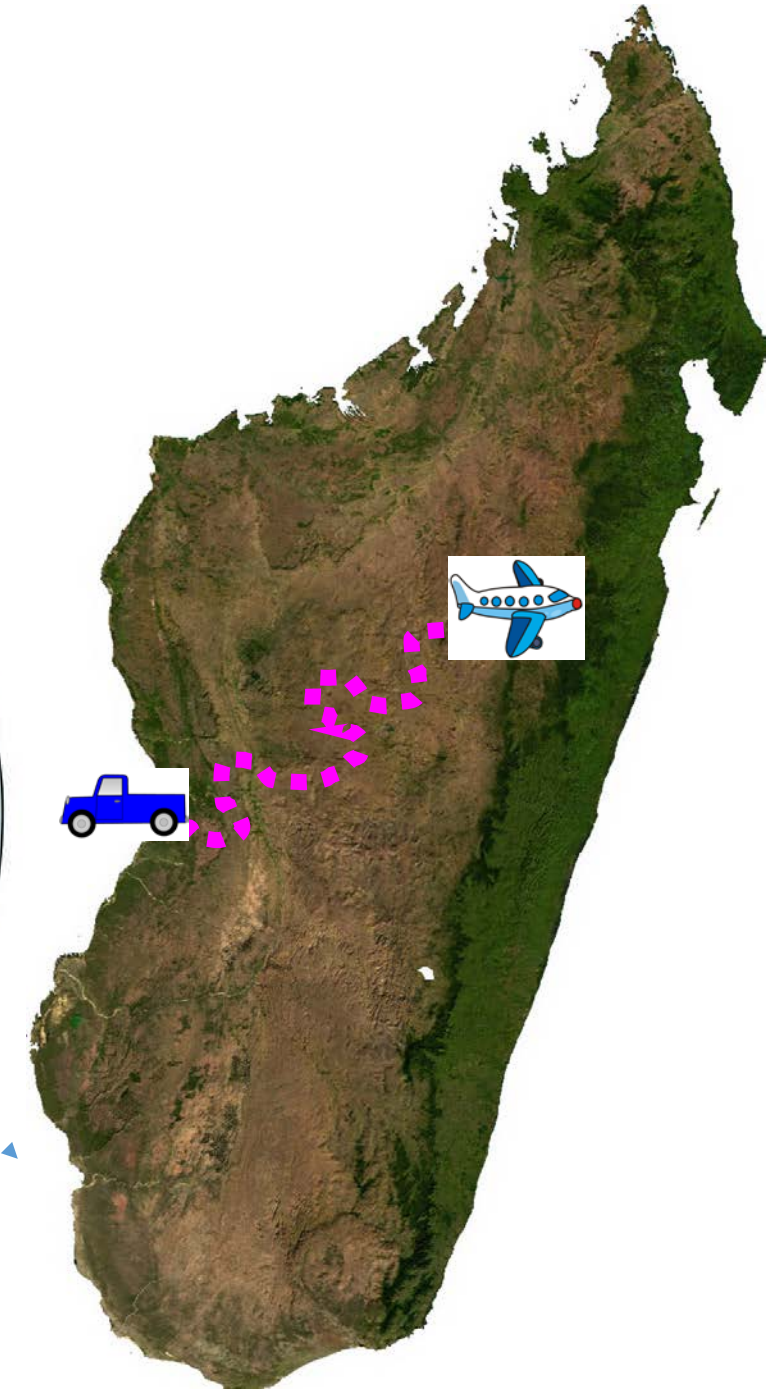


3 + 10 + 11 + 12 hrs in airports

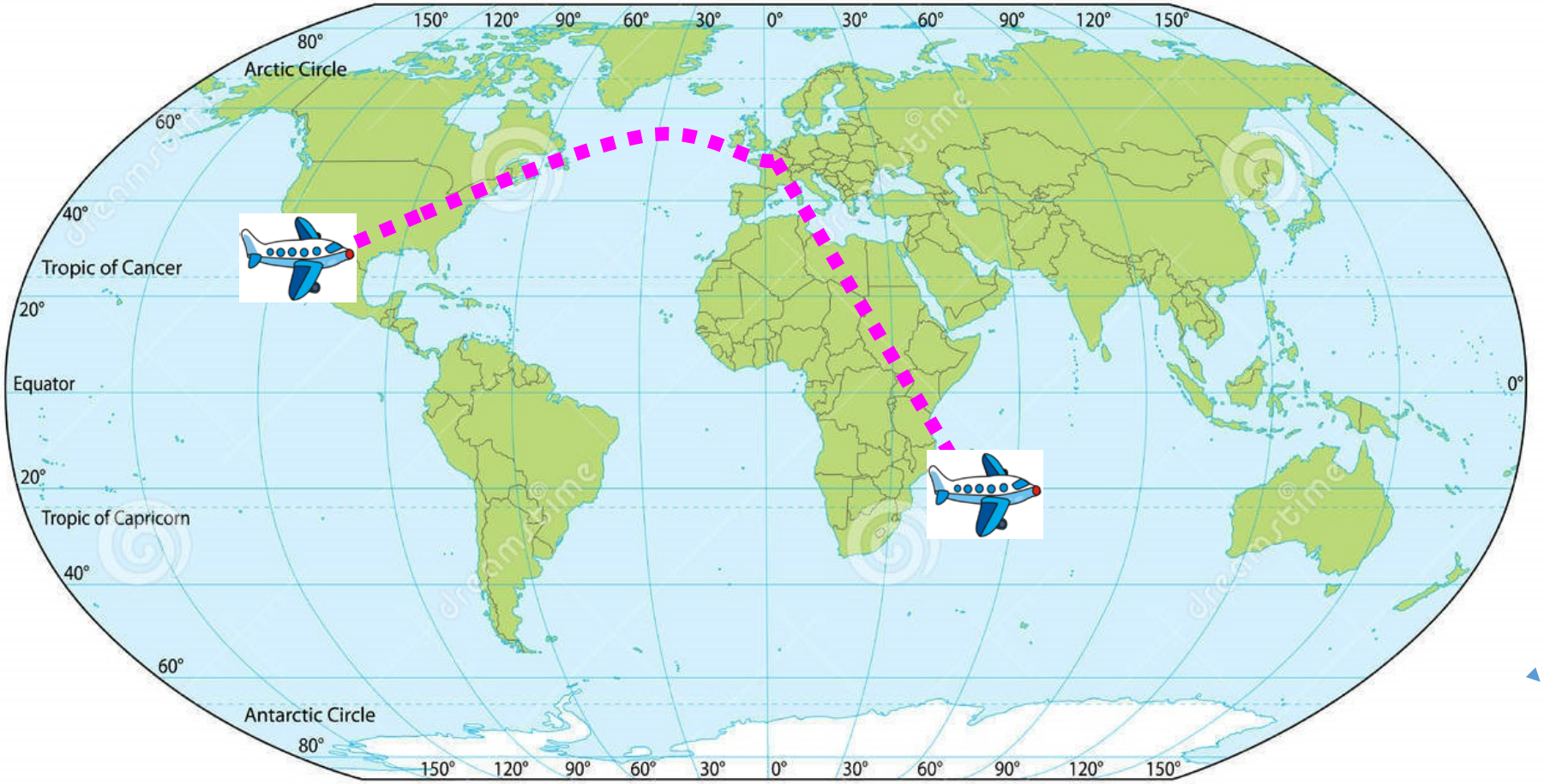


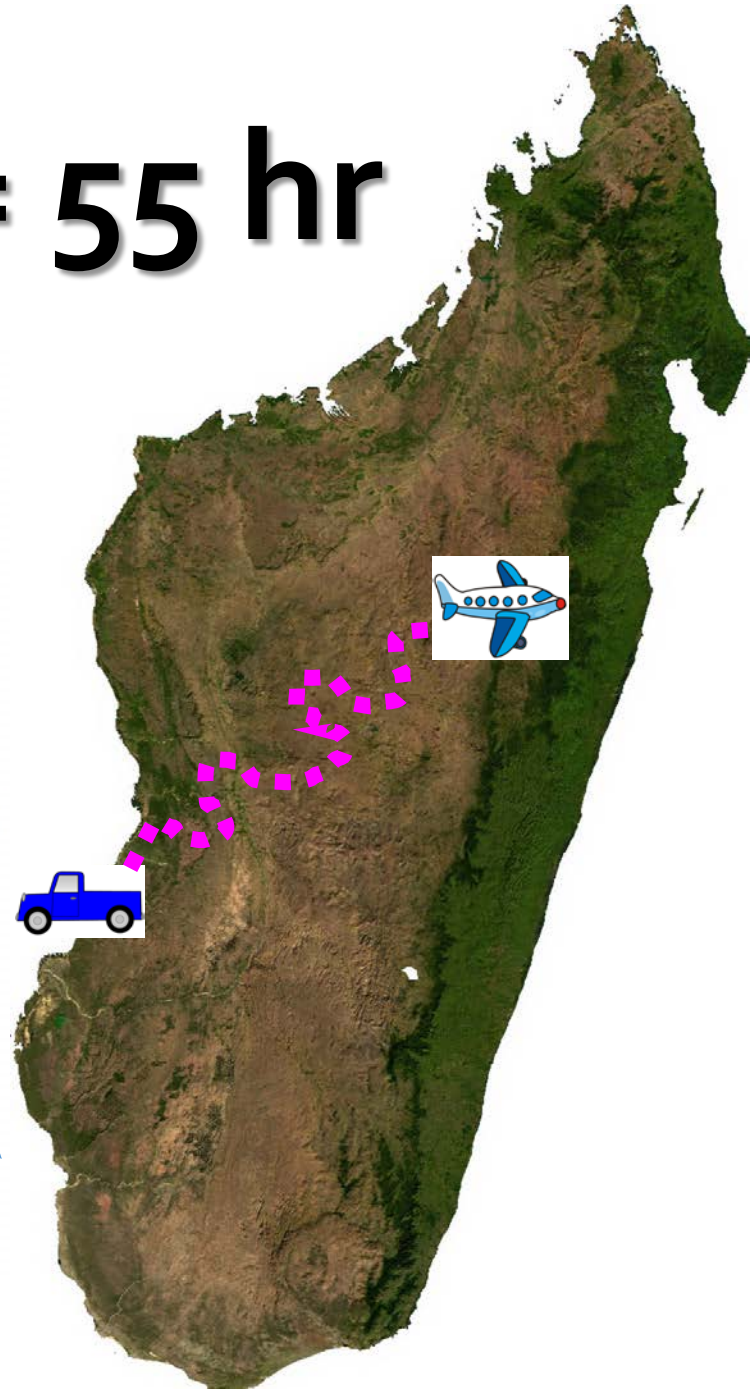
3 + 10 + 11 + 12 + 15 hr





3 + 10 + 11 + 12 + 15 + 4 = 55 hr

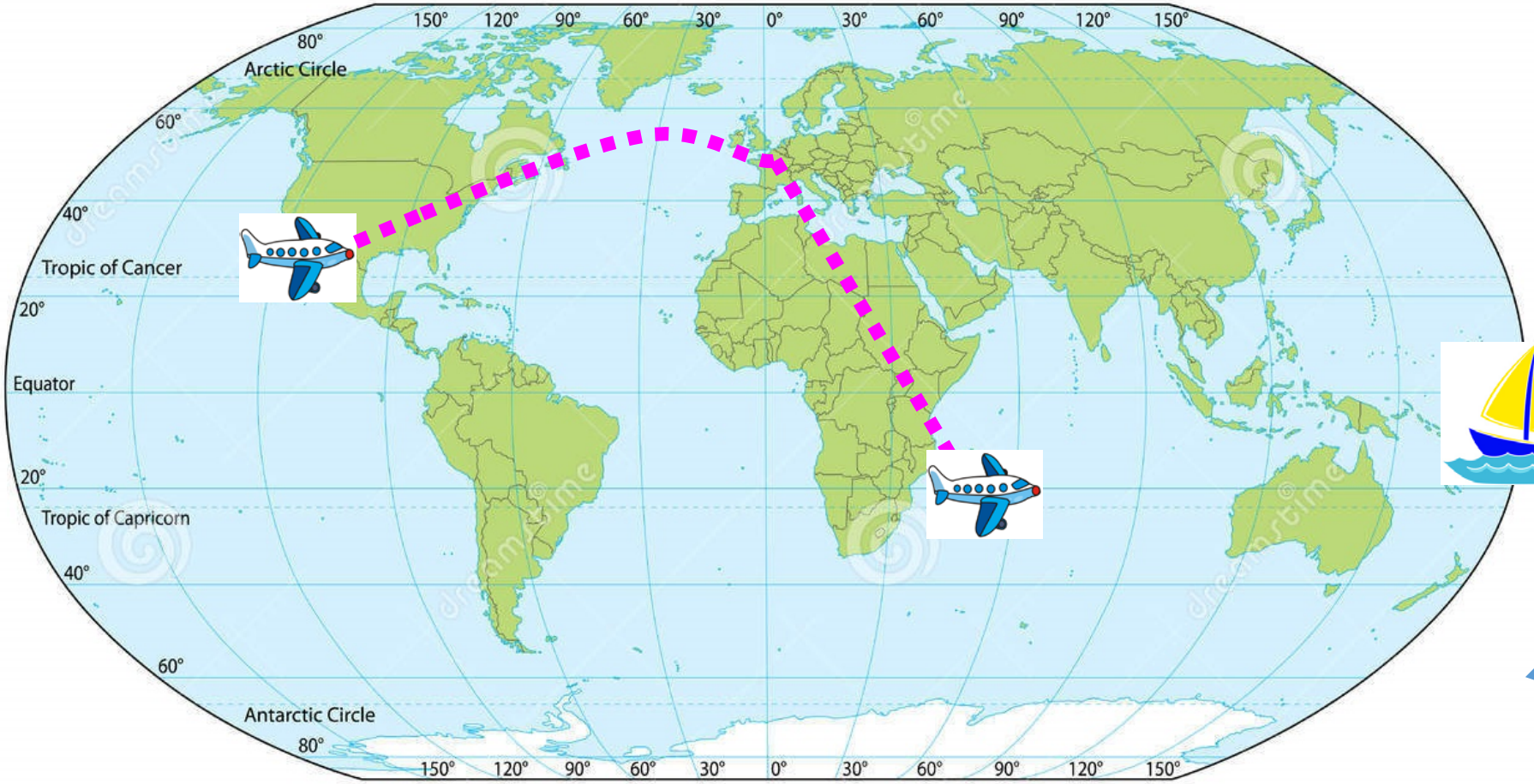


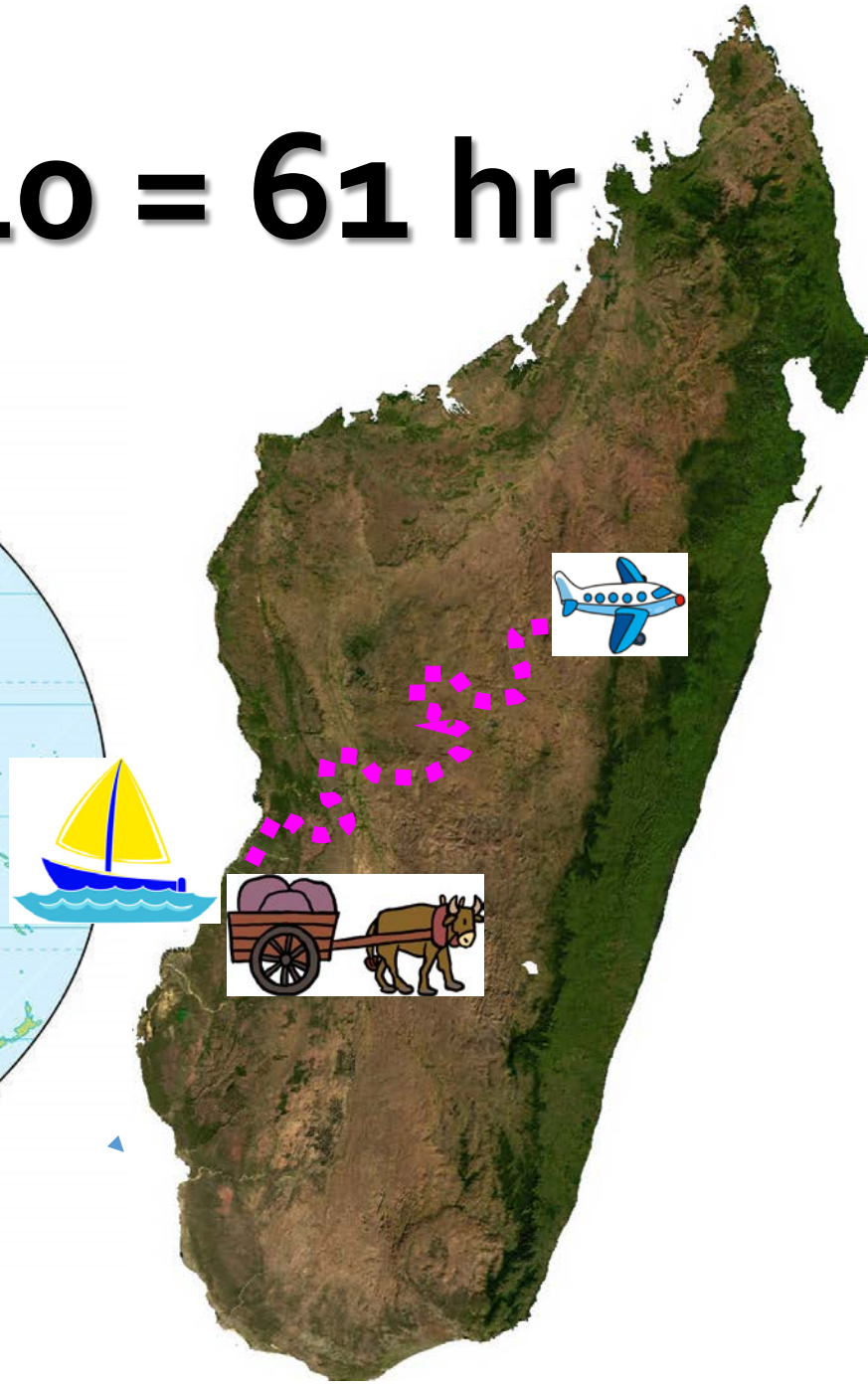


Roads: Sense of Adventure

Sense of Adventure

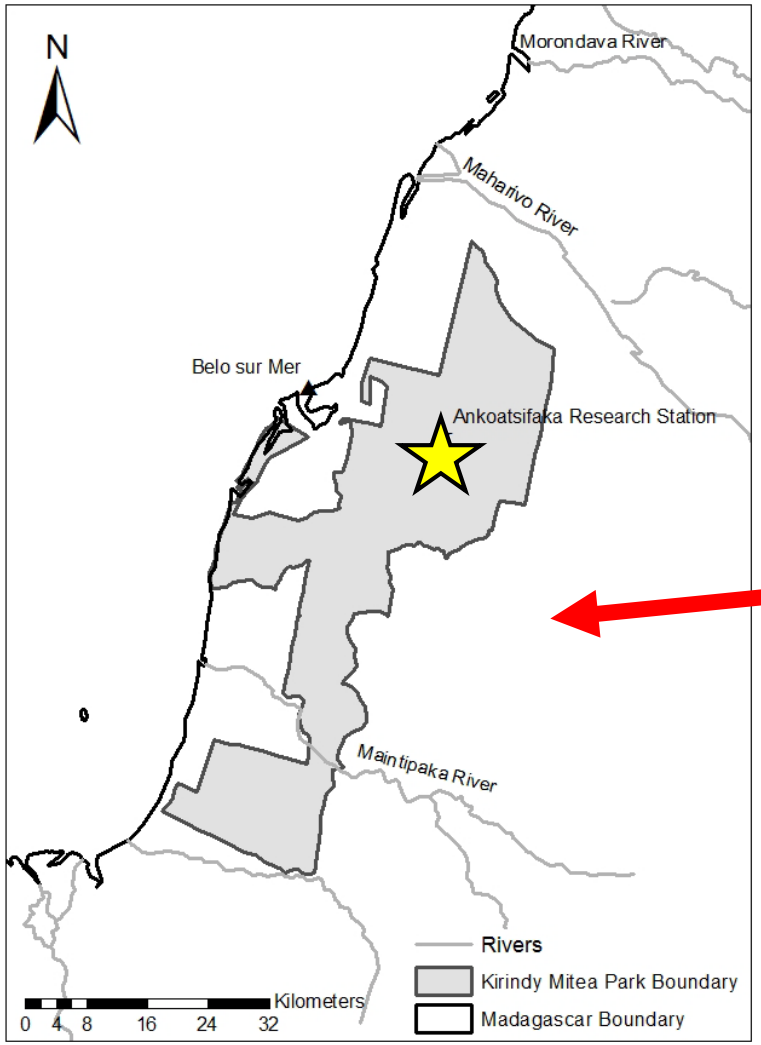
3 + 10 + 11 + 12 + 15 + 10 = 61 hr

