

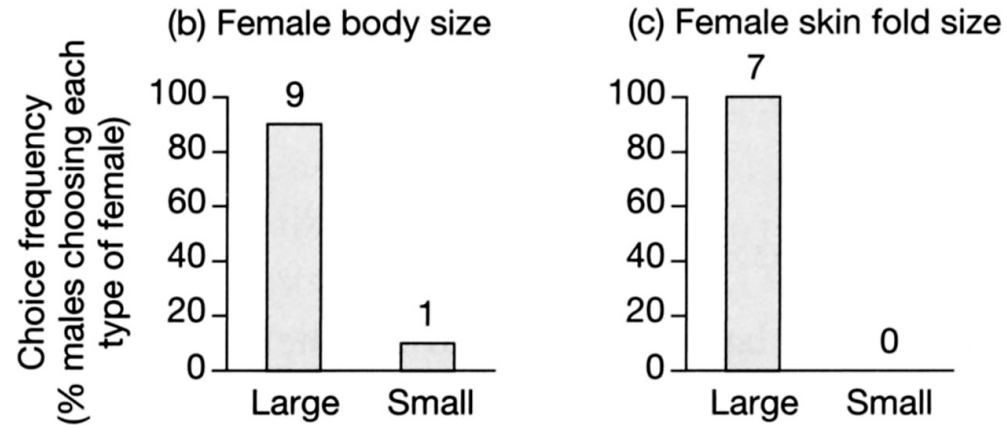
Sex role reversal

- We predicted males competitive and females choosy because females invest more in reproduction than males
- What if males invest more?
- E.g. seahorses, pipefish

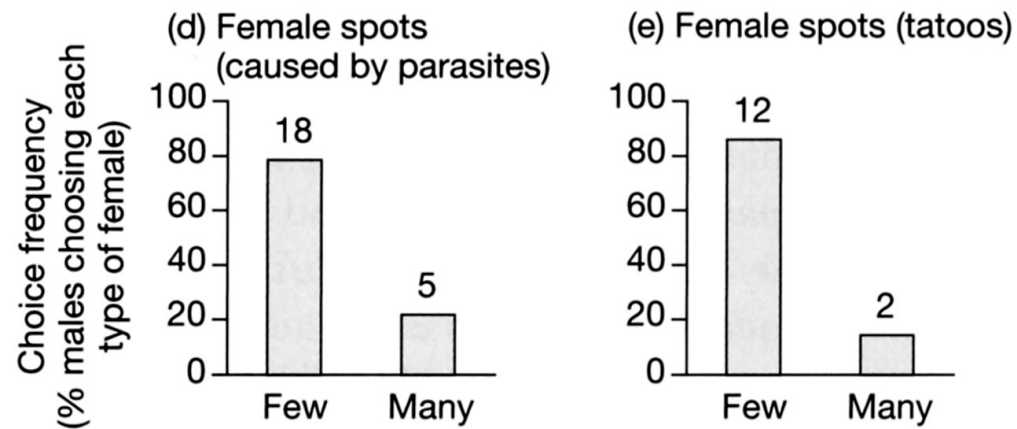


Pipefish: choosy males

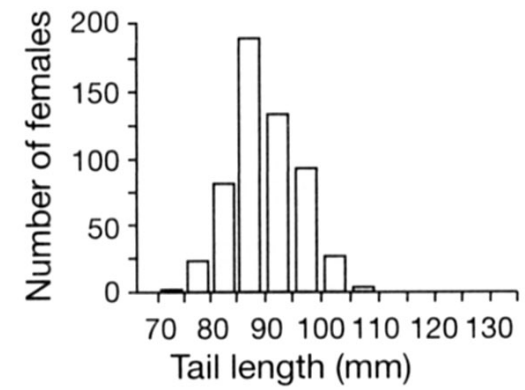
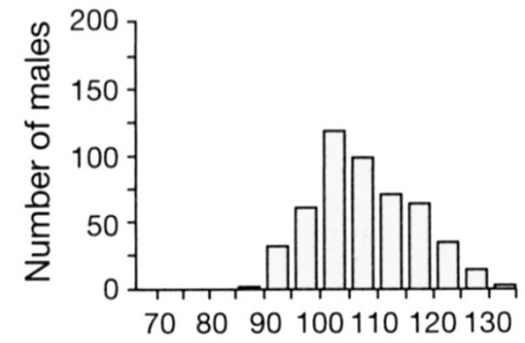
Nerophis ophidion



