

Topic 2

Studying the Evolution of Behavior

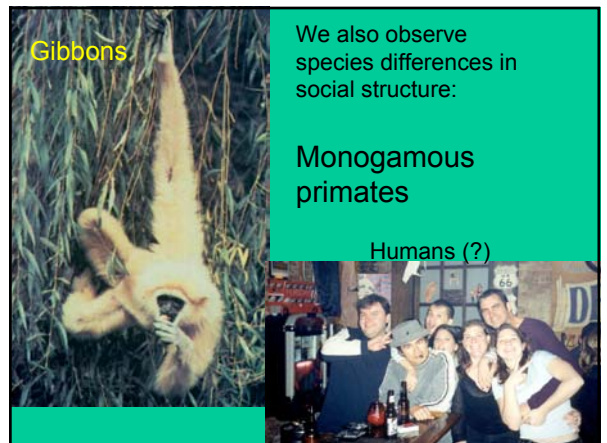
Comparative method:

Using patterns of the distribution of behavioral characters among species to gain information about the evolution of behavior

Non-phylogenetic comparisons

Example: effects of social structure on the evolution of testes size in primates

Hypothesis: Sperm competition drives the evolution of sperm production (testes size).



Mountain gorilla

Single-male group primates

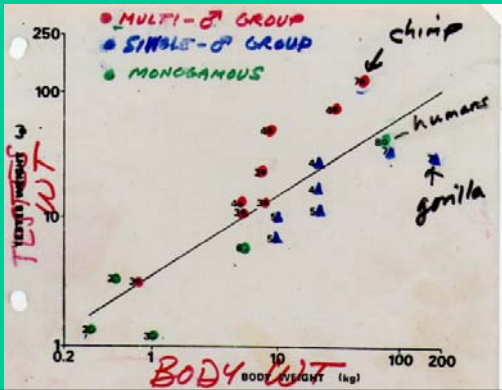


Chimpanzees

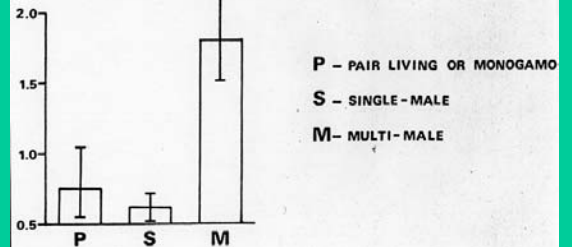
Multi-male group primates



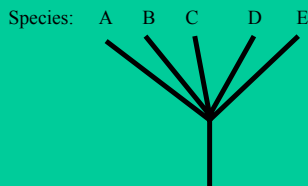
Plot of testes vs. body weight



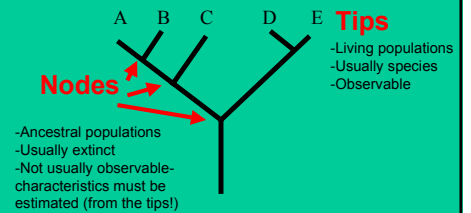
RELATIVE TESTES SIZE



Evolutionary (phylogeny) assumption for standard statistics:



More realistic situation...



Behavioral Ecology

Studying the adaptive value of behavioral traits in natural populations

YEARS	WINGS SHOWN 1972		
	A FIRST INDIVIDUAL (THU)	B SECOND INDIVIDUAL (MON)	C THIRD INDIVIDUAL (TUE)
1972	THU (CALF)	MOM (CALF)	COLC (CALF)
1973	THU (YEARLING)	MOM (YEARLING)	COLC (YEARLING)
1974	THU (THO YEARS OLD)	MOM (THO YEARS OLD)	COLC (THO YEARS OLD)
1975	NO OFFSPRING	NO OFFSPRING	NO CALF SURVIVES
1976	CALF SURVIVES	CALF DIES IN SUMMER	CALF DIES IN SUMMER
1977	CALF SURVIVES	CALF DIES IN SUMMER	CALF SURVIVES
1978	THU DIES R.I.P.	CALF DIES IN SECOND WINTER	CALF SURVIVES
1979		CALF DIES IN FIRST WINTER	CALF SURVIVES
1980		CALF DIES IN FIRST WINTER	CALF SURVIVES
1981		NO CALF	CALF DIES IN SUMMER
1982		CALF DIES IN SECOND WINTER	CALF SURVIVES
1983		CALF DIES IN FIRST WINTER	CALF SURVIVES
1984		NO CALF	NO CALF
TOTAL SURVIVING OFFSPRING	2	0	7

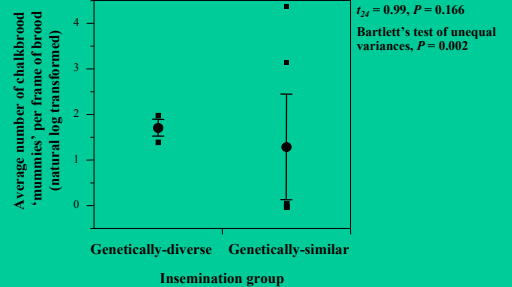
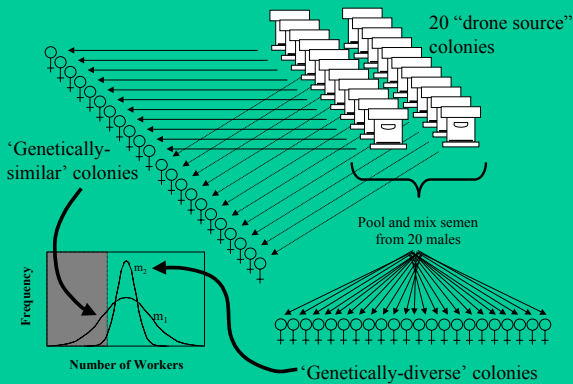
Fitness (RS) components: survival and fecundity

Good (complete) example of behavioral ecology research:

Tarpy et al. and R.E. Page et al., multiple mating and disease resistance in honey bees



Honey bee comb and queen retinue



Tarpy (In press). *Proc. R. Soc. Lond. B.*