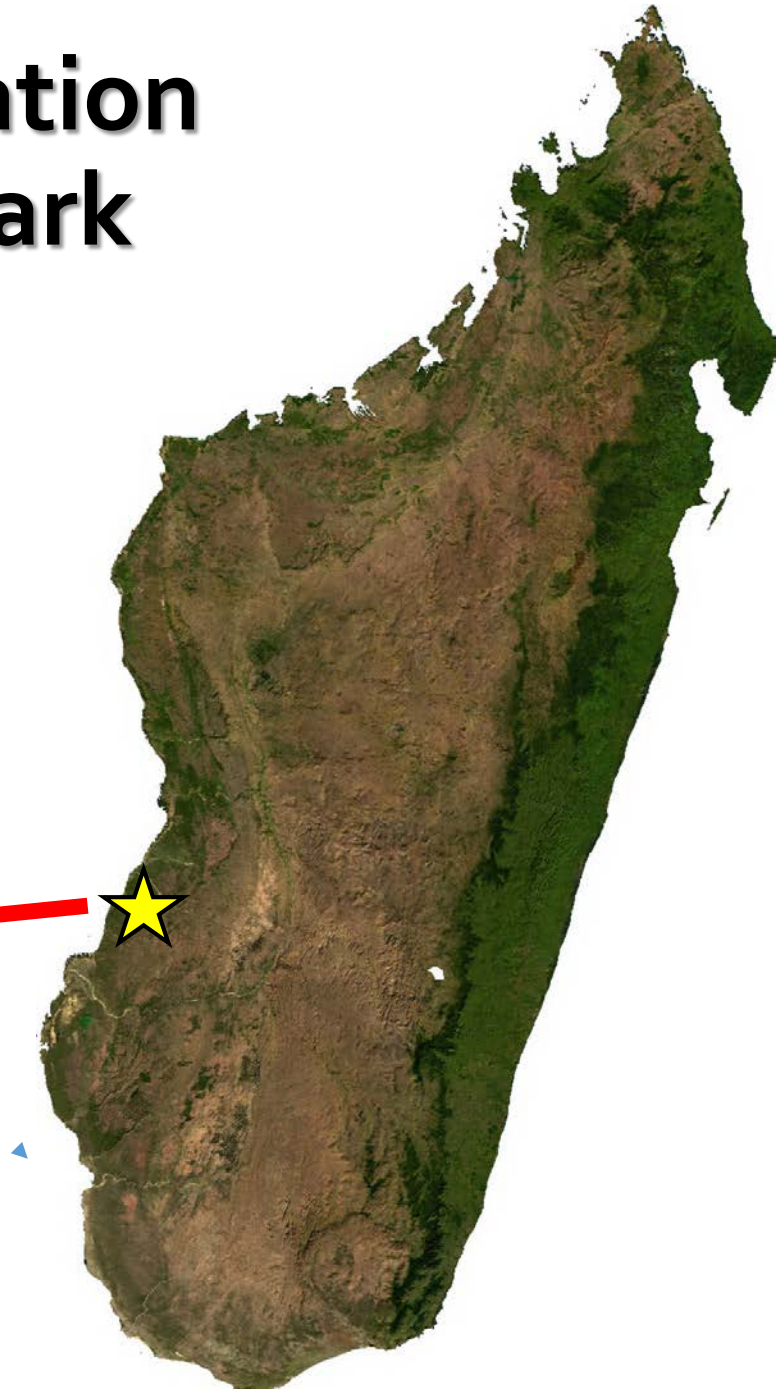




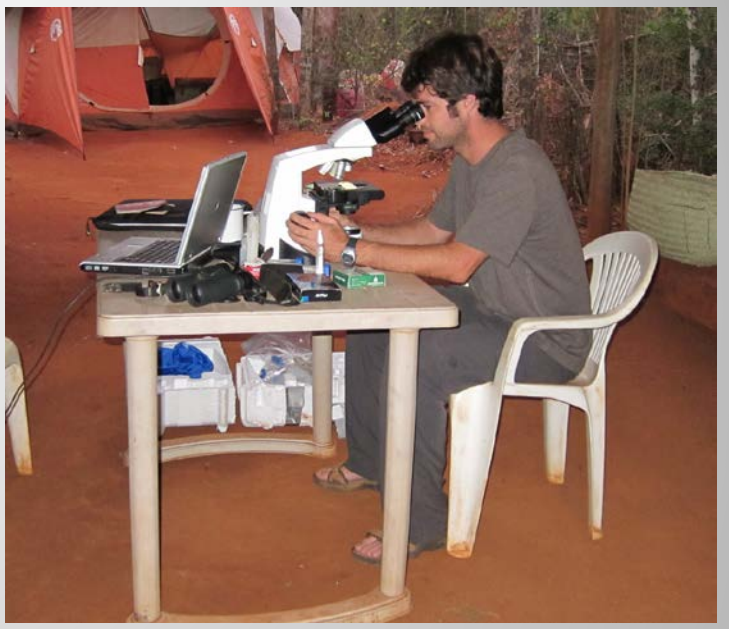
23 Years of Research on Wild Lemurs

Ankoatsifaka Research Station
Kirindy Mitea National Park



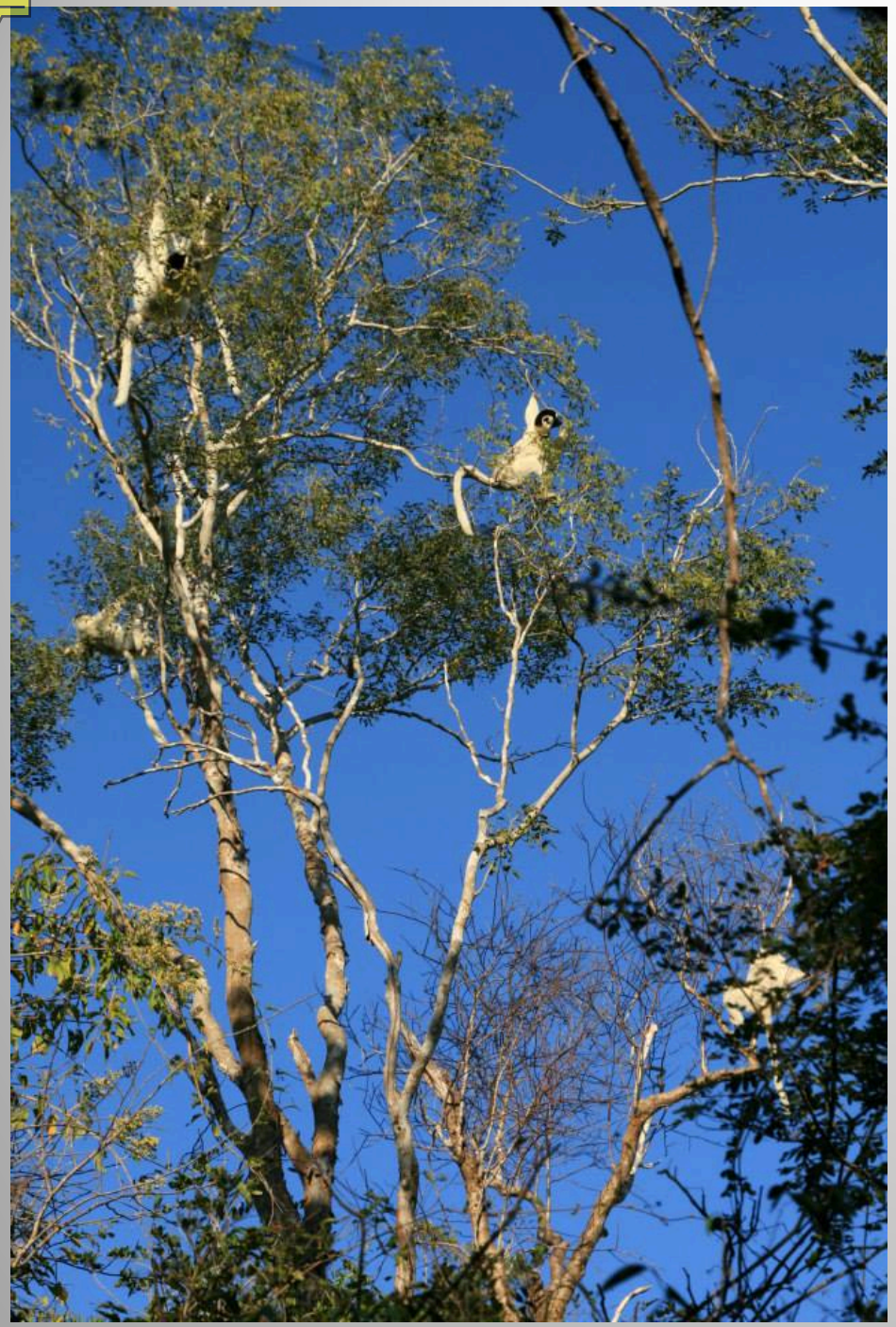


Ankoatsifaka Research Station

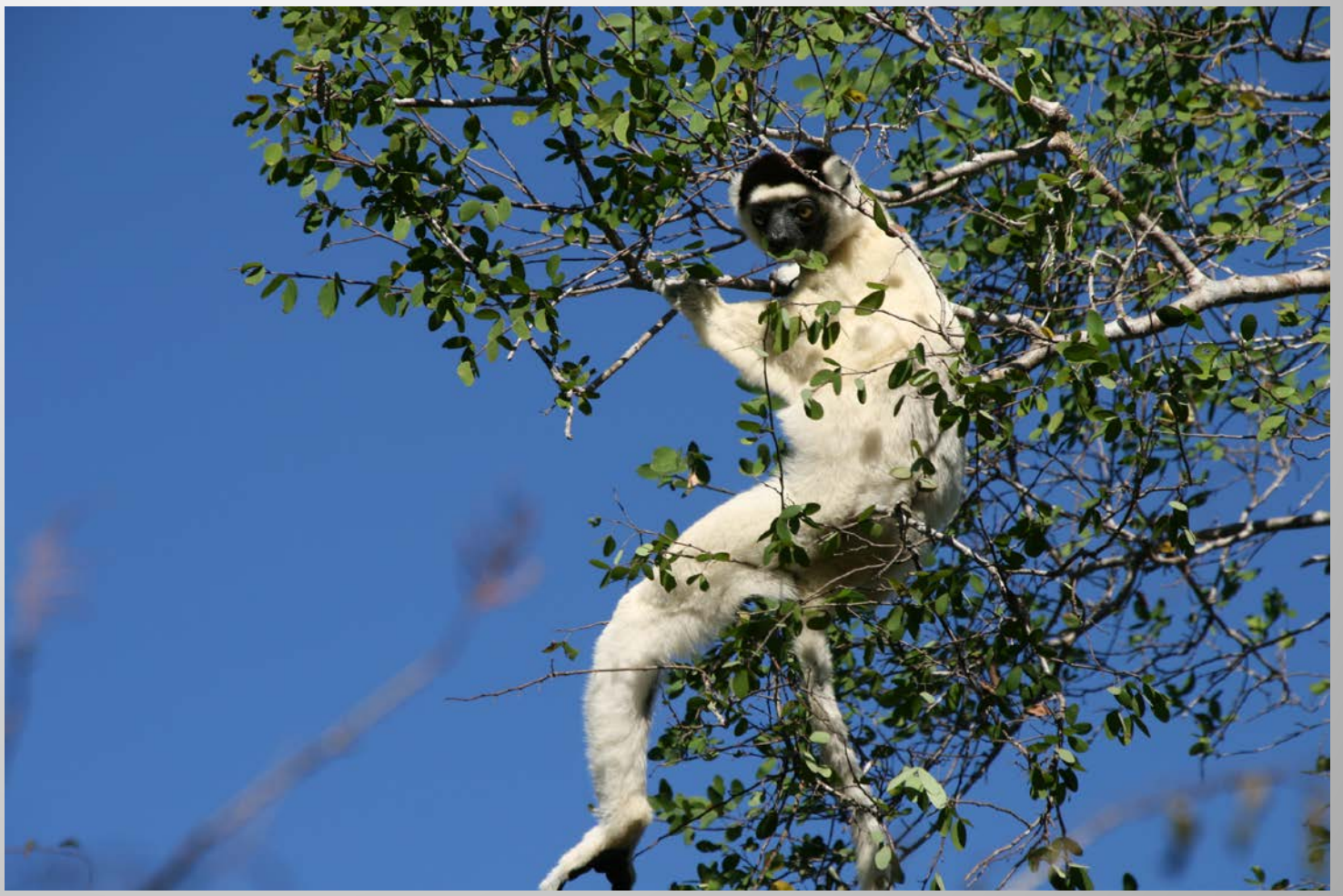


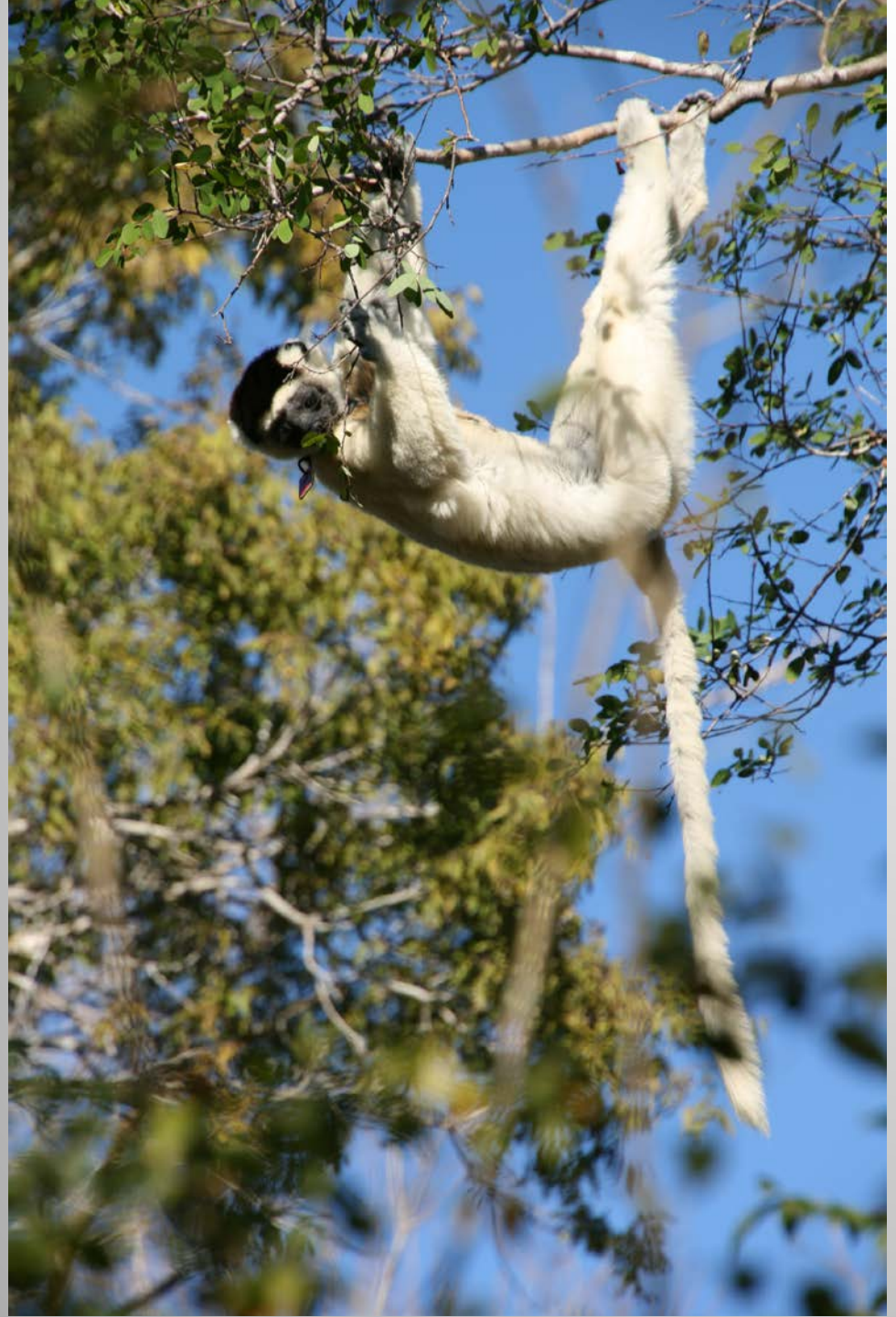
- 82 km of trails with 1700 “street signs”
- 14,000 trees identified & marked
- 130 sifaka habituated

