Lect. 6 Prosimians

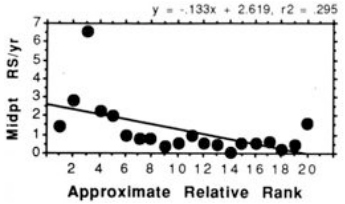
Quiz clock

Minutes remaining: **ONE**

30 sec …

5 4 3 2

Sexual selection not just mate choice; competition & control



Curie-Cohen et al. 1983; caged rhesus

p = 0.01

Ranks by eye, this study

i.e., dominance and power

"Power is the ultimate aphrodisiac"
- Henry Kissinger

BUT, choosiness can manipulate competition, choice can be internal (crypic female choice of gametes), etc. COMPLEX - as I said earlier.

Toolkit is ready

1. **Animals as <u>strategists</u> working toward optimal <u>balance</u> of growth, maintenance and reproduction, where "optimal" is defined by reproductive <u>fitness</u> - number of offspring who survive to reproduce (or grandoffspring, or births, or whatever…).**

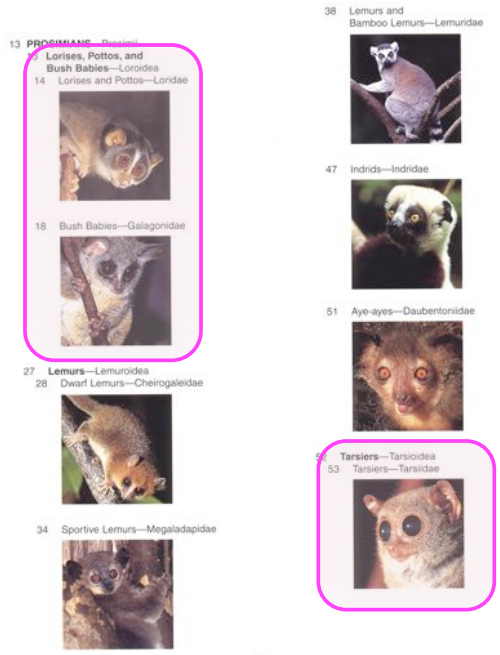
2. **This involves individual 'selfish' <u>tradeoffs</u> among feeding, antipredator and reproductive strategies, complicated by potential for tactics based on <u>kinship</u>, <u>mutualism</u> and <u>reciprocity</u>.**

Toolkit is ready

The use of <u>formal</u> observational methods allows us to <u>quantify behavior</u>, enabling

1. **<u>Testing</u> theoretical predictions (are female baboons twice as nice to full sibs as to half sibs?)**
2. **Comparisons across populations and species, both to test predictions and to <u>detect patterns</u> that generate theories that make predictions ….**

"Comparative method" is <u>central</u> to primatology and *anthropology as a whole*.



Prosimians

Africa, Asia, and especially Madagascar

Lorises & pottos (slow climbers)

Galagos [bushbabies] (fast leapers)

Tarsiers (fast LEAPERS)

Series short film clips; we'll see how much time left….

Bushbabies (galagos): 1st is greater galago (*Otolemur* sp.); starting at scene grasping a green branch, shows one of the lesser galagos: *Galago moholi*

Cousins: First Primates 3 min

Slow loris (*Nycticebus*)