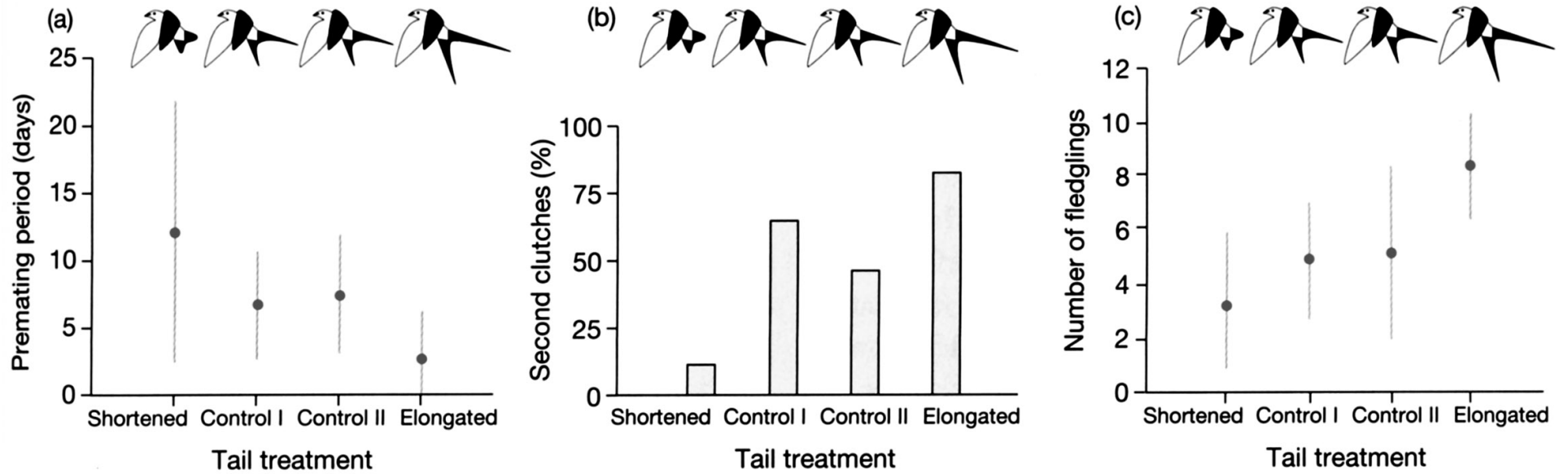
Syngnathus typhle



Female choice



Møller's experiments



Extra-pair copulations

Table 9.2 Extra-pair copulations in Møller's barn swallow experiment

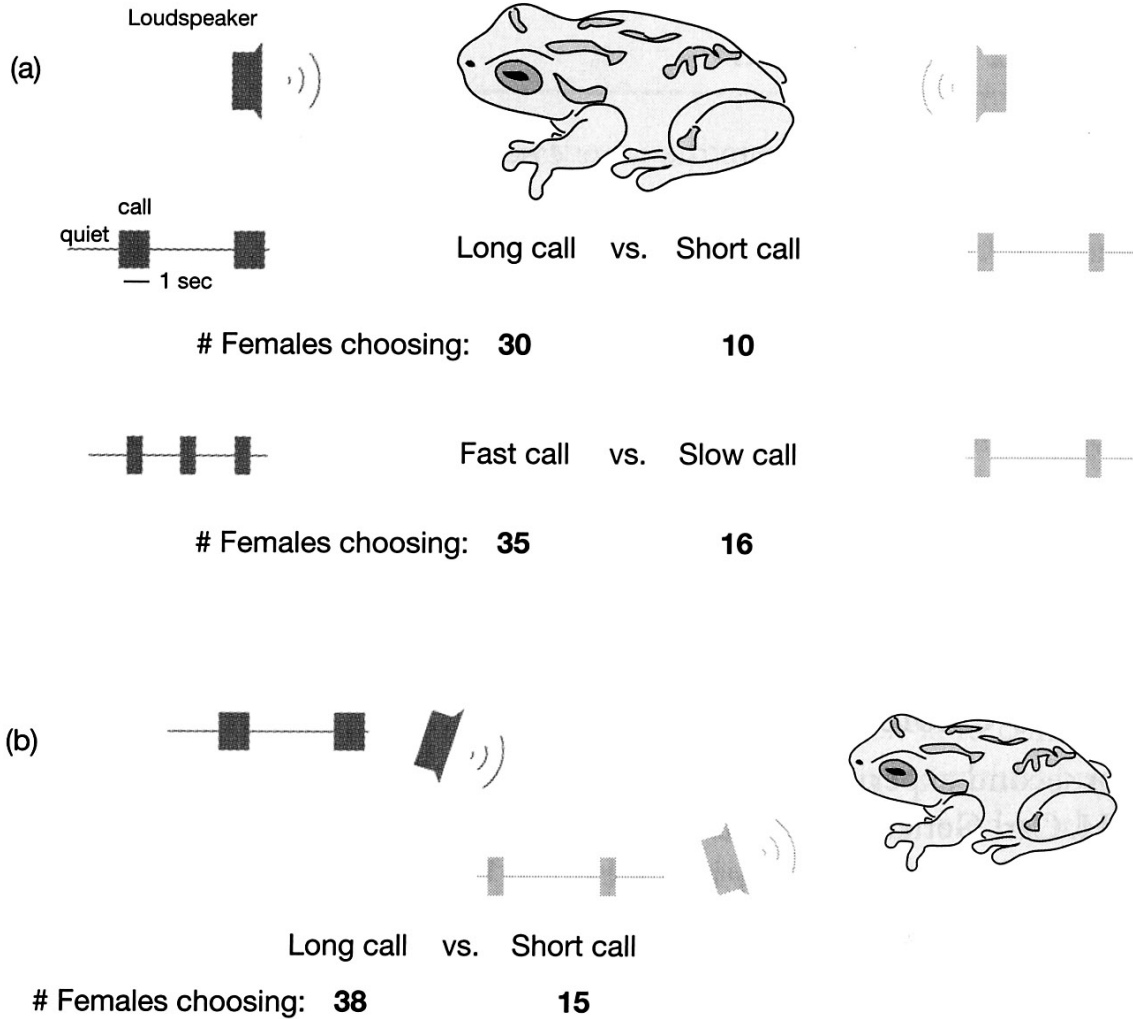
The numbers reported are rates, measured as extra-pair copulations per hour. *P* values give statistical significance of variation among groups. From Møller (1988).

Extra-pair copulations	Male Tail Treatment				<i>P</i>
	Shortened tails	Control I	Control II	Lengthened tails	
By males	0	0	0	0.040	< 0.001
By their social pair-mates	0.036	0.014	0.017	0	< 0.01