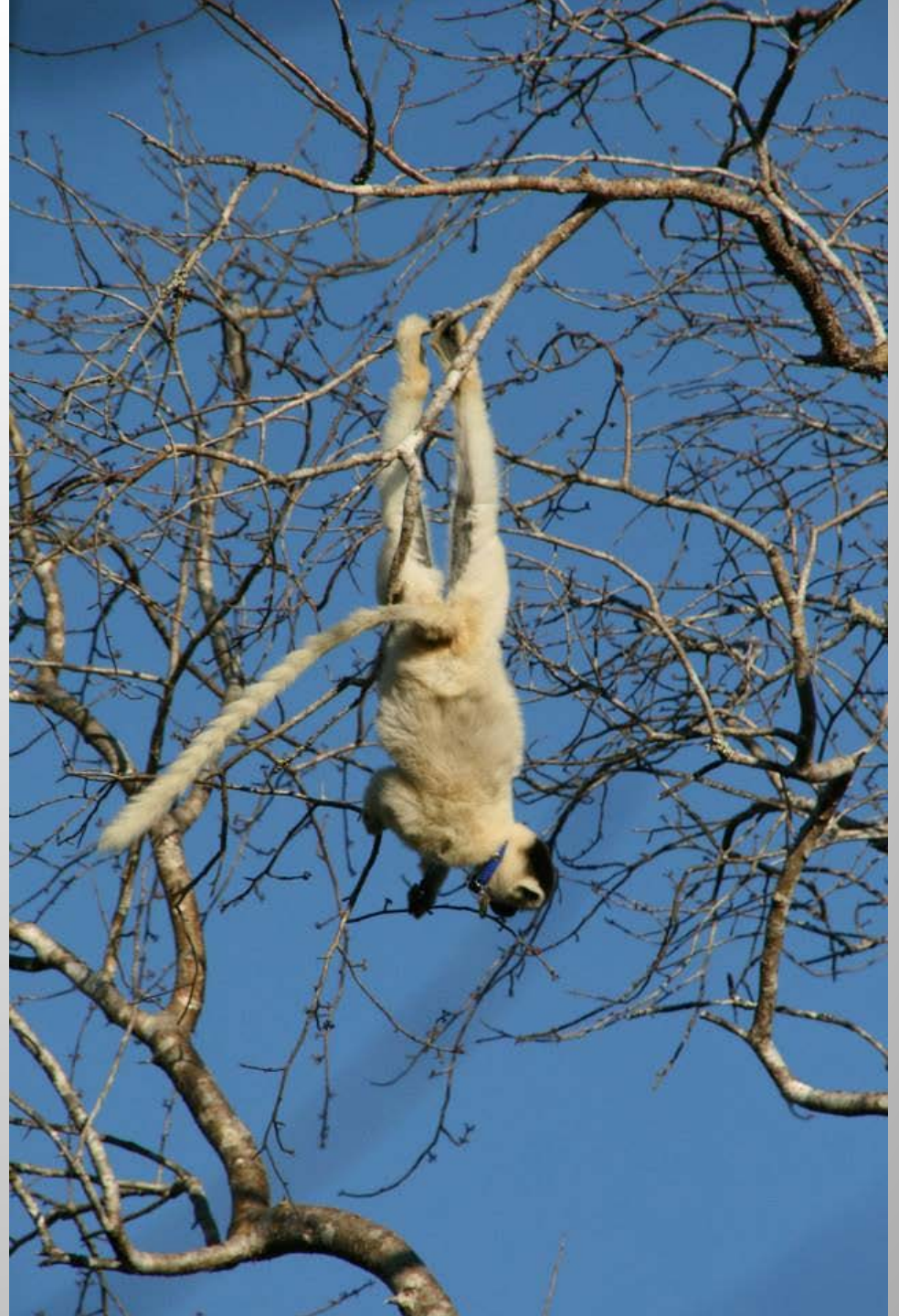
Sifaka live in social groups.



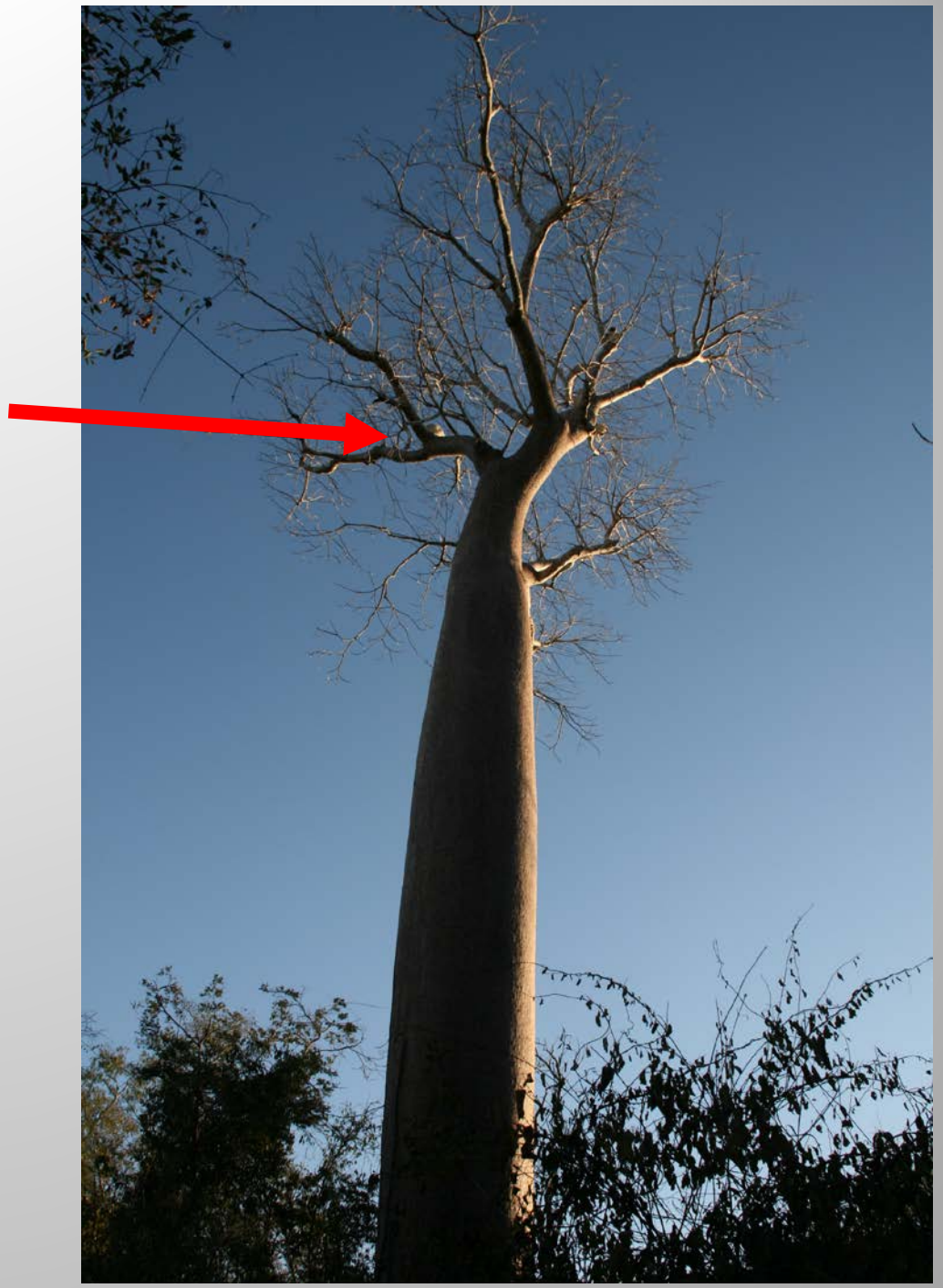
Verreaux's sifaka are arboreal.







They sleep in huddled in the biggest trees…

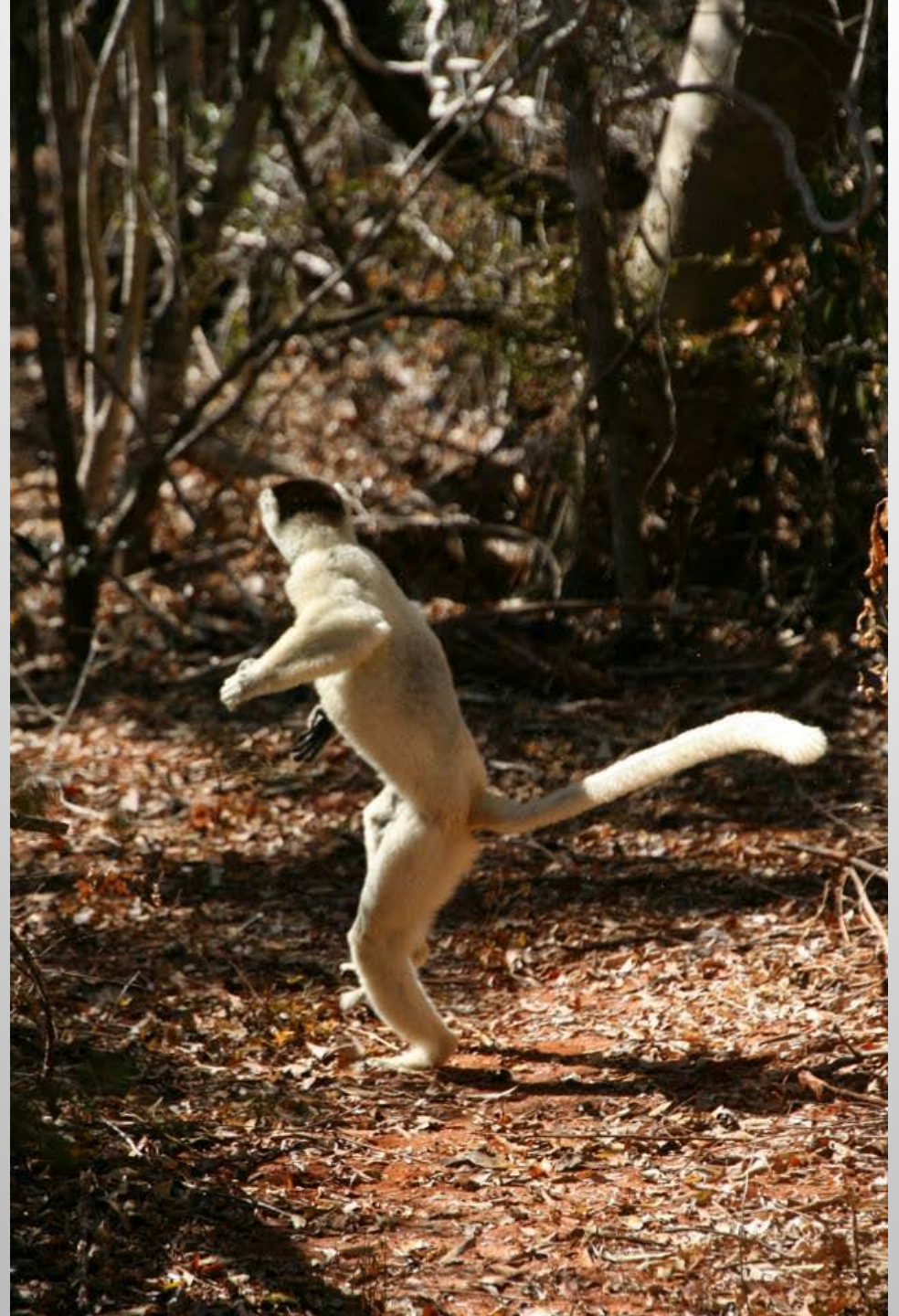


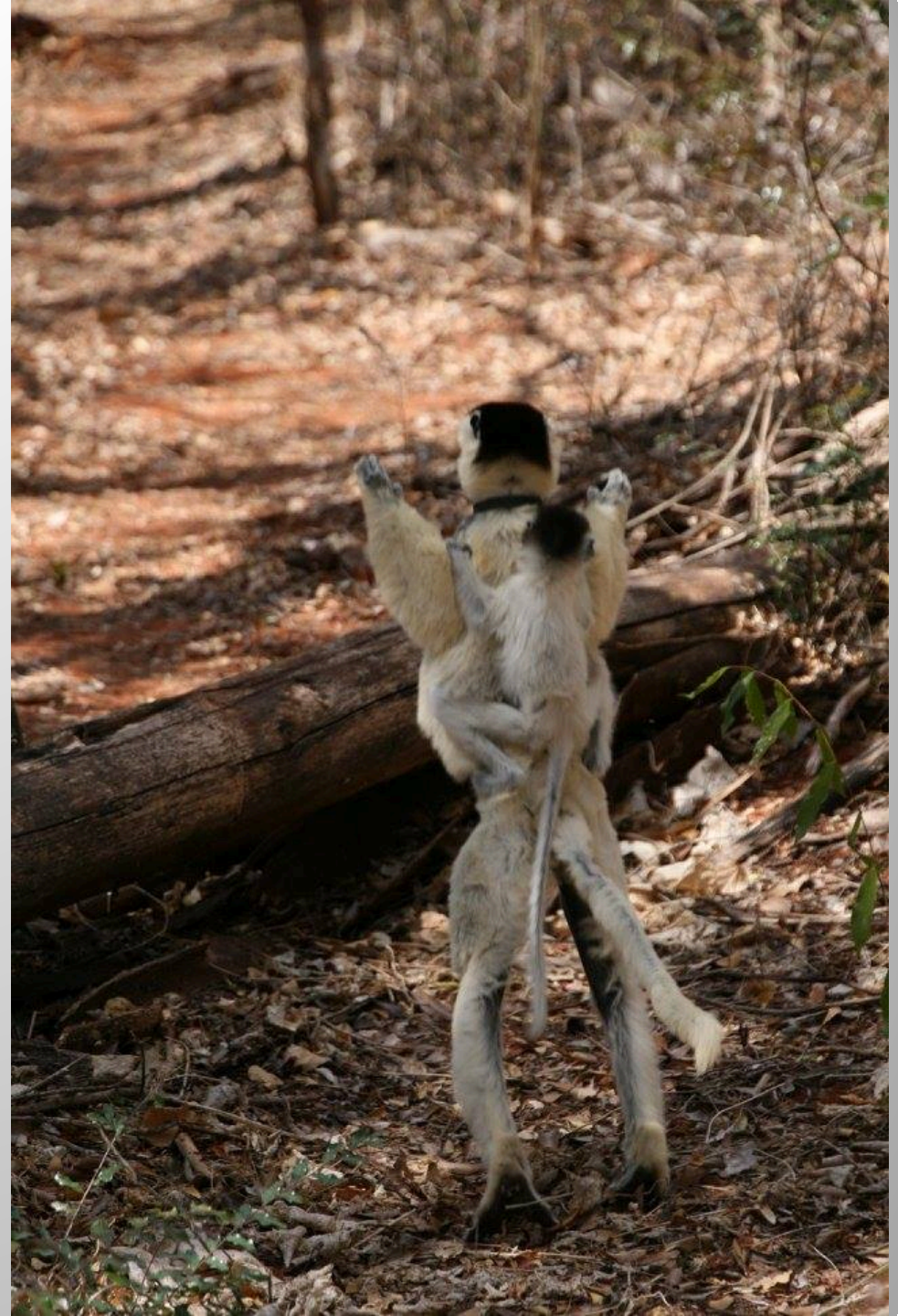
…to avoid being eaten by a fosa while they sleep.

…to avoid being eaten by a fosa while they sleep.

Sifaka are great jumpers!

Long legs for jumping.

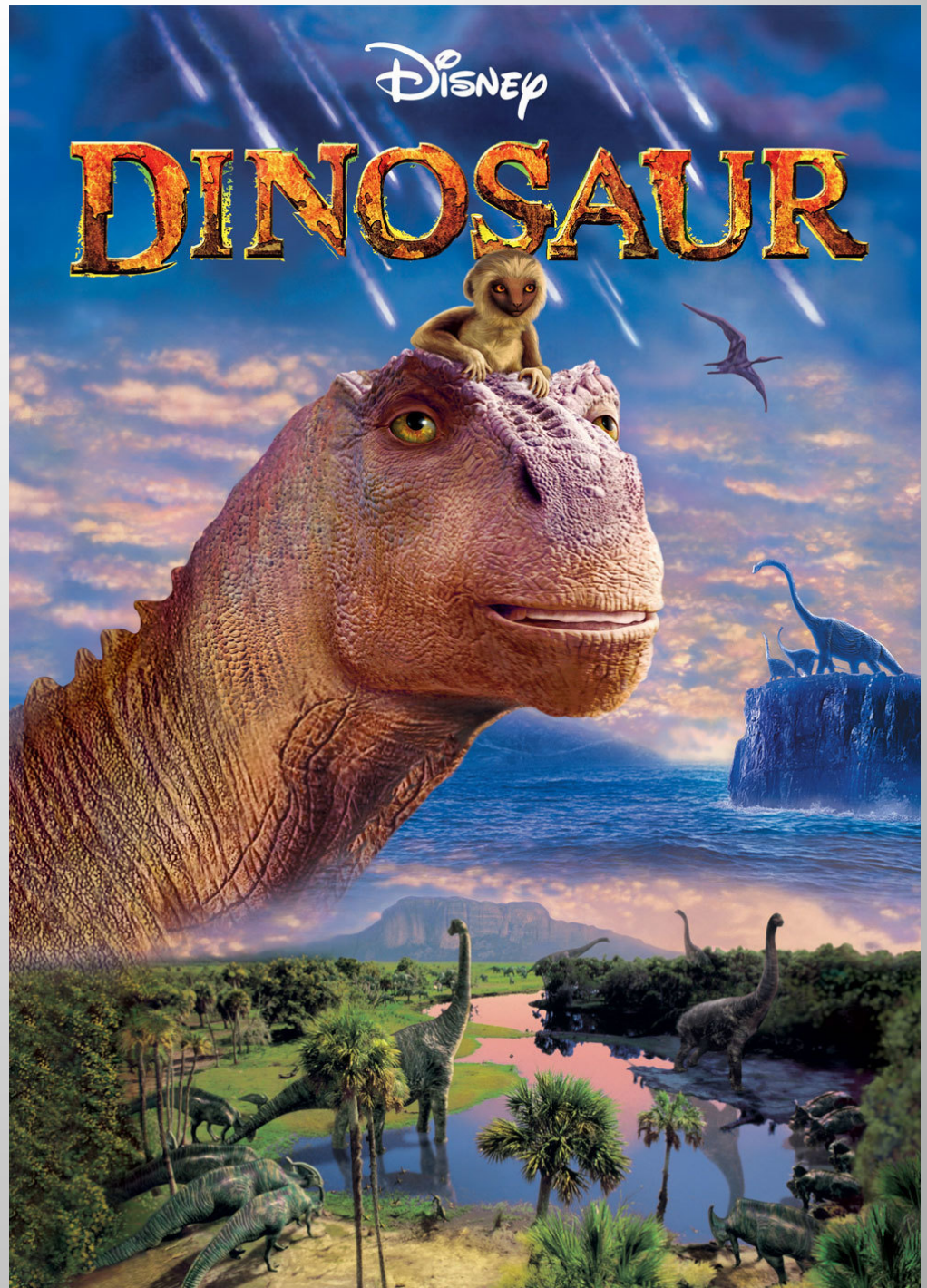




Infants

- 1 every year or 2
- Food, births, & survival
- Carrying & nursing influenced by locomotion