Cousins: First Primates 2.2min

Tarsier

Cousins: First Primates 3 min

Social system of "solitary" animals

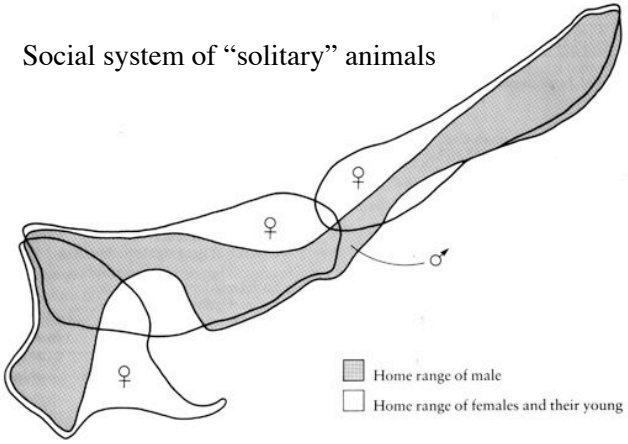


Figure 8.1 The spatial distribution of Demidoff's bush baby (*Galago demidovii*) in a sector of the Makokou forest, Gabon. Like many nocturnal strepsirhines, the home ranges (unstippled) of several females are encompassed by the home range (stippled) of one male. (From Charles-Dominique 1977.)

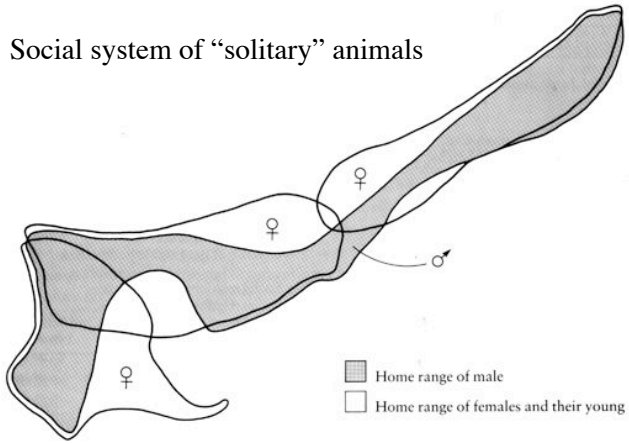
A. Richard, *Primates in Nature*

Origins of sociality

Most galagos - *stable* social groups 1-5 (some 1 - 10), forage alone but sleep together, frequent changes nest/hole.

Birth rates range 1/yr to twins/ 6mos.

Social system of "solitary" animals



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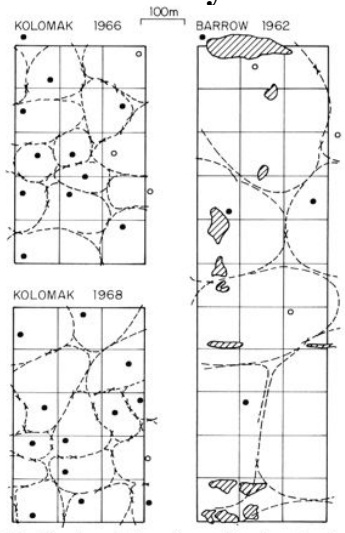
Origins of sociality

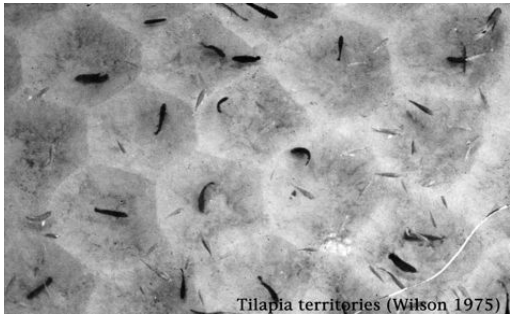
For *G. moholi*, during estrus female may copulate >20 times/night, mean duration 9 min, > 1 male. Relatively large testes; dispersed promiscuous system with sperm competition