Gray tree frogs, *Hyla versicolor*



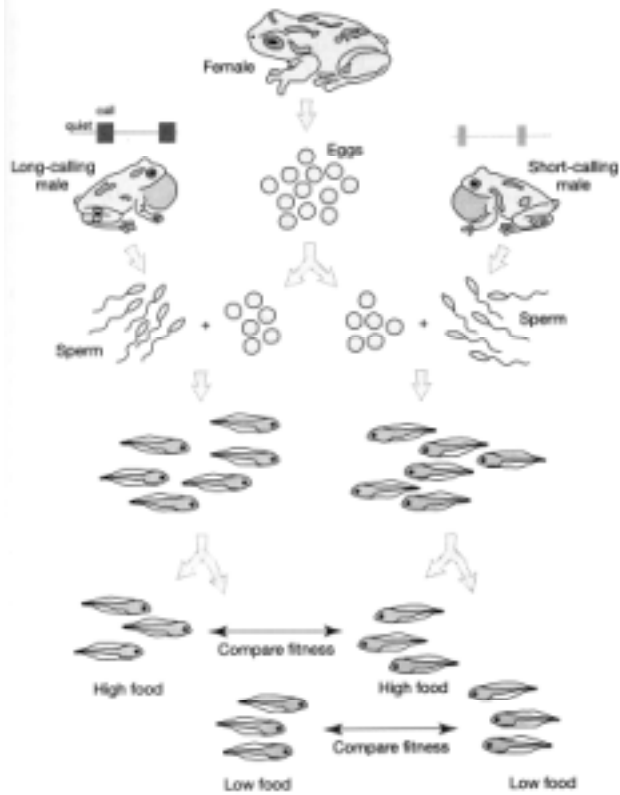
Female *Hyla* song preferences



Why are females choosy?

- Benefits
 - Better genes for offspring
 - Better or more resources
- No benefit
 - Neural response to traits
- Runaway coevolution
 - Side effect, benefit is attractive sons

Genetic benefits in Gray treefrogs, Welch et al. 1998

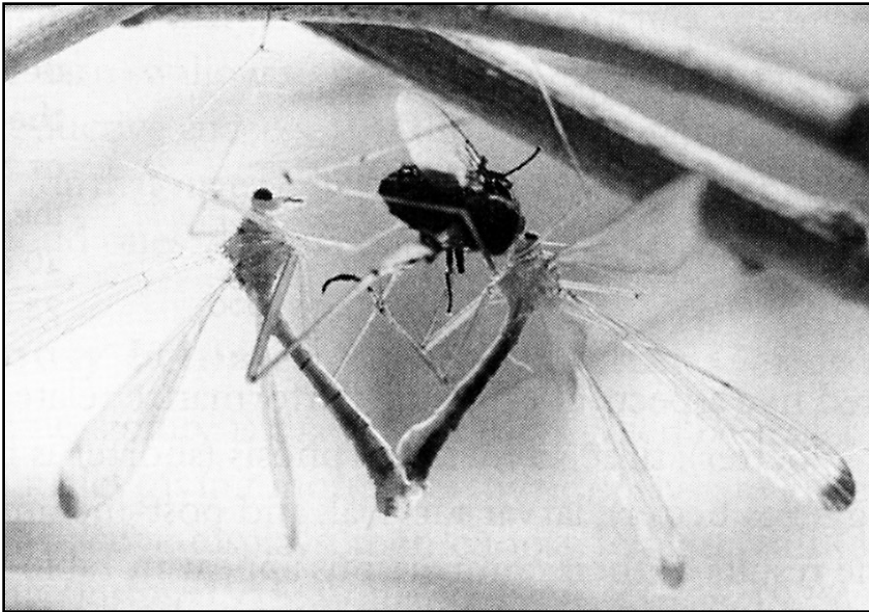


1995

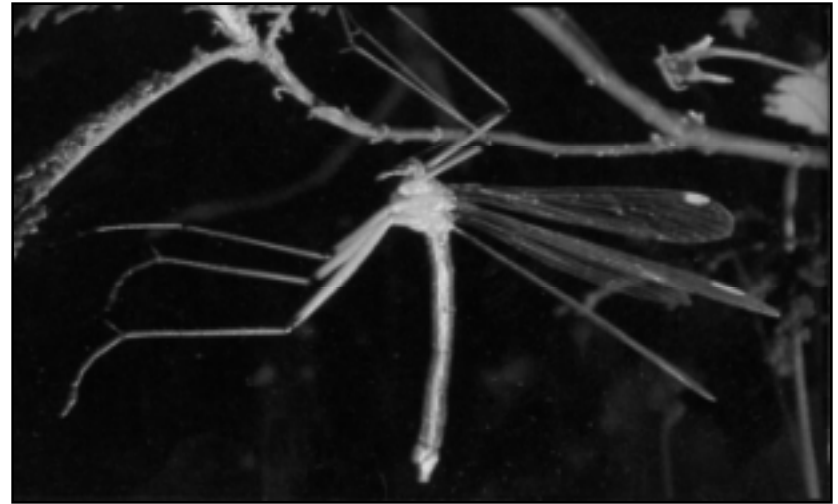
1996

Fitness measure	High food	Low food	High food	Low food
Larval growth	NSD	LC better	LC better	LC better
Time to metamorphosis	LC better	NSD	LC better	NSD
Mass at metamorphosis	NSD	LC better	NSD	NSD
Larval survival	LC better	NSD	NSD	NSD
Postmetamorphic growth	—	—	NSD	LC better