MADAGASCAR

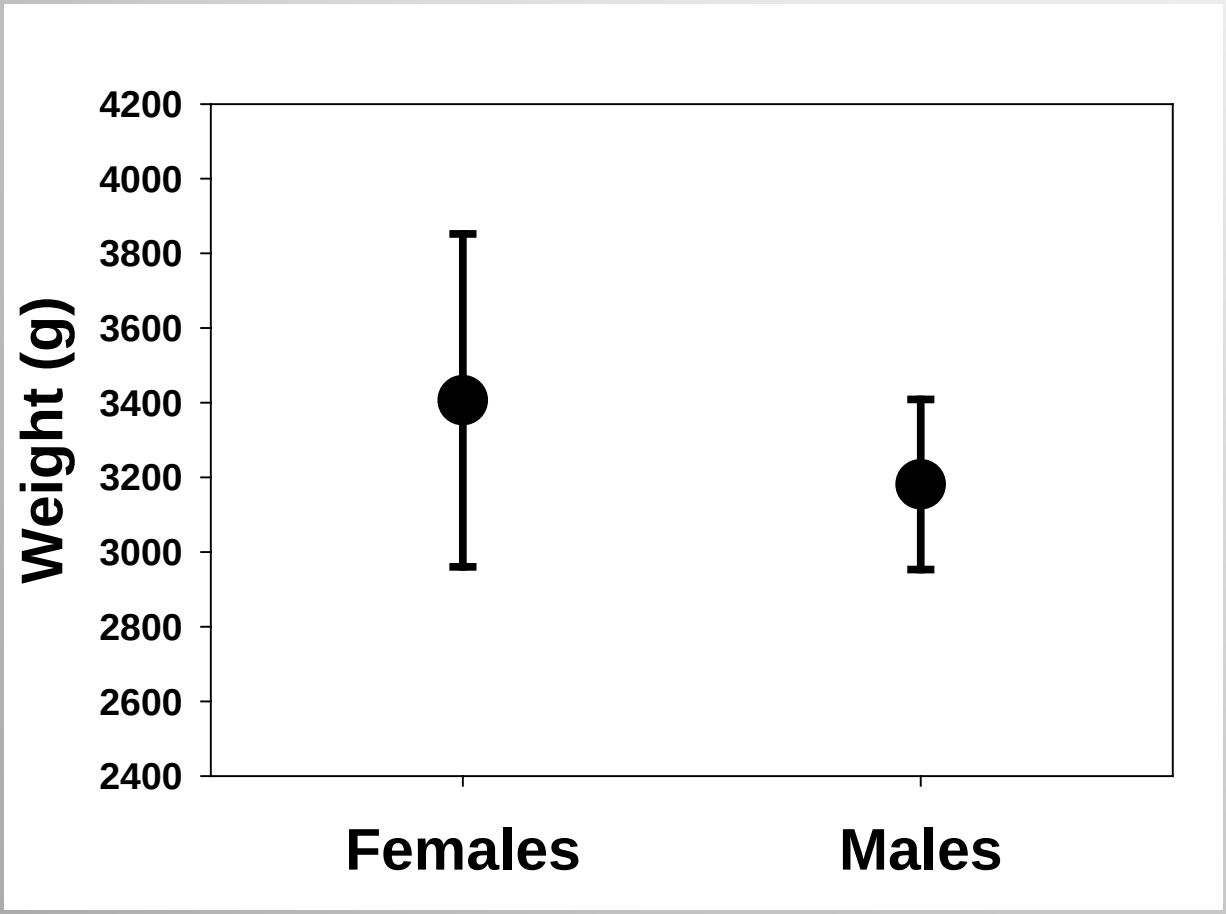

Disney
DINOSAUR

Contrary to Disney,

- Sifaka were not around with the dinosaurs in the Cretaceous

Contrary to Disney,

- Sifaka were not around with the dinosaurs in the Cretaceous
- Males are not larger than females, and …



Sifaka are female dominant.

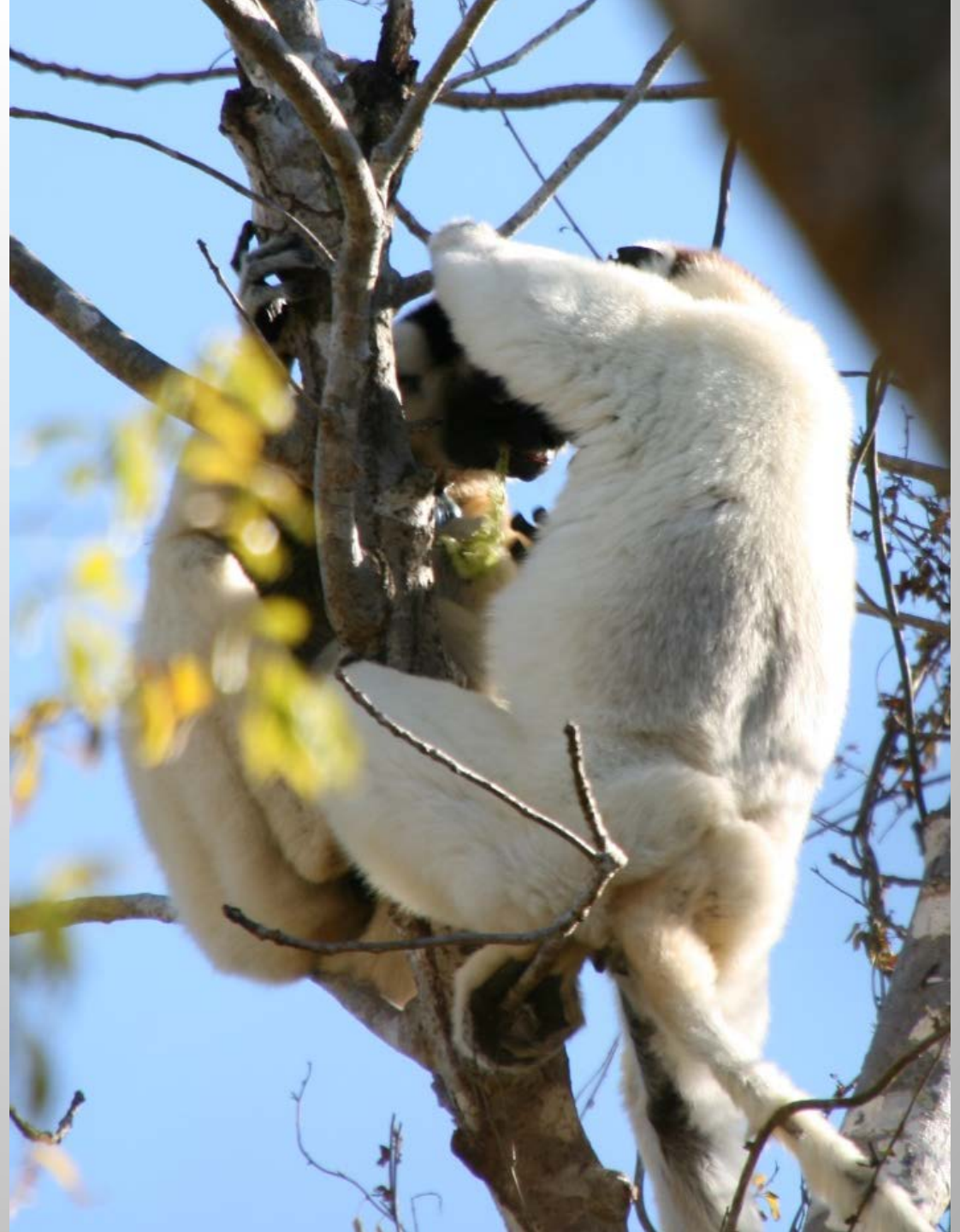
Rich eating seed pod.
Emily nearby.

Sifaka are female dominant.

Rich eating seed pod.
Emily wants it.

Sifaka are female dominant.

Rich eating seed pod.
Emily hits Rich.



Sifaka are female dominant.

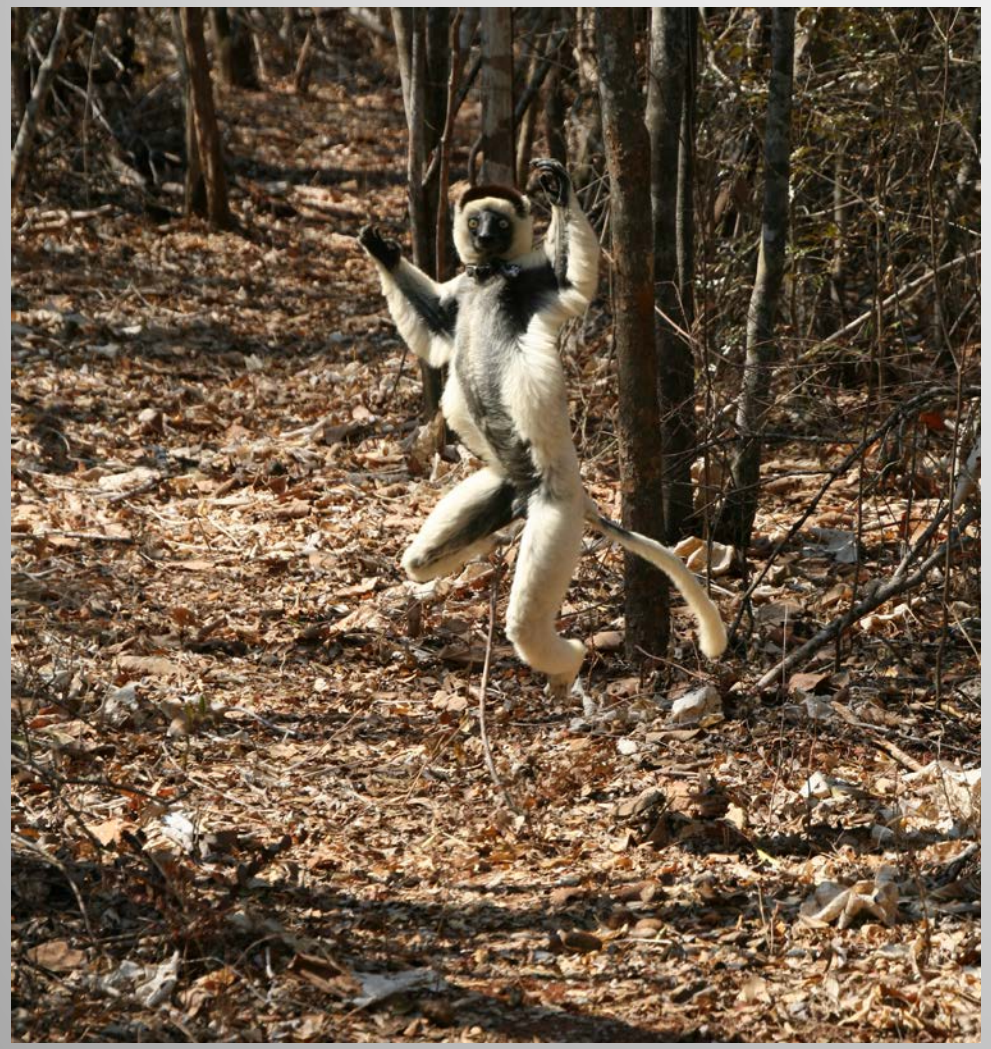
Rich eating seed pod.
Emily takes pod.

Sifaka are female dominant.

Rich loses pod.
Emily eats seed pod.

Sifaka are like “Wonder Woman”

Sifaka are like "Wonder Woman"



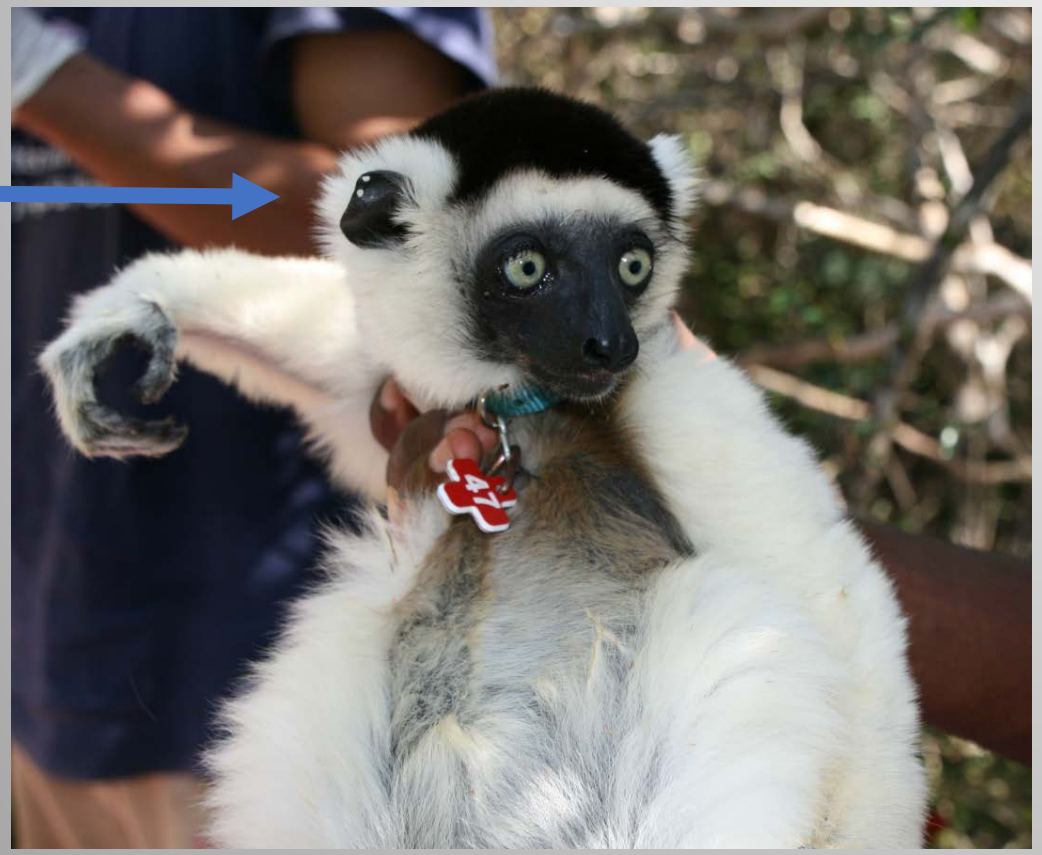
Science of Studying Sifaka

Methods: Locating & Identifying

Methods:

Capture & Measure

Methods:
Genetics, Health, & Identification



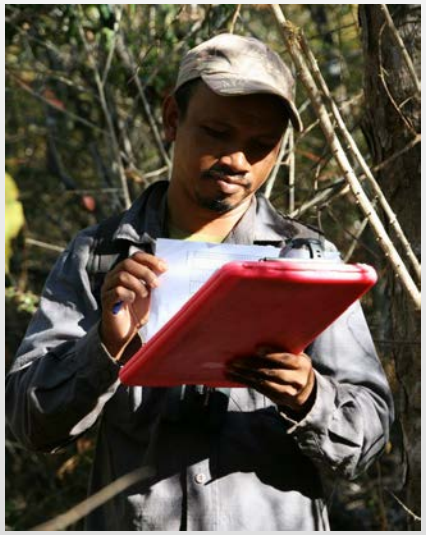
Fidy Rasambainarivo

Methods:
Behavior

Methods: Behavior

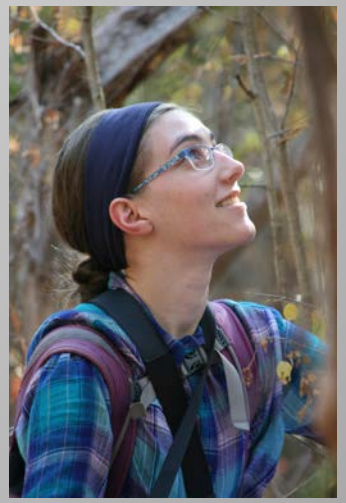
Assistants:

Max, Francis, Daniel



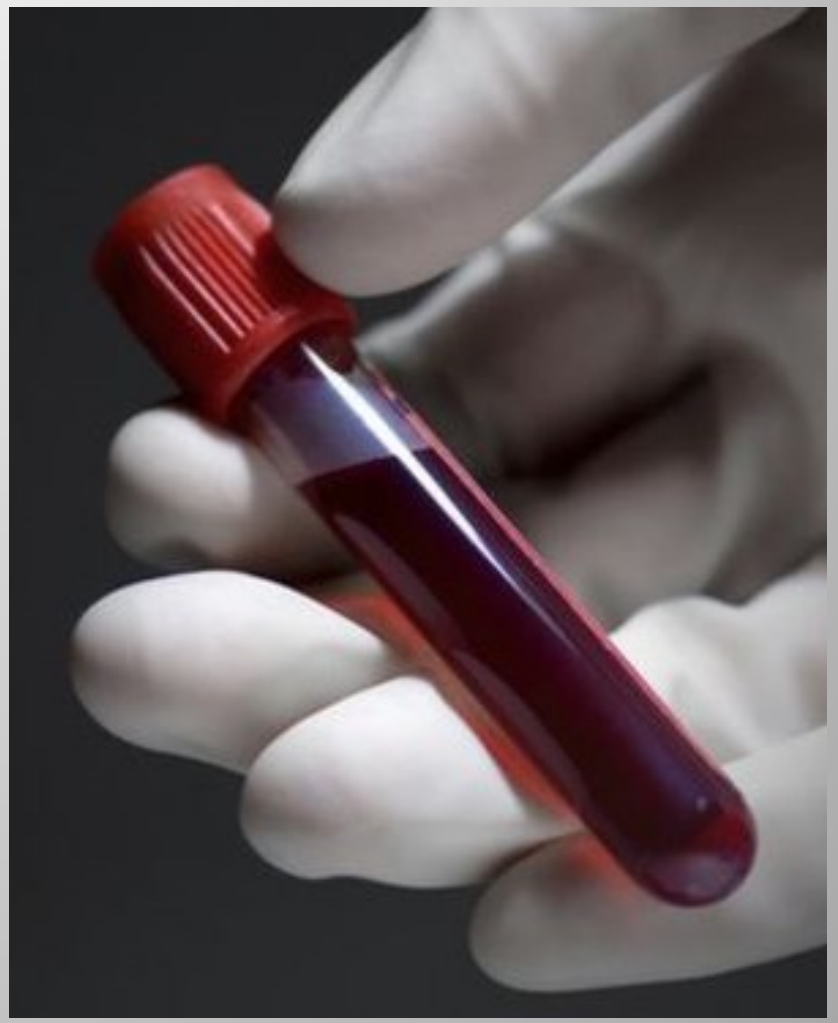
Students & Volunteers:

Felana, Elvis, Rachel, Meredith



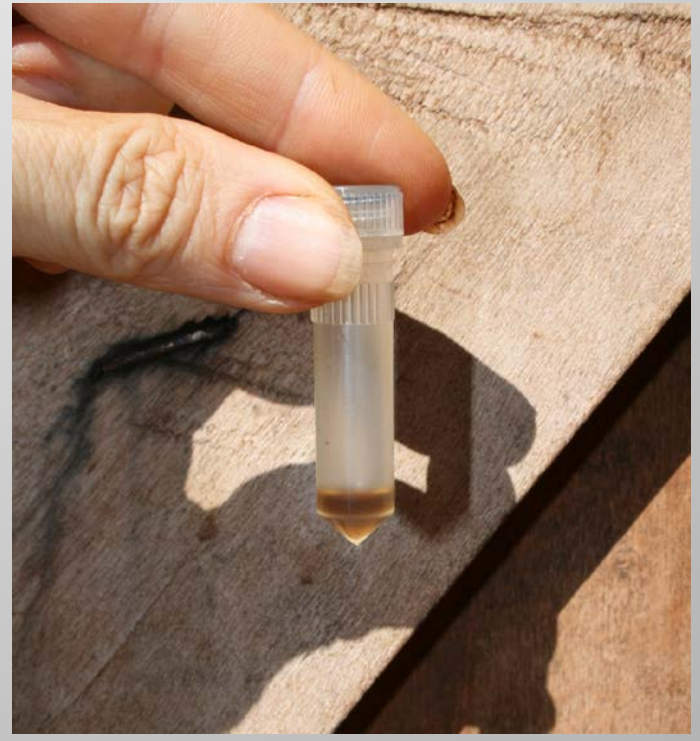
Sifaka collecting data on us?