Territoriality



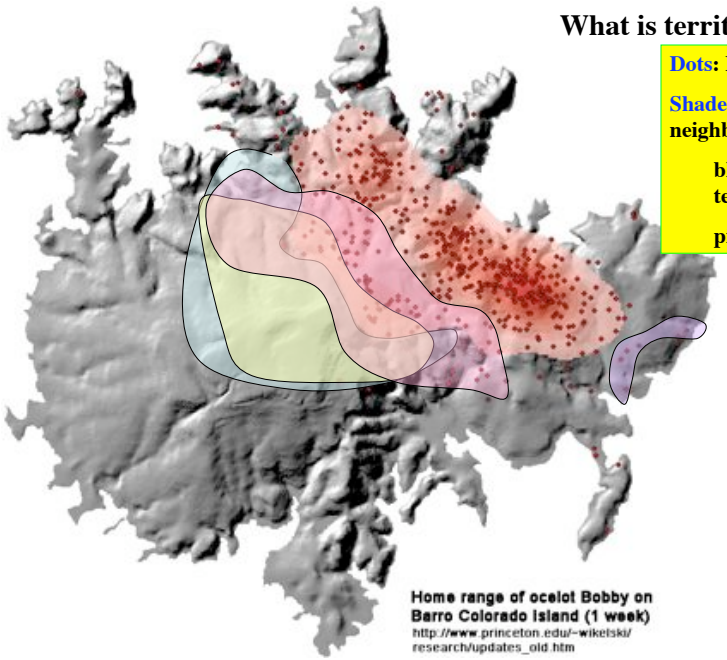
Dunlin (sandpiper) nesting territories at 2 sites in Alaska. Boundaries are contiguous over 5x density range. (Wilson 1975: 270; "elastic disk")

Text: Ring-tail lemurs not territorial *"in the strict sense of the word".*



Territoriality.

- **What exactly is this?**



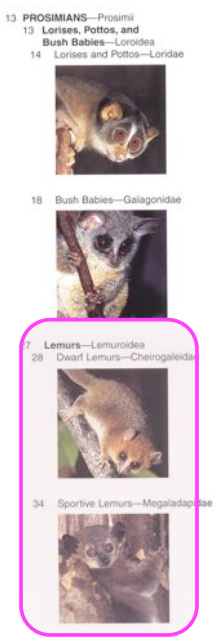
What is territoriality?

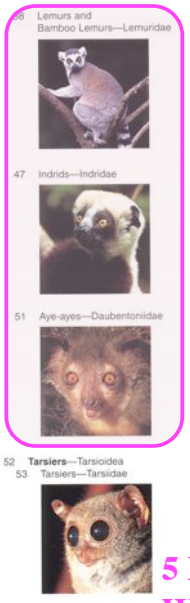
Dots: Bobby.

Shaded: hypothetical neighbors

blue, certainly territorial

pink, ???





Lemurs

Prosimians

Madagascar

Dwarf

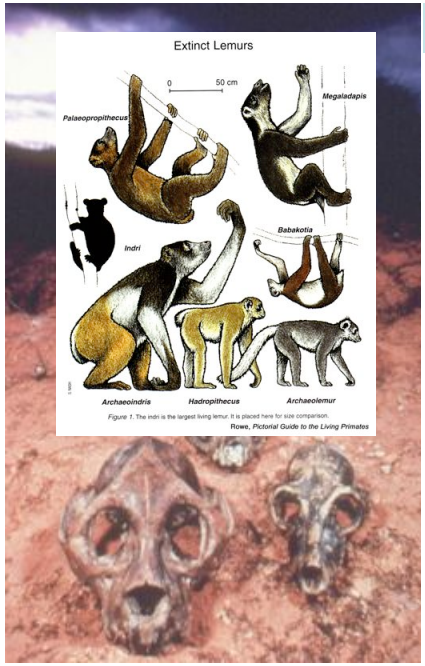
Sportive

Basic model...

Indris

Aye-aye

5 Families (of 15 primate).
What does that *mean*??



Start with what you won't see.

Sifakas (*Propithecus*) sometimes hang like sloths. *Palaeopropithecus* was a lemur version of a sloth, weighed ~ 130 lbs (59kg). *Megaladapis* was like a 170 lb (77kg) koala. *Archaeoindris fontoynonti* got to ~ 200kg - more than a silverback gorilla

Almost 50% of the lemurs have gone extinct in the last 2,000 years (of 49; 20% NHP).

WHY?