Resources

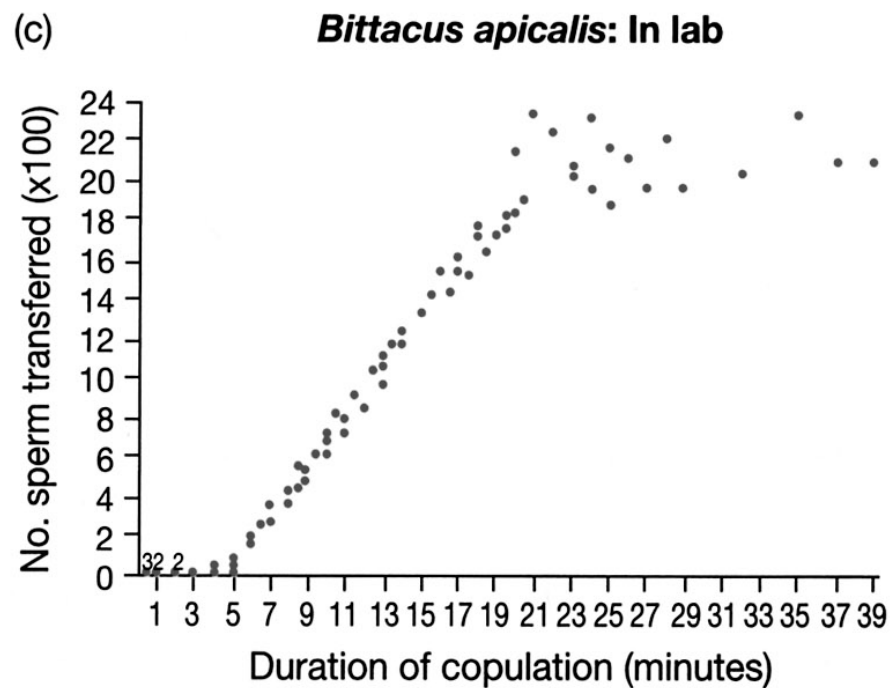
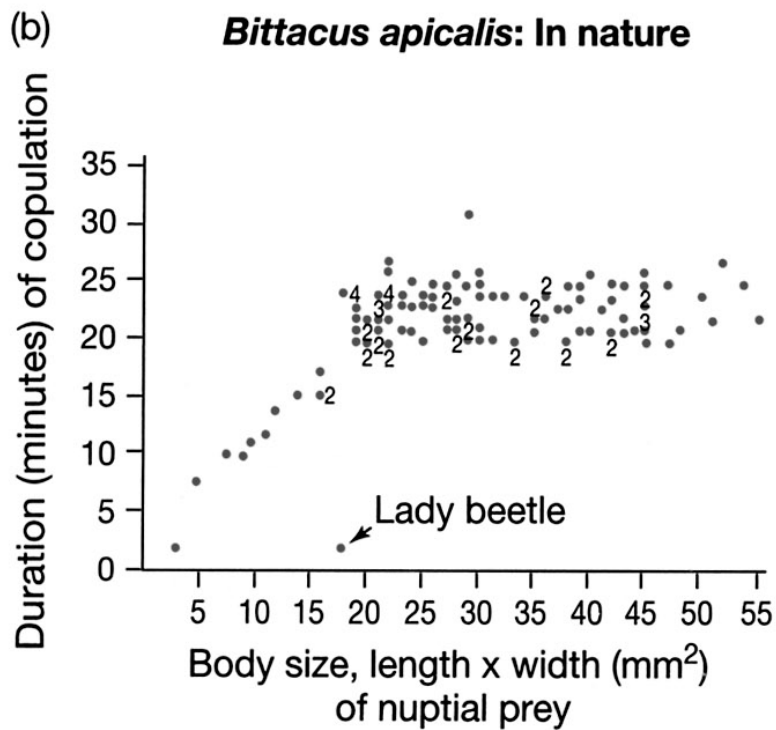