Physiology & Behavior: Hormones

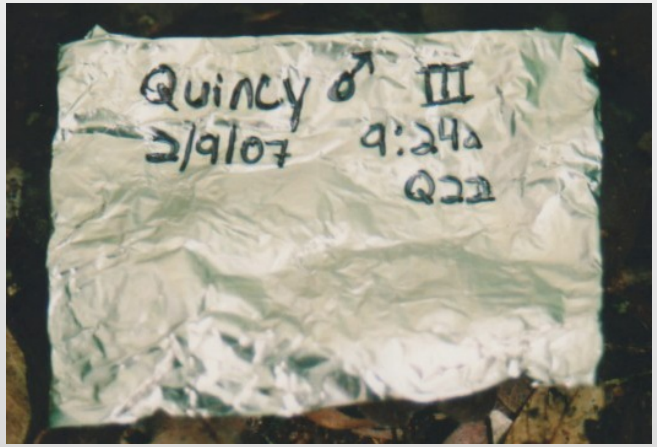


Methods: Hormones
Collecting pee

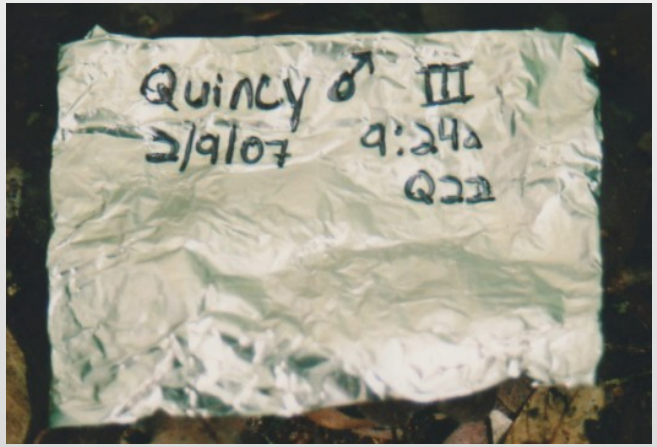
Methods: Hormones
Collecting pee

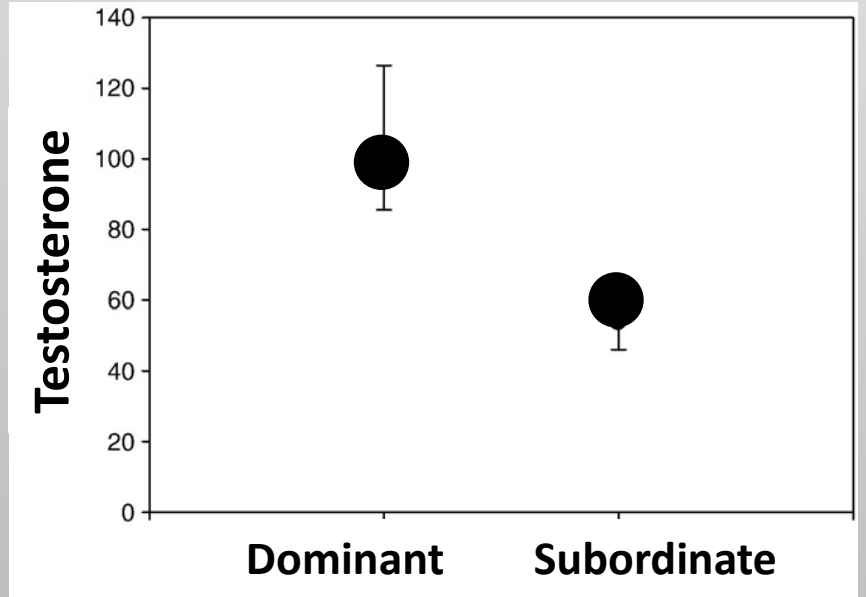


Methods: Hormones
Collecting poop



Methods: Hormones
Collecting poop





Data to understand social relationships

- ~~Surveys~~
  - Behavior
  - Hormones
  - Genetics
  - Kinship
  - Health
  - Stress
  - Body size
  - Demography

Power in Animals

Power arises whenever there is an inequality in a relationship.

Resources

Coalition Partners

Knowledge

Fighting Ability

Mating Opportunities

Sex Ratios

Power in Primate Societies: Superior Force

Resources

Coalition Partners

Knowledge

Fighting Ability

Mating Opportunities

Sex Ratios

Power in Primate Societies: Leverage

Resources

Partners

Knowledge

Fighting Ability

Mating Opportunities

Sex Ratios

What is power good for?

- **Fitness:**

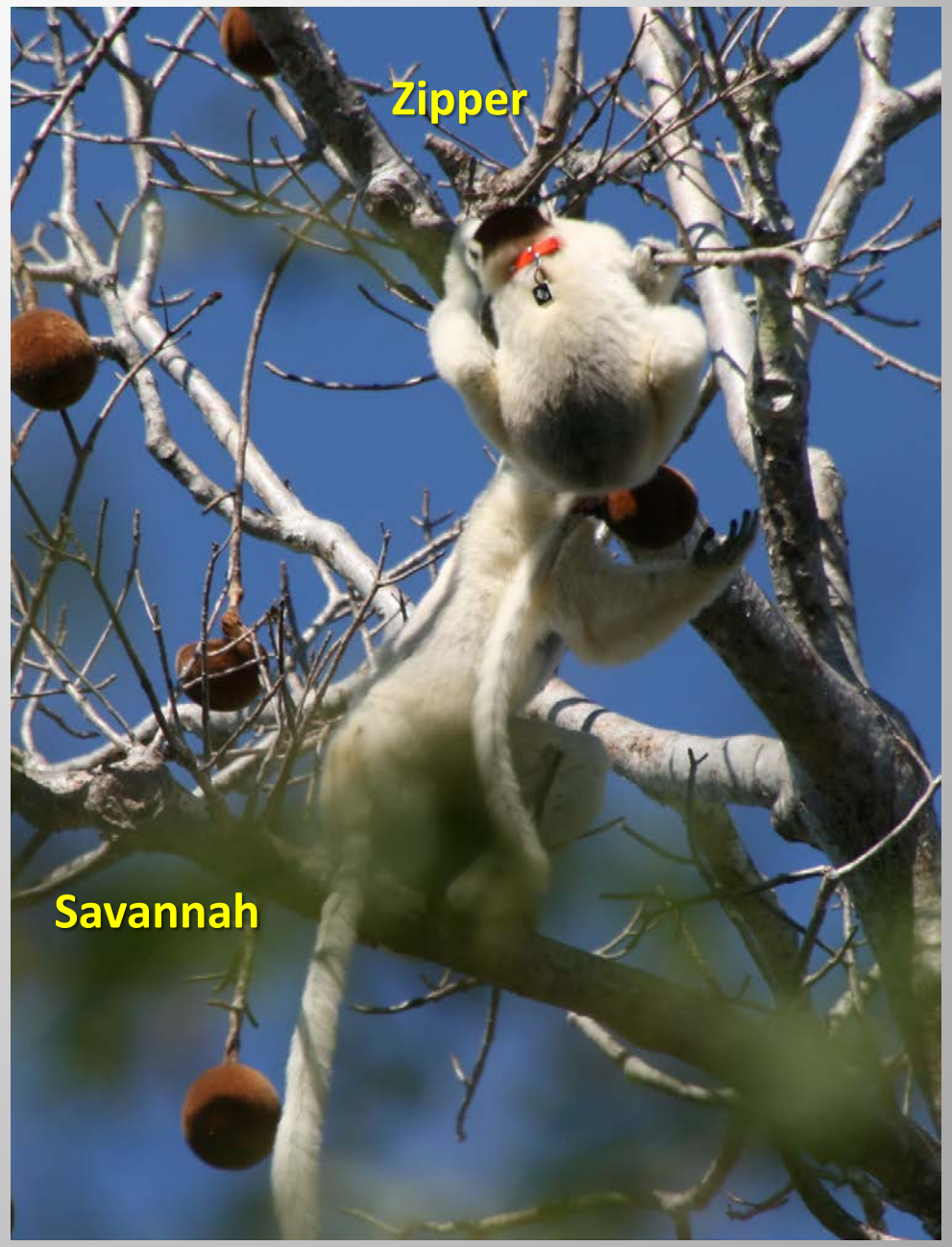
  Do they pass on their genes to the next generation?

  - **Who has babies?**
  - **Do those babies survive?**
  - **Do their babies grow up and have babies that survive?**

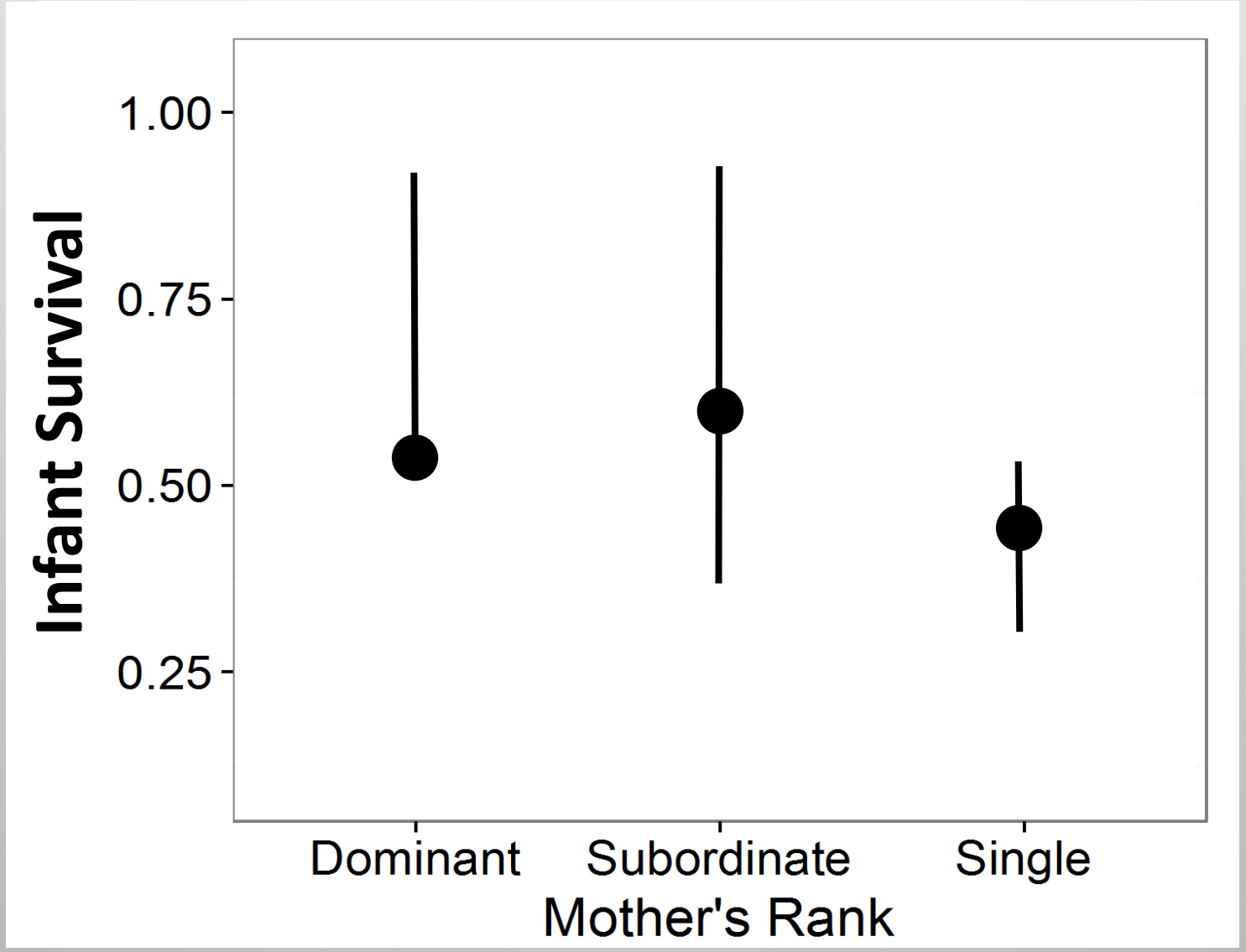
- **Conflicts over food**
  - **Do winners have more babies?**

Conflicts over Food

Conflicts over Food

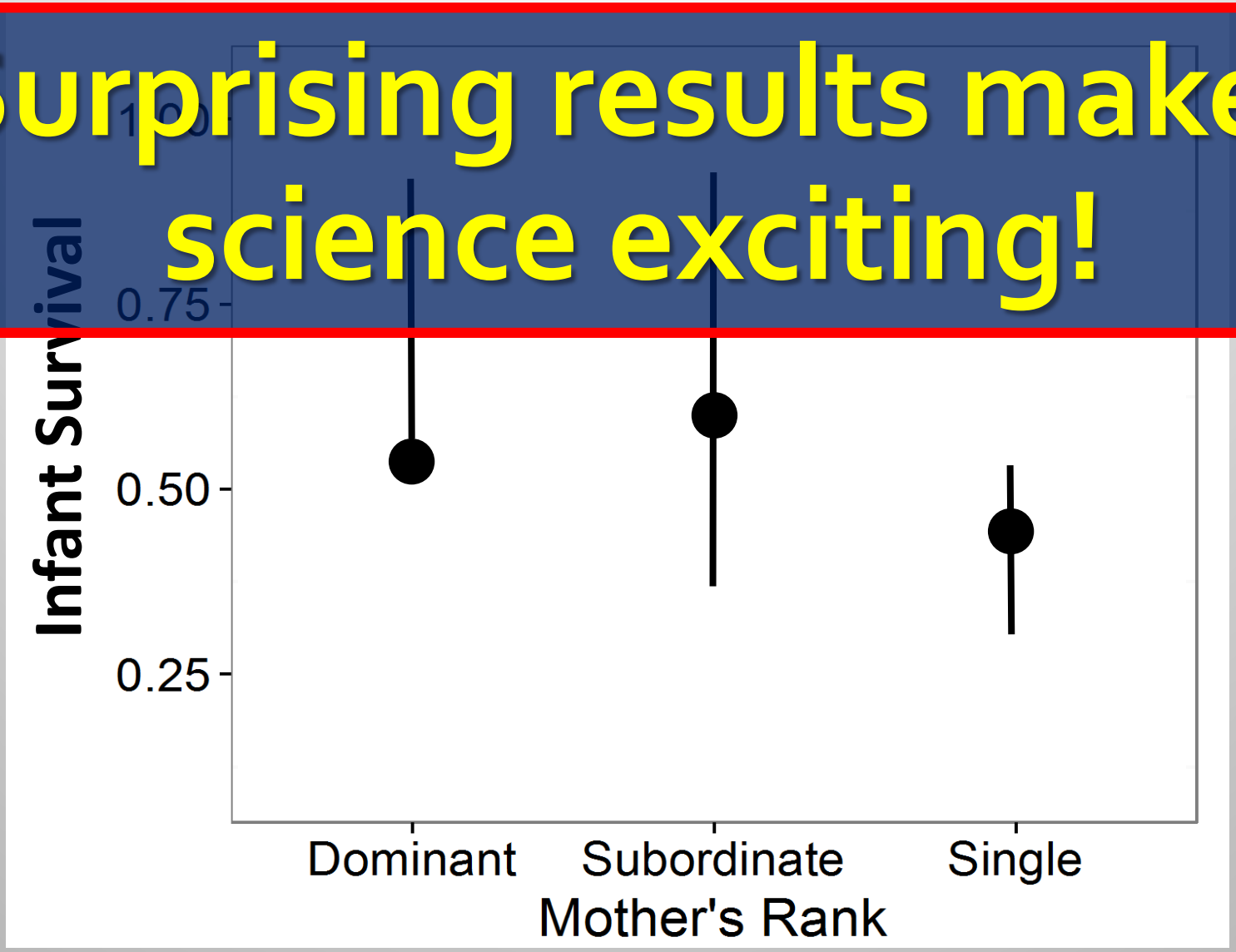


Does winning translate into higher fitness?



Does winning translate into higher fitness?

Surprising results makes science exciting!