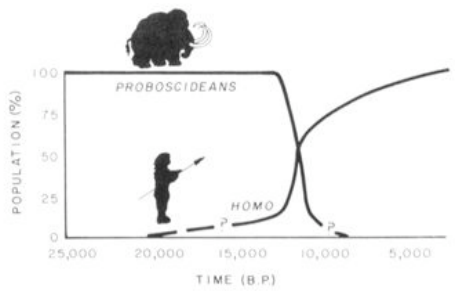
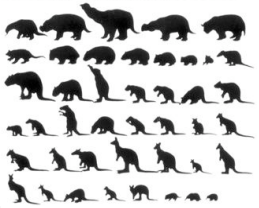


Figure 3.8. Population and temporal relationships of mammoth and men in the late Pleistocene of the New World[14]

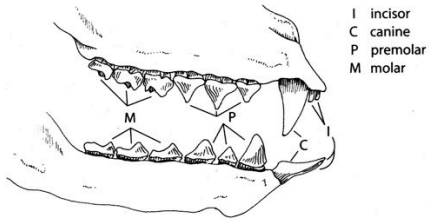

"A large moa snared and speared."

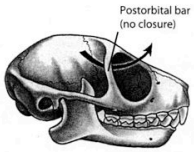


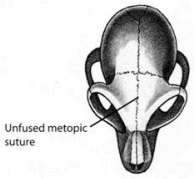
PATTERN.

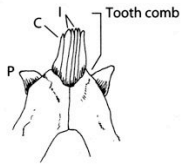
Kill? or Disease?

About lemurs…









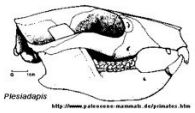
Falk (2000)

Falk (2000)

What is a tooth comb used for, and why?

Familiar?

Aye aye (*Daubentonia madagascarensis*)



Plesiadapids (*Plesiadapis*, *Carpolestes*)

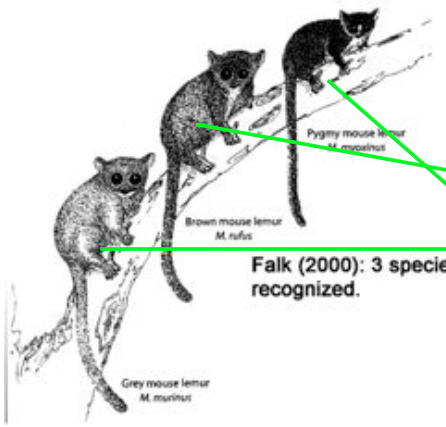
NOT suggesting aye aye is a plesiadapid holdover - merely that the peculiar "non primate-like" dentition of plesiadapids does have modern form; convergence (*homoplasy*)

"niche"

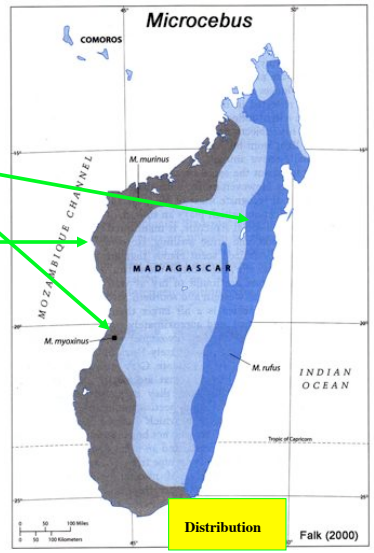
Mouse lemurs (*Microcebus*)

BBC *Cousins: First Primates*

Microcebus taxonomy



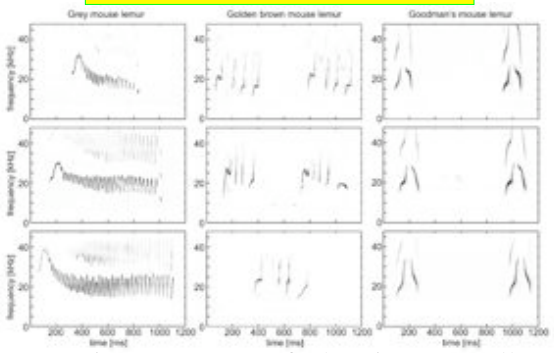
Falk (2000): 3 species recognized.