<- *Bittacus apicalis*

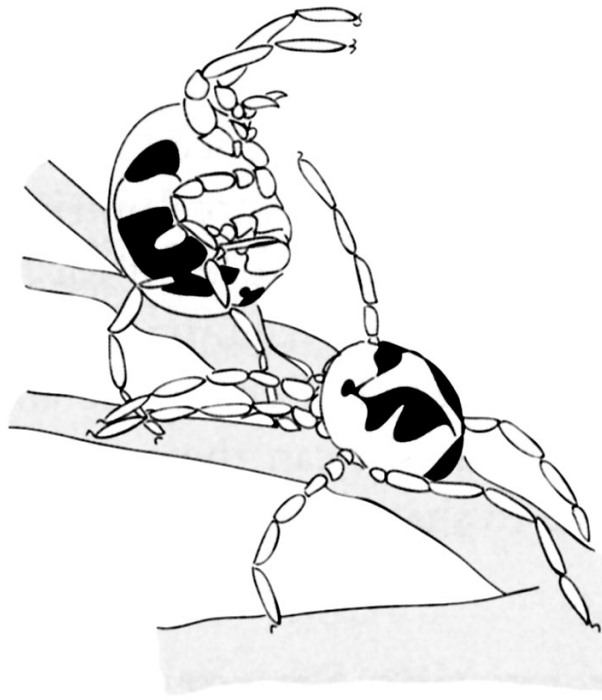


Bittacus chlorostigma above

Food size, mating time, and sperm transfer



Pre-existing sensory biases



**Leg vibrations
10 - 23 per
second**

Prey 8 - 45

**Hungry
females more
likely to clutch
males**

Hunting copepods in net stance

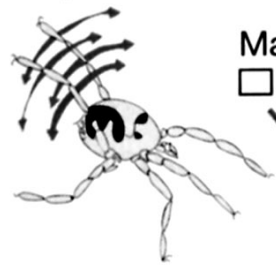
Male spermatophores; pheromones, vibrations

Did female preference predate male display?

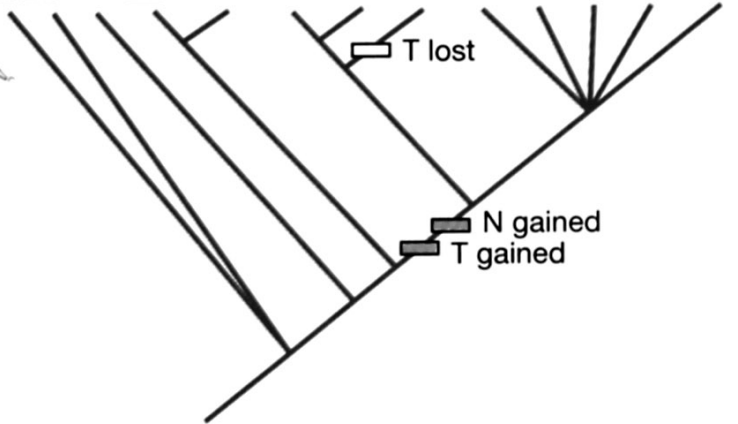


(a)

Female uses netstance (N)



Male trembles during courtship (T)

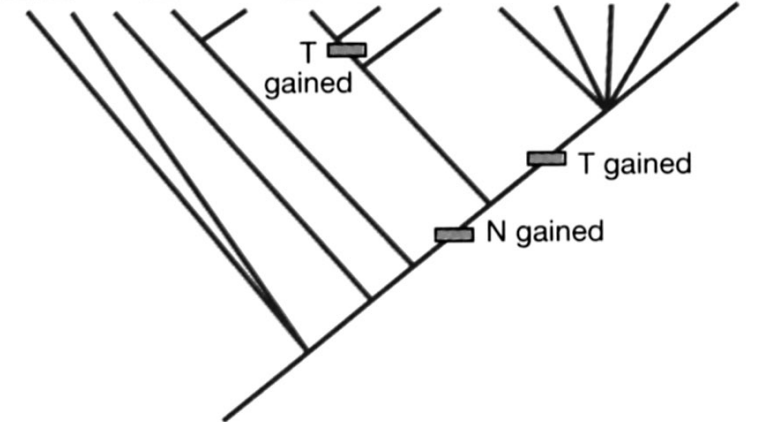


(b)