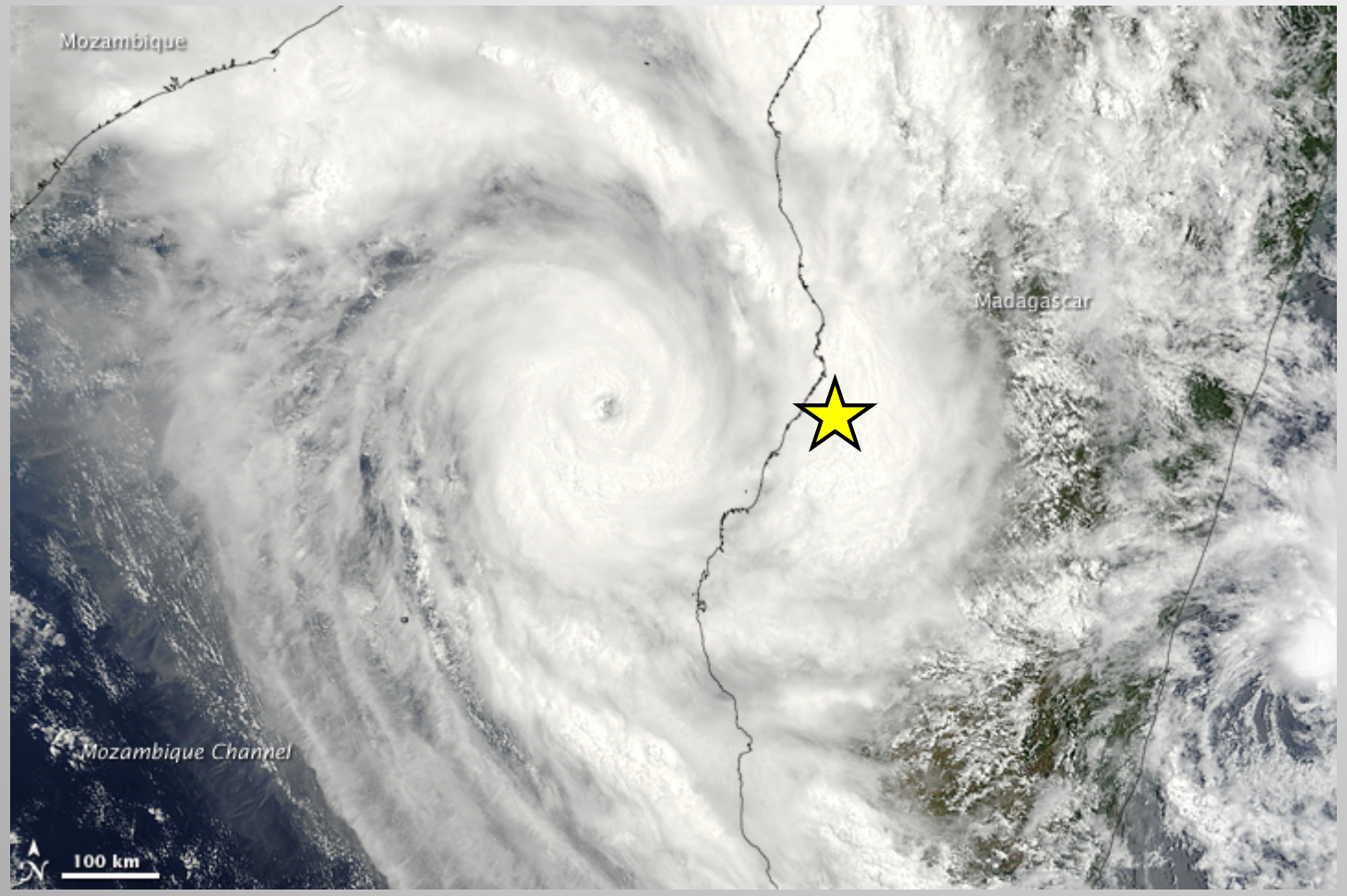


Sifaka are female dominant.

- Females rank above males
- Females get what they want

Evolution of power between the sexes

Evolution of Female Dominance: Hypotheses



- Unpredictable & harsh climate
- Hard to reproduce
- Females need priority access to food

Cyclone Fanele passing over Ankoatsifaka Research Station.

Evolution of Female Dominance: Hypotheses

1. <u>Male deference</u>: females mate with males who let them have the good food

wimpy males

Evolution of Female Dominance: Hypotheses

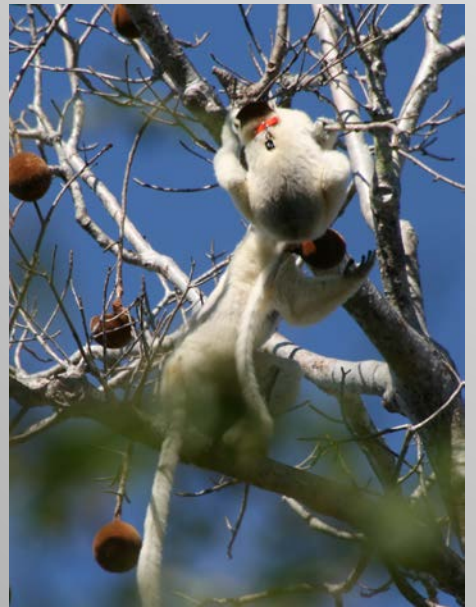
1. <u>Male deference</u>: females mate with males who let them have the good food

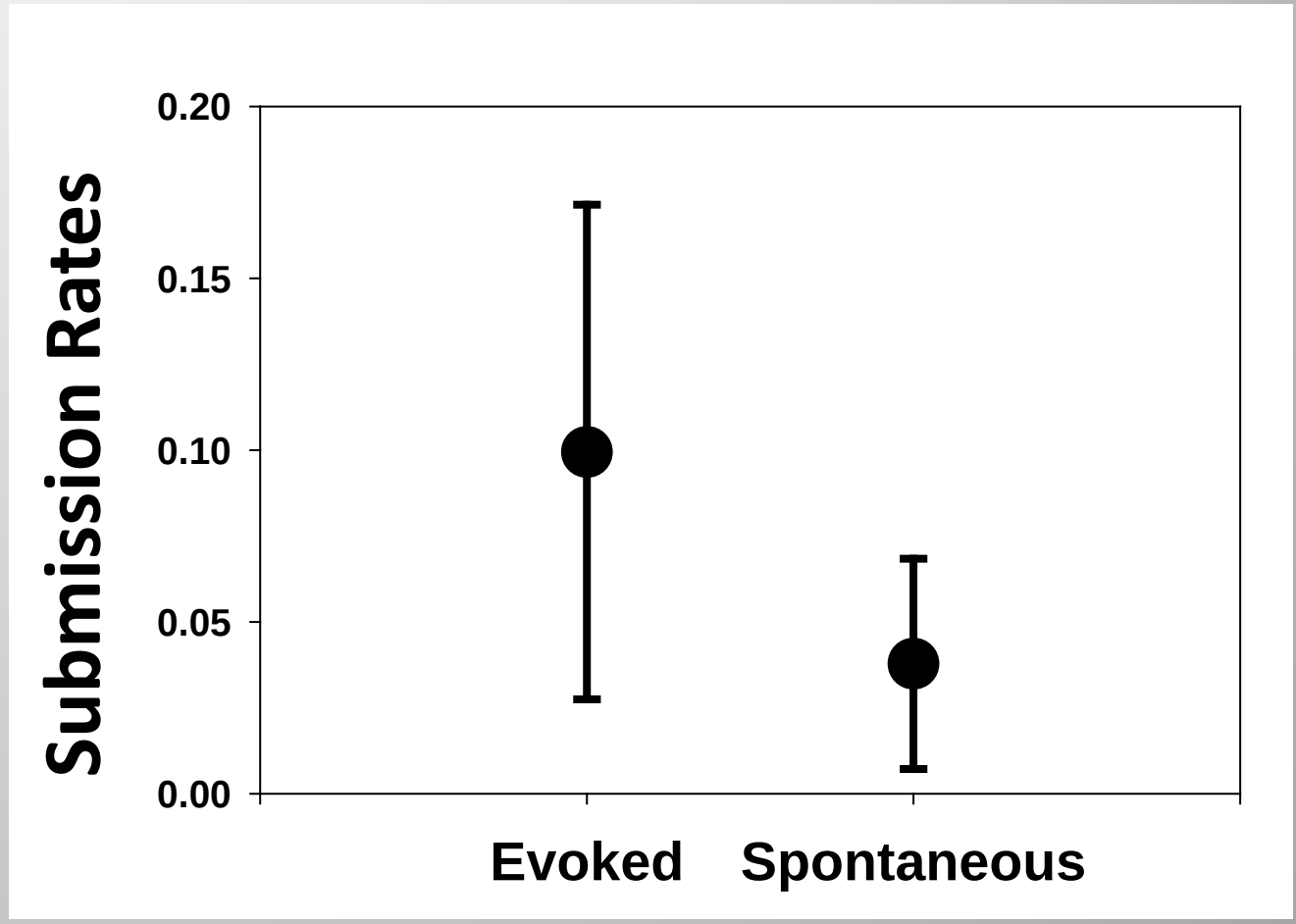
Prediction:

Males give females the food without any fuss.

Evolution of Female Dominance: Hypotheses

1. <u>Male deference</u>: females mate with males who let them have the good food





Evolution of Female Dominance: Hypotheses

1. **Male deference**: females mate with males who **let** them have the good food

Female dominance is seen as an evolutionary puzzle:

Why would males give up their power to females?

Evolution of Female Dominance: Hypotheses

1. <u>Male deference</u>: females mate with males who **let** them have the good food

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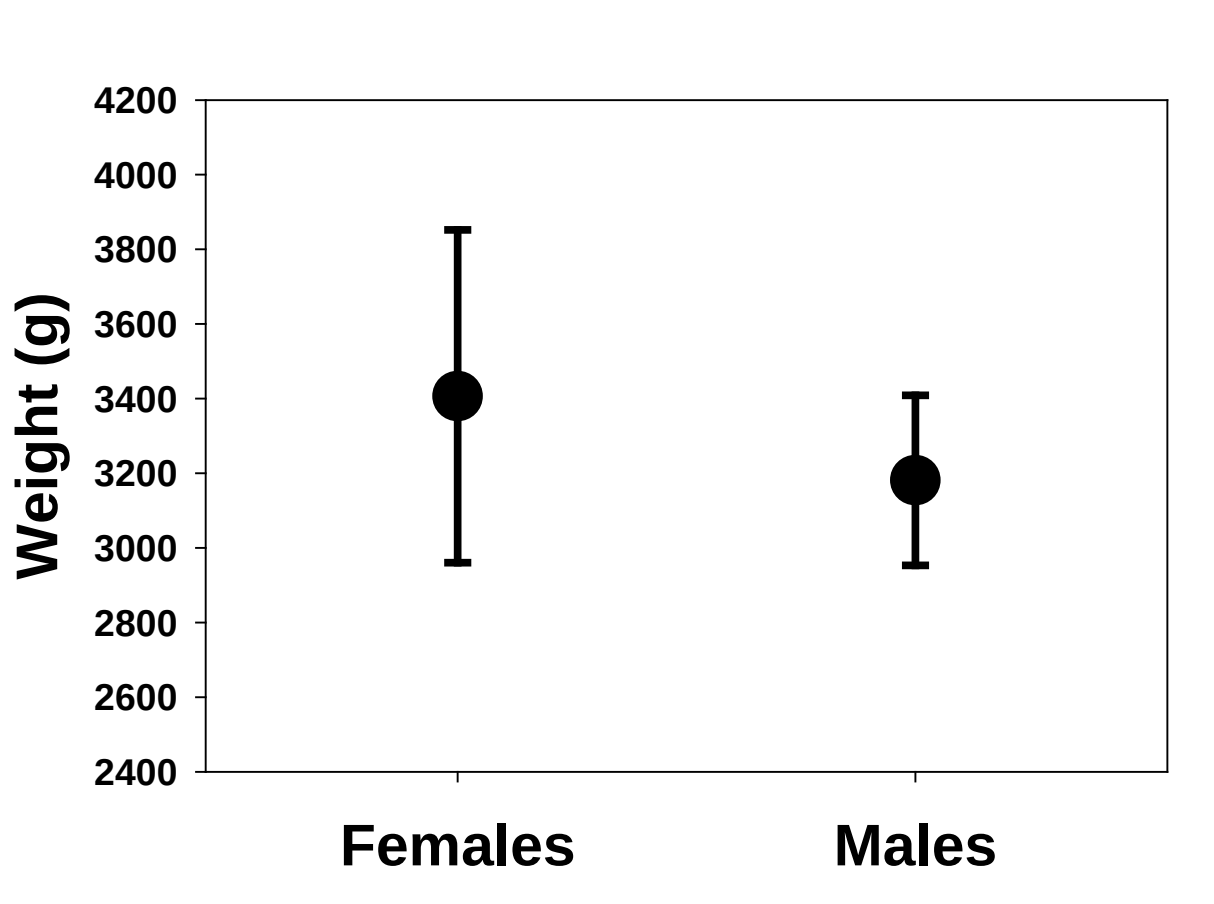
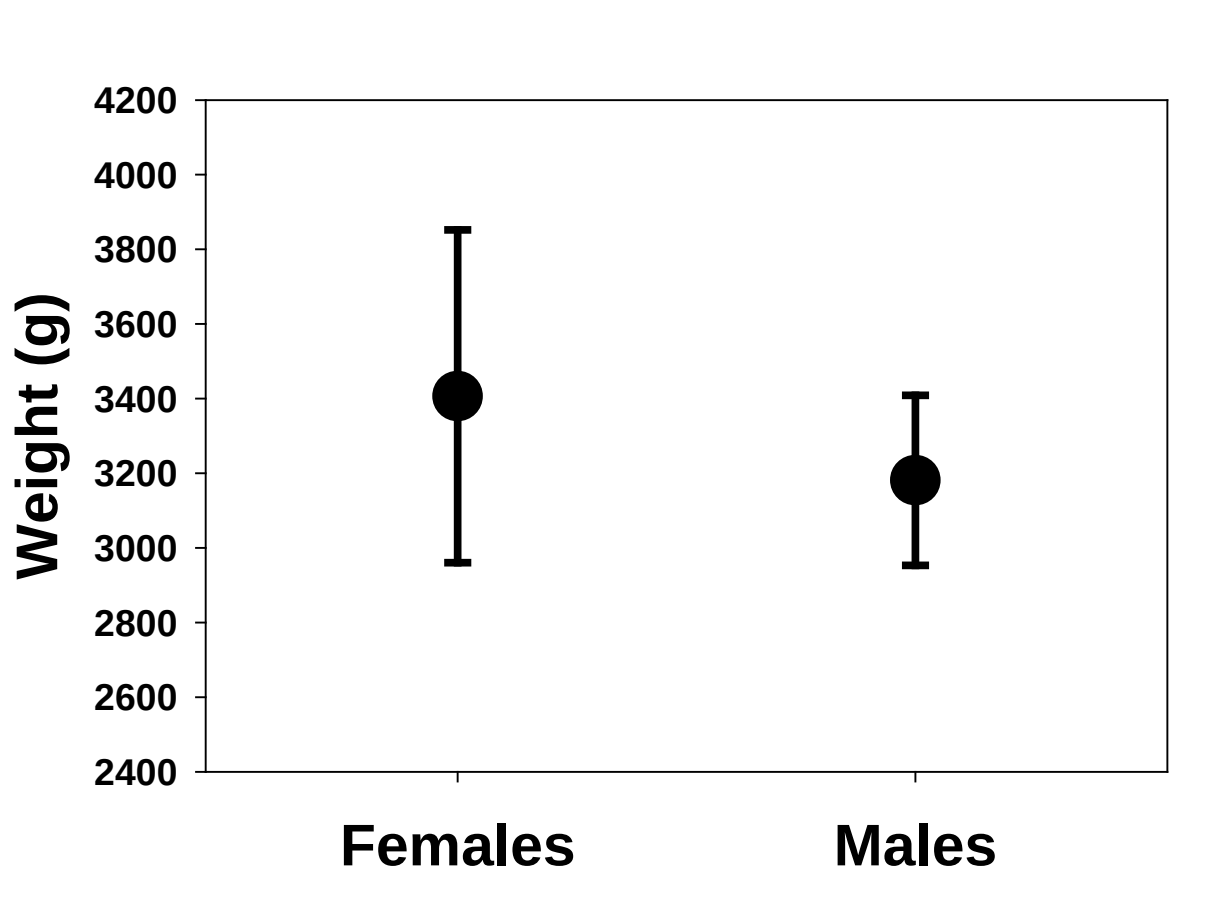
Why would males give up their power to females?



Evolution of Female Dominance: Hypotheses

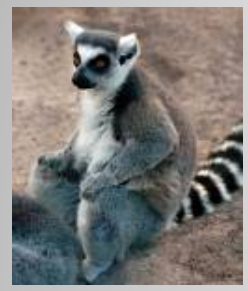
1. **Male deference**: females mate with males who **let** them have the good food



Female dominance is seen as an evolutionary puzzle:

Why would males give up their power to females?

Did males have the power?



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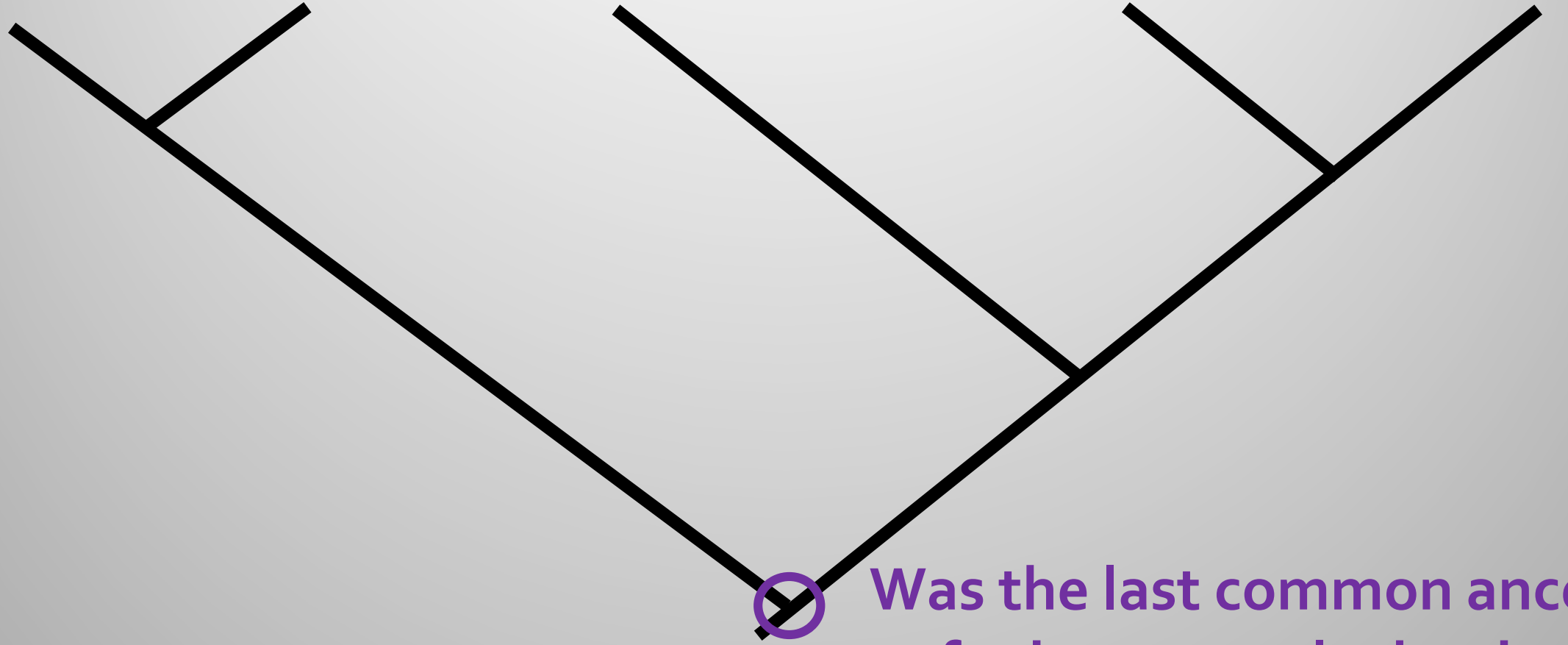
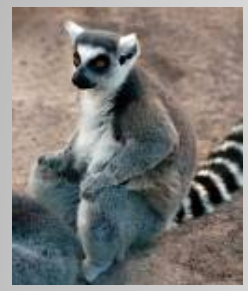


Was the last common ancestor of primates male dominant?