Microcebus & species: vocalizations

DIFFERENT INDIVIDUALS

DIFFERENT SPECIES

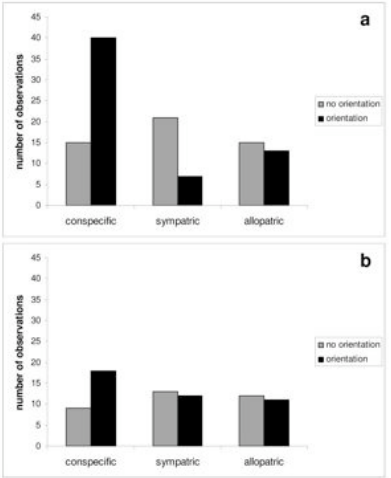


Why so different?

Representative sonagrams of advertisement calls emitted by three different individuals of the three studied mouse lemur species.
BMC Biol. 2008; 6: 19.

Microcebus & species: vocalizations

Responses of grey mouse lemurs to playbacks. Responses to playbacks of (a) conspecific (*M. murinus*), sympatric (*M. ravelobensis*) and allopatric (*M. lehilahytsara*) advertisement call stimuli and (b) short whistle stimuli.



Microcebus & species: morphology

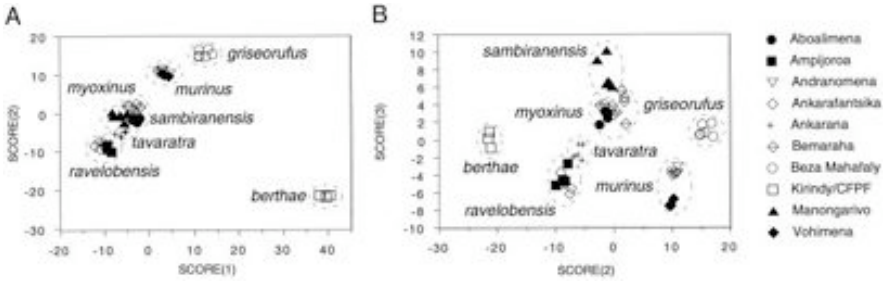


Figure 1

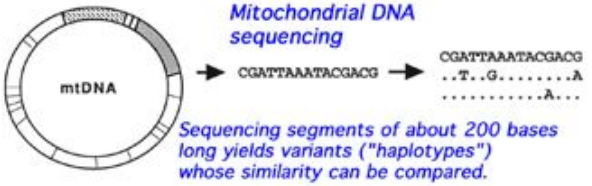
Results from discriminant function analysis of 34 cranial, dental, and external morphometric characters. Body mass was not considered in this analysis. Detailed character descriptions are given in ref. 11. Functions 1 and 2 (A) show conspicuous discrimination of M. berthae from other species. Functions 2 and 3 (B) show discrimination of all species. Combined, the first through third discriminant functions describe 94.5% of the variance in the data set; 55.9%, 31.7%, and 6.9% for the first, second, and third discriminant functions, respectively. Dashed lines are drawn around species clusters for purposes of illustration; they do not convey statistical information.

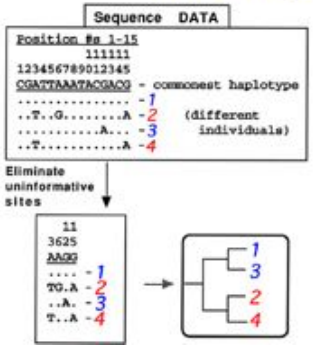
Proc Natl Acad Sci U S A. 2000 October 10; 97(21): 11325–11330.