Female uses netstance (N)

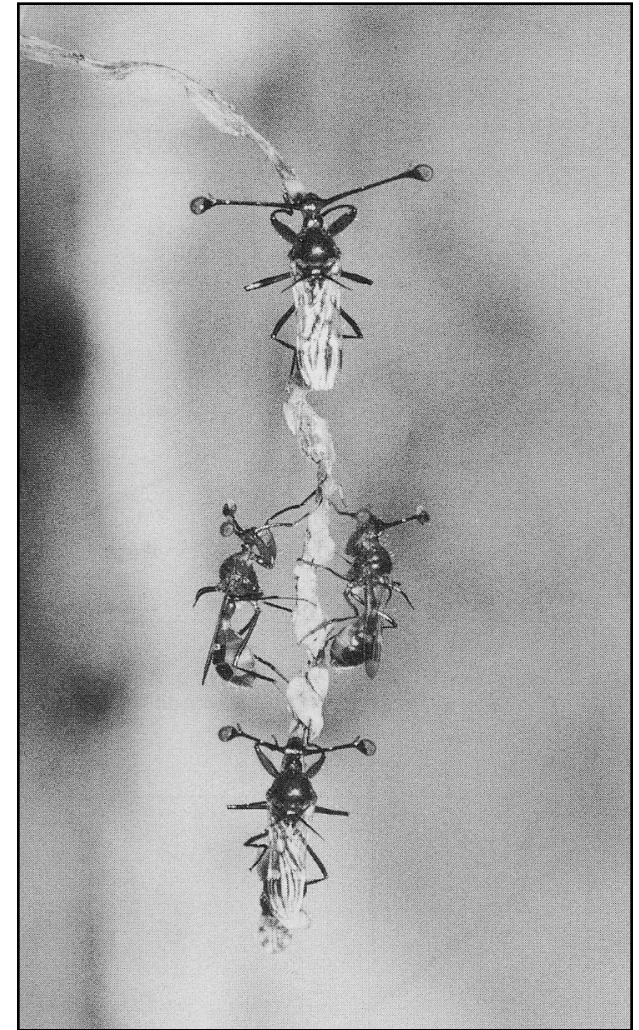


Male trembles during courtship (T)



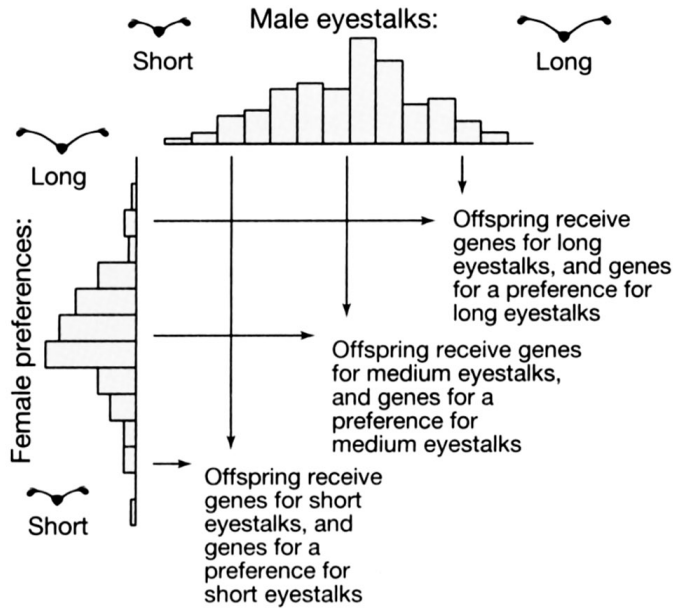
Stalk-eyed flies

- Males with longer eye stalks more likely to win fights
- Females prefer males with longer eye stalks
- Genetic benefit exists
 - Condition
 - Pop'n sex ratio female biased
 - Some males w/ X-bias, random
 - Long-eye males w/ Y-bias