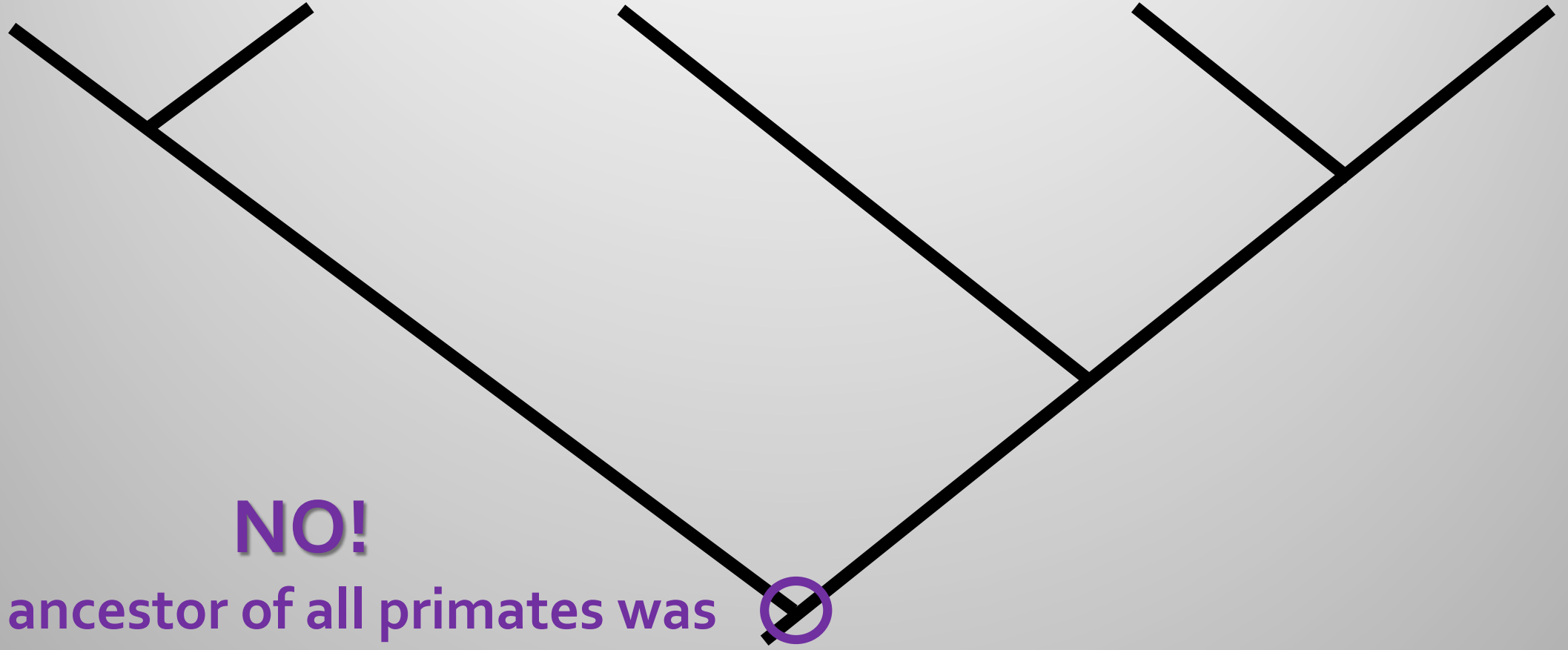
Lemurs

Lorises

Tarsiers

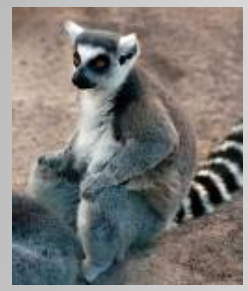
Monkeys

Apes



NO!

Last ancestor of all primates was NOT necessarily male dominant.



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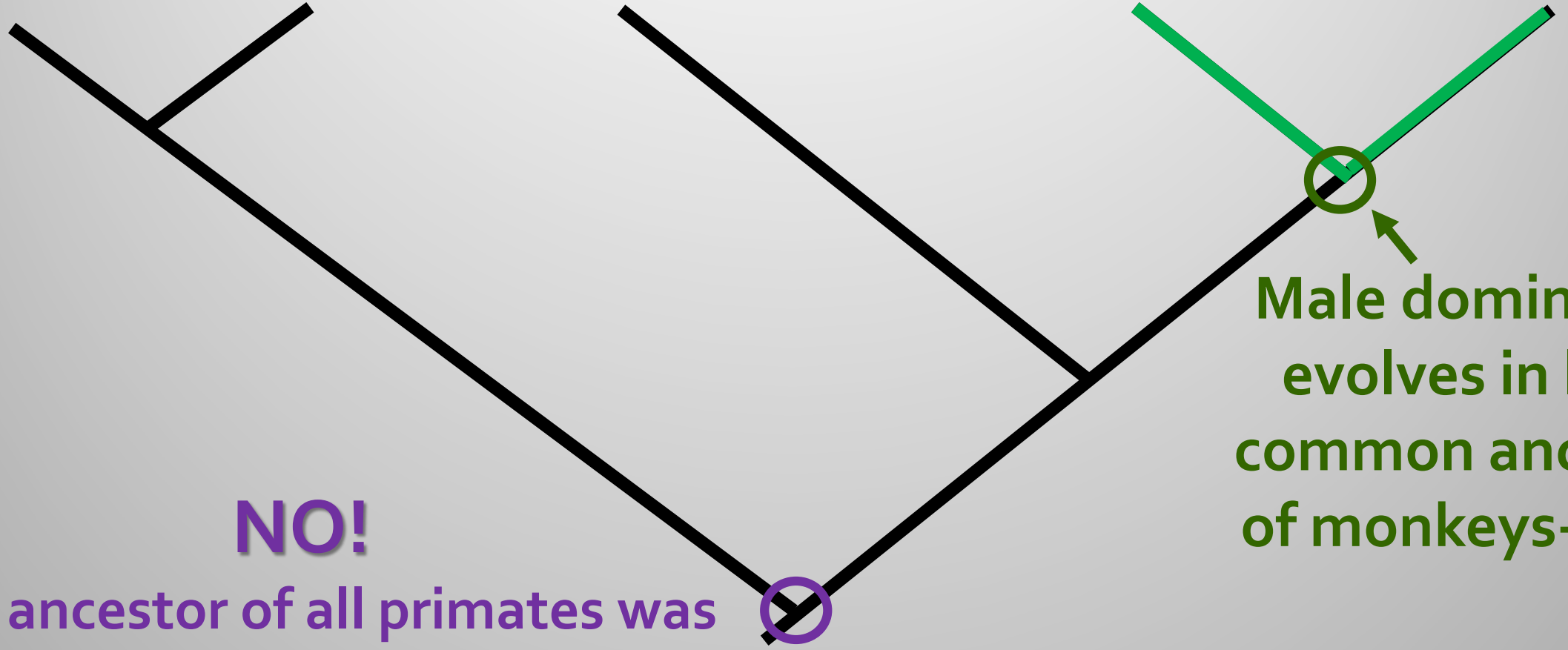


Male dominance evolves in last common ancestor of monkeys+apes

NO!

Last ancestor of all primates was NOT necessarily male dominant.

Evolution of Female Dominance: Hypotheses

1. Male deference: females mate with males who let them have the good food

Female dominance is seen as an evolutionary puzzle:

Why would males give up their power to females?

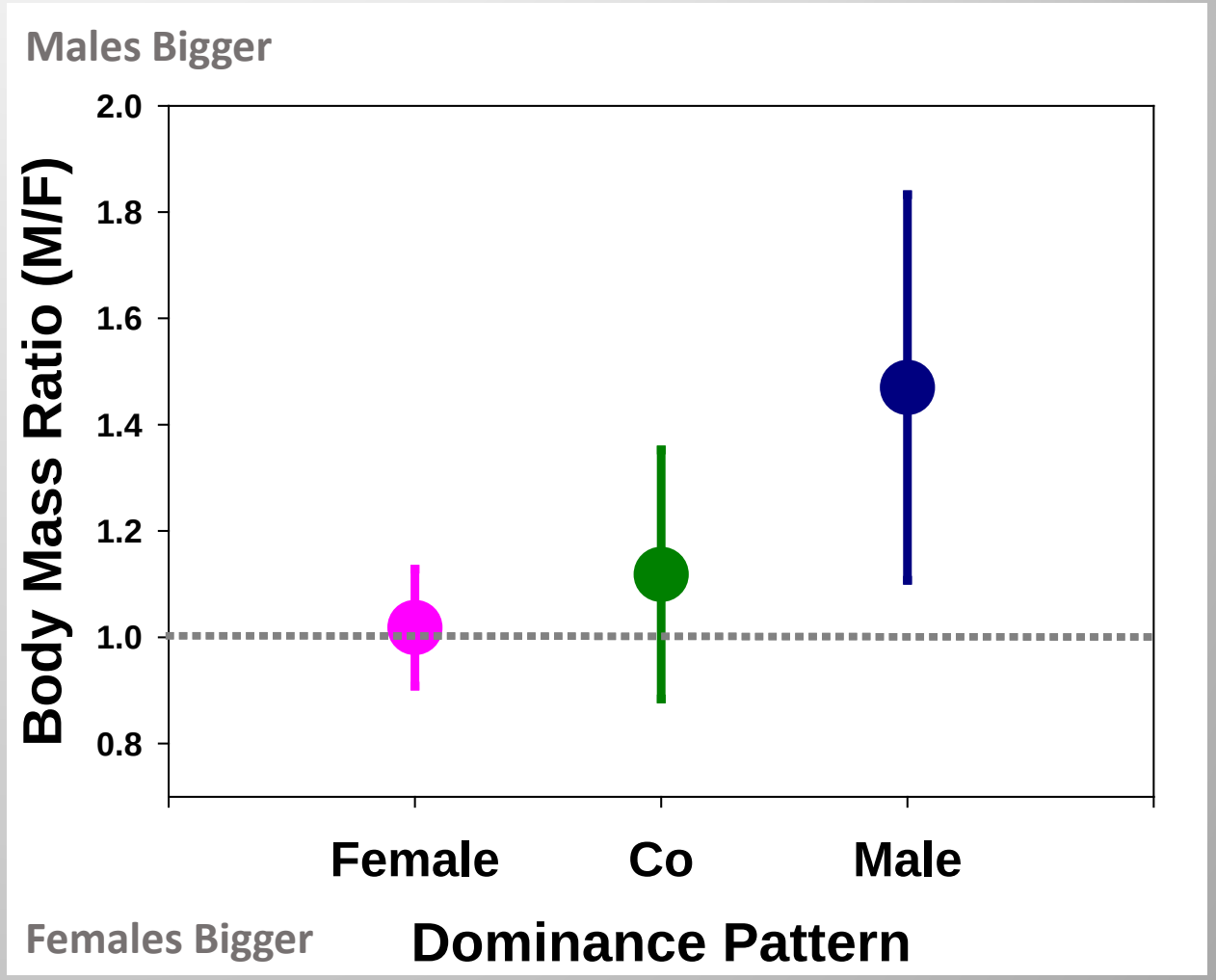
Evolution of Female Dominance: Hypotheses

2. <u>Body size</u>: Females dominate males whenever females are larger than males because larger animals have superior fighting ability

Which sex is larger?

Evolution of Female Dominance: Hypotheses

2. <u>Body size</u>: Females dominate males whenever females are the larger than males



Evolution of Female Dominance: Hypotheses

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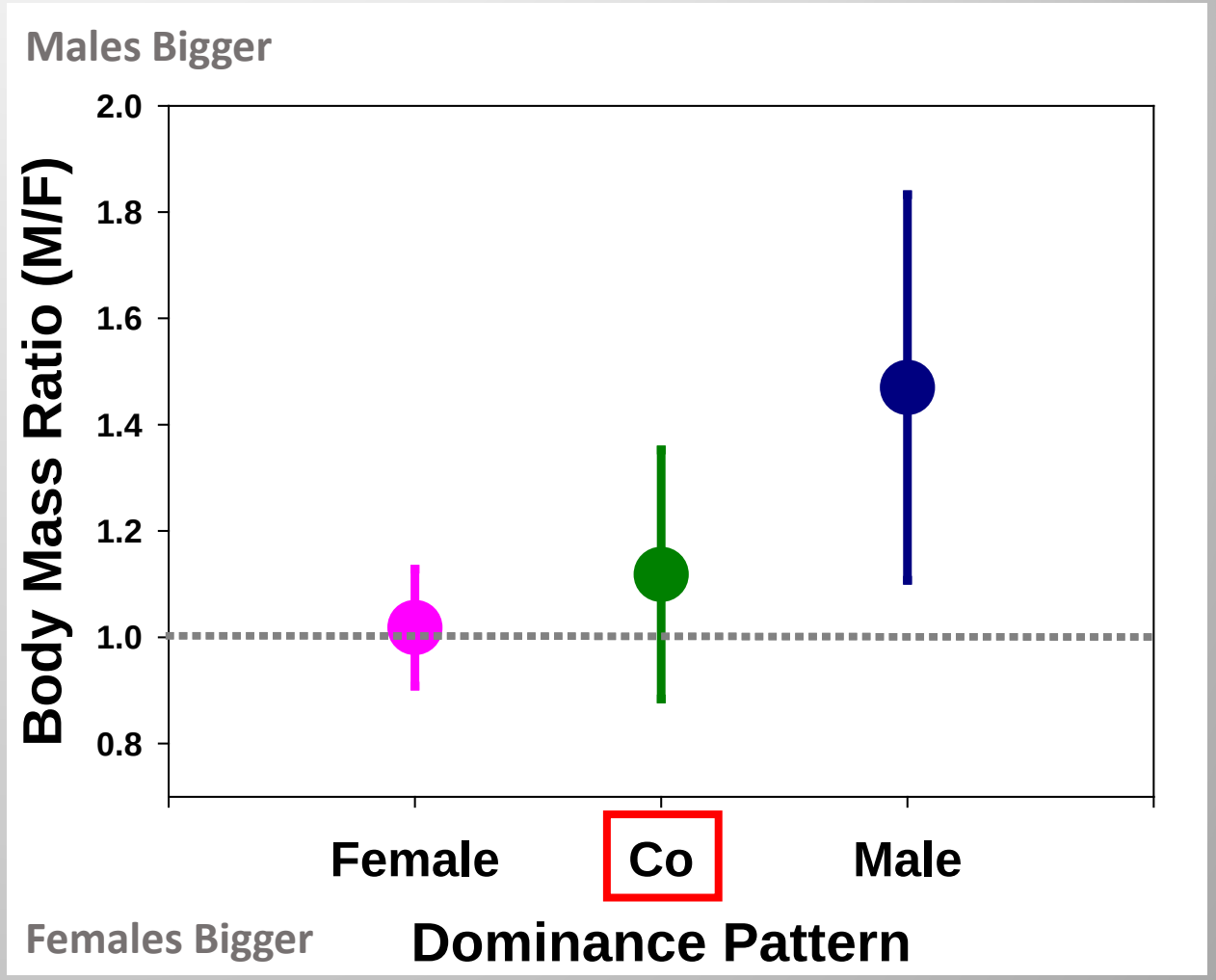

Evolution of Female Dominance: Hypotheses

2. Body size: Females dominate males whenever females are the larger than males

Evolution of Female Dominance: Hypotheses

3. <u>Economic power</u>: Females have leverage because control reproduction

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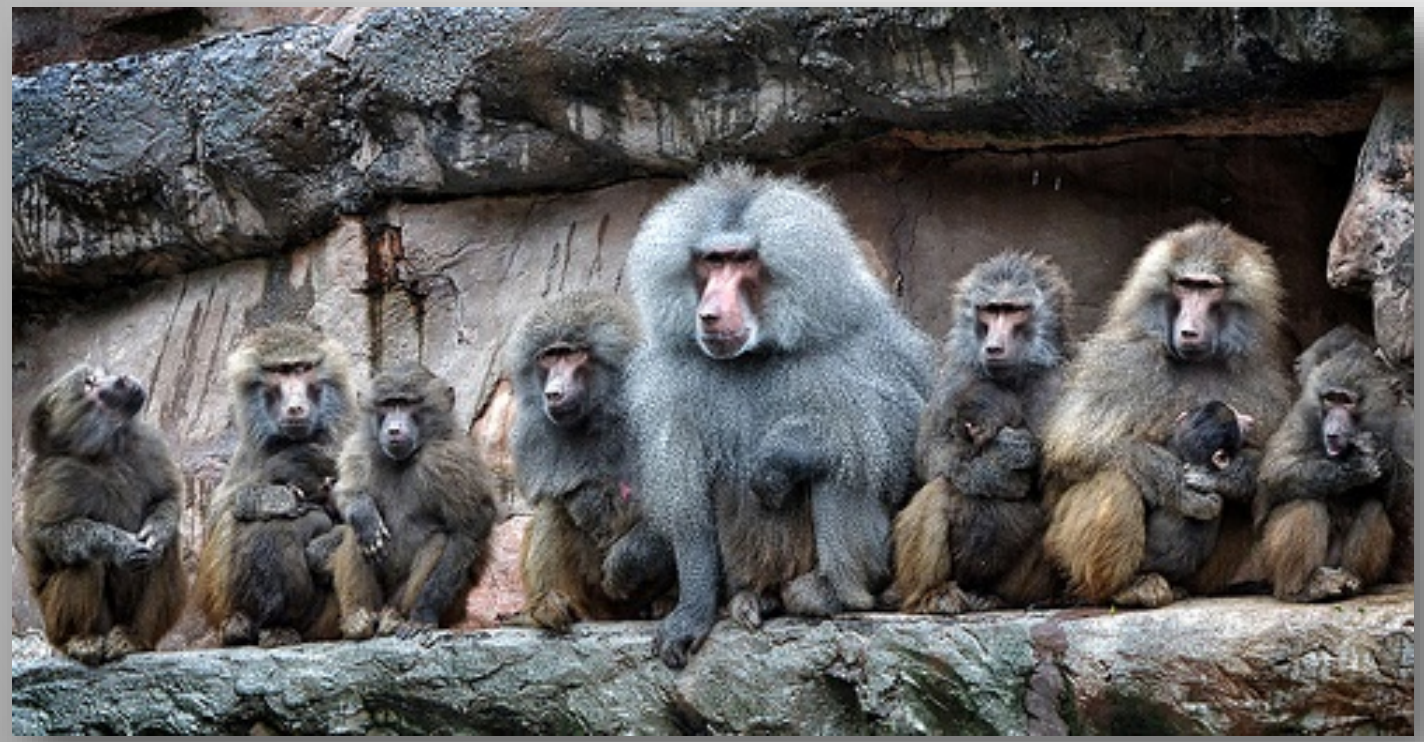
BEYOND DOMINANCE: THE IMPORTANCE OF LEVERAGE

REBECCA J. LEWIS
Biological Anthropology and Anatomy, Duke University
Durham, North Carolina 27708 USA

Conception, gestation, lactation are controlled by female physiology.