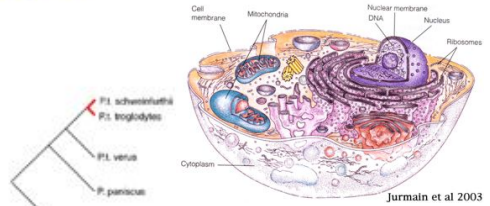
DNA sequence data:

a primer *(get it?)*

Molecular phylogenetic methods in brief

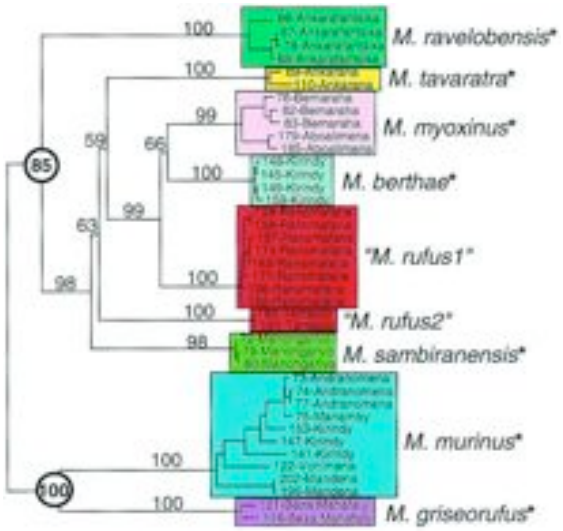






Morin et al., 1994

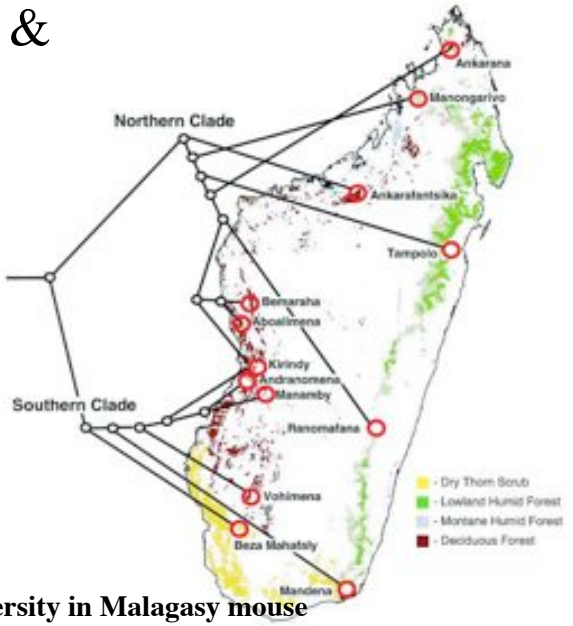
Microcebus & species: genetics



Yoder et al. Proc Natl Acad Sci U S A. 2000 October 10; 97(21): 11325–11330.

Microcebus & species

Combined mtDNA haplotype phylogeny (from Fig. 2) superimposed on mouse lemur collecting localities. Figure shows segregation of haplotypes into northern and southern clades with 85% and 100% bootstrap support, respectively.



Remarkable species diversity in Malagasy mouse lemurs (primates, *Microcebus*) (Yoder et al. 2000)

Ghost of Wynne-Edwards?

Density and sex ratio

Mouse lemurs found at densities from 60 / km^2(home range to 3.5ha) to 800 / km^2 (home range to 0.2ha).

What's a ha?

1 hectare = 10,000 m^2

1/100 of km^2; 100 x 100 m

@ 0.2/ha, ≈ 1 per 35 x 35m

At high densities, sex ratio is ≈ 4:1 "because surplus males have been excluded" [Falk, p.99].

?surplus?

Excluded by whom (and why?)

Evolutionary logic

Signalling theory

Mouse lemur males use chemical signals (pheromones) to suppress growth & hormone production in other males... "no weapons needed!" [Falk, p. 100]

Does that make sense as the *whole* story?