Female Economic Power in Sifaka?

- Teenagers can be sexually active but don't give birth or infants don't survive
- Adults reliably produce offspring

Female Economic Power in Sifaka?

- Teenagers can be sexually active but don't give birth or infants don't survive
- Adults reliably produce offspring

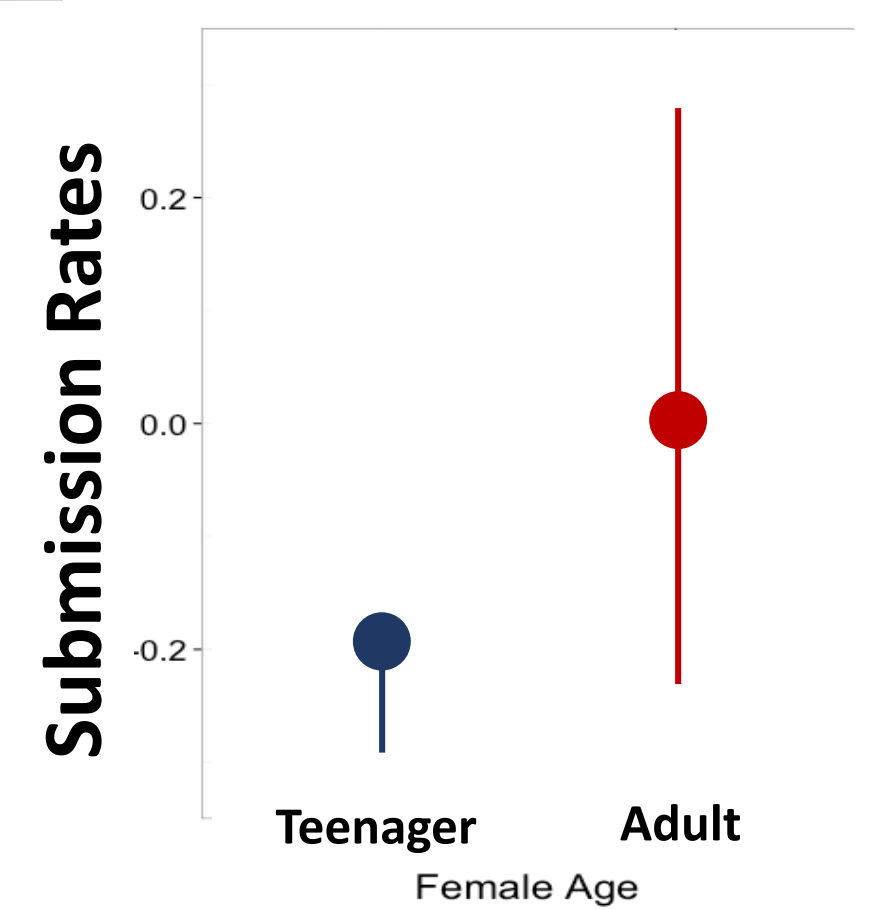
Prediction: If female power is leverage

- Female age determines pattern of submission
- Only females who reliably produce offspring receive submission from males

Isaac making a submissive chatter vocalization to Hester

Submission Based on Leverage

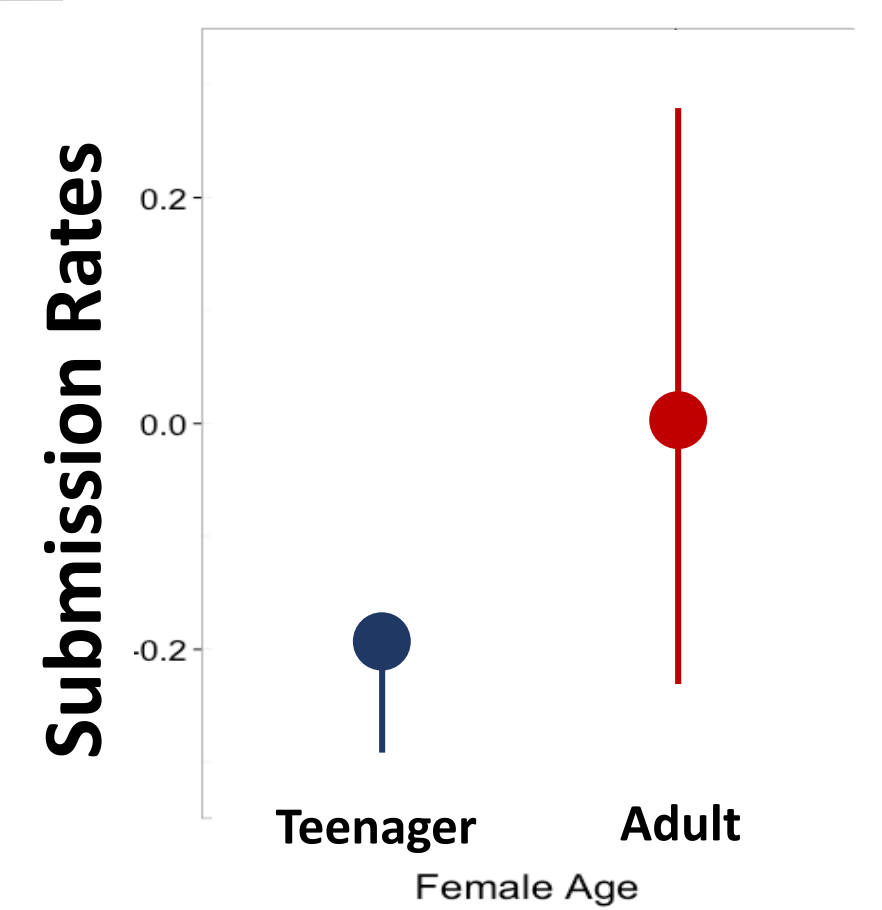
Male to Female



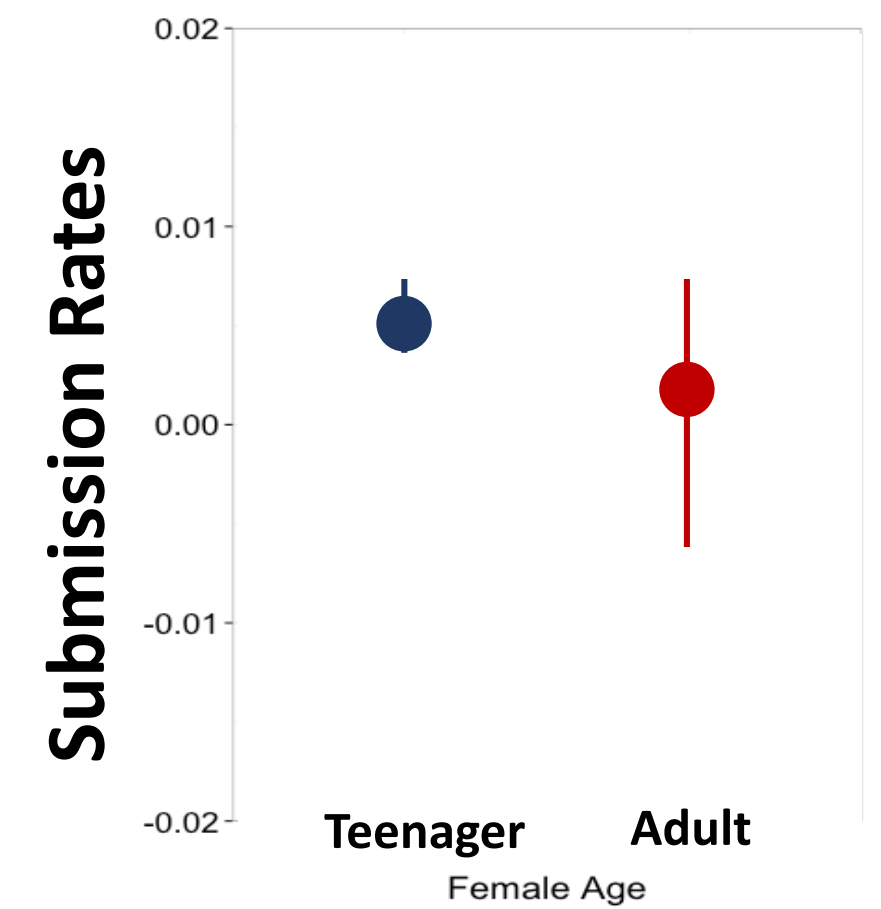
Female Age

Submission Based on Leverage

Male to Female

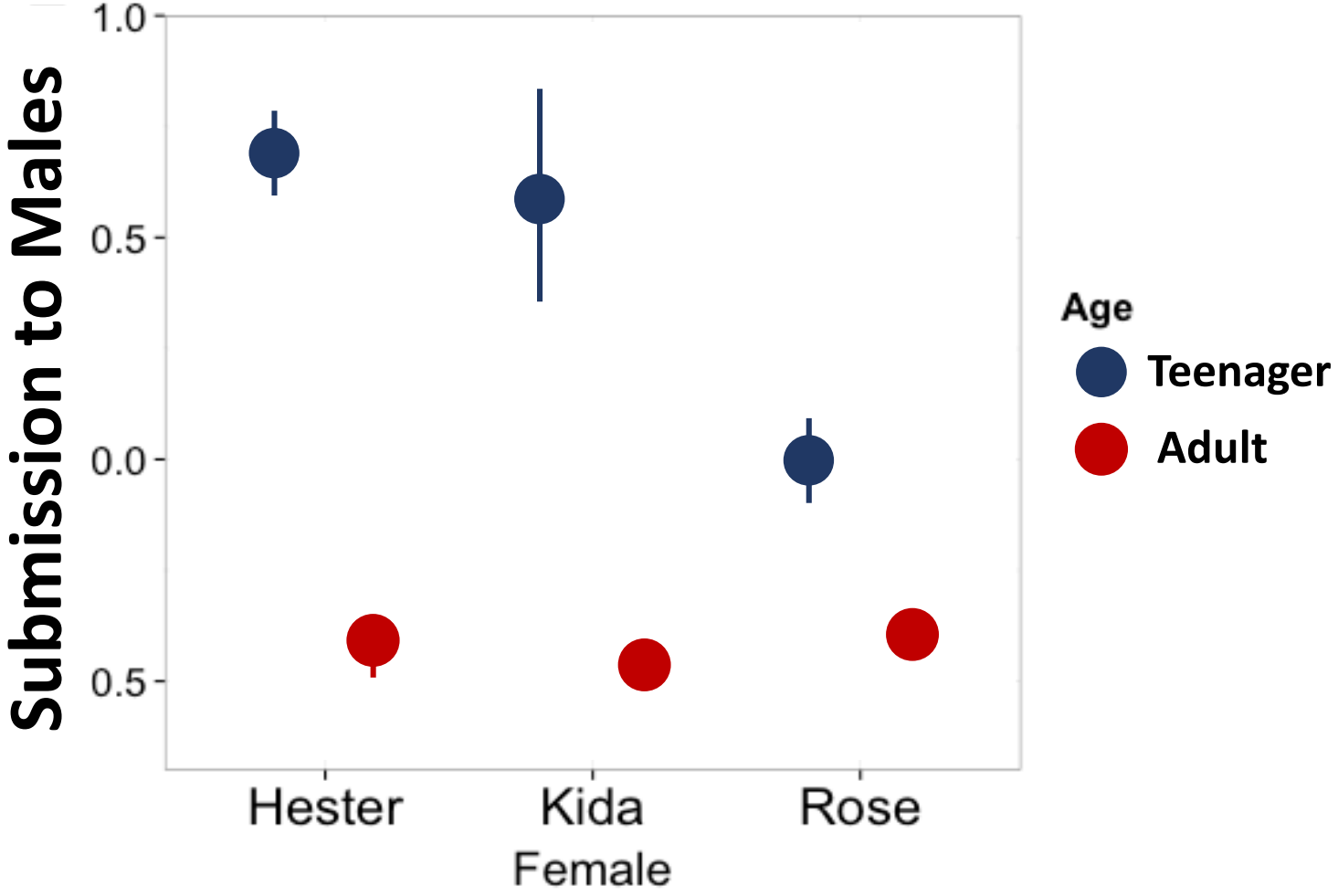


Female to Male



Female Age

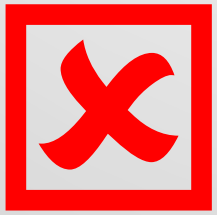
Submission Based on Leverage



Teenage females are submissive to males.

Once mating likely to produce offspring, then intersexual dynamics change.

Evolution of Female Dominance: Hypotheses

1. Male deference 
2. Body size 
3. <u>Economic power</u>: Females have leverage because control reproduction 

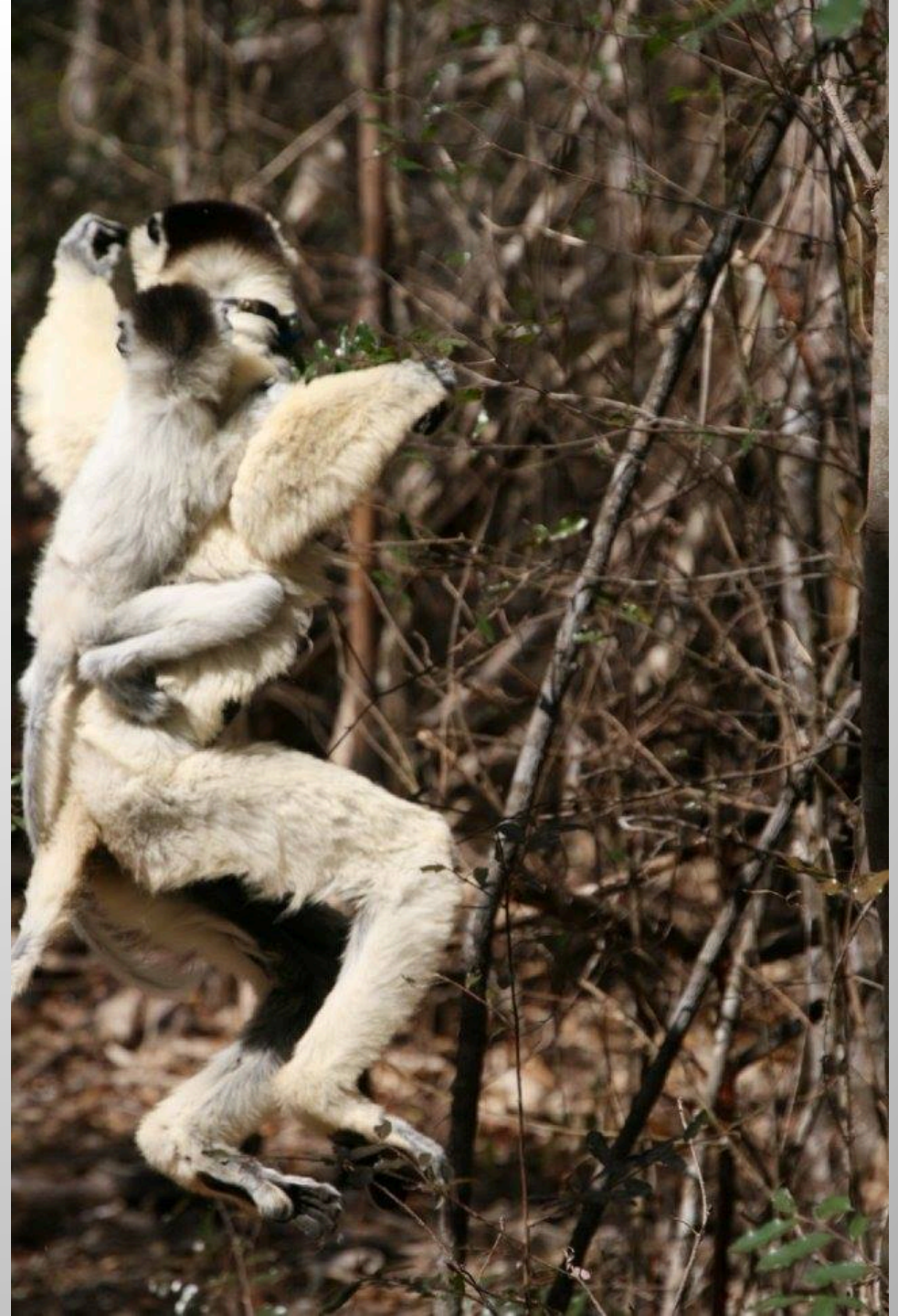
Conservation

Conservation

Conservation: Ankoatsifaka Research Station

Summary:

1. Lemurs are cool.



Summary:

1. Lemurs are cool.
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4. Babies are important.

Summary:

1. Lemurs are cool.
2. Science is fun.
3. Research is a team sport.
4. Babies are important.
5. Power is more than fighting.

Misaotra betsika!
Thank you!

Find out more at http://labs.la.utexas.edu/ankoatsifaka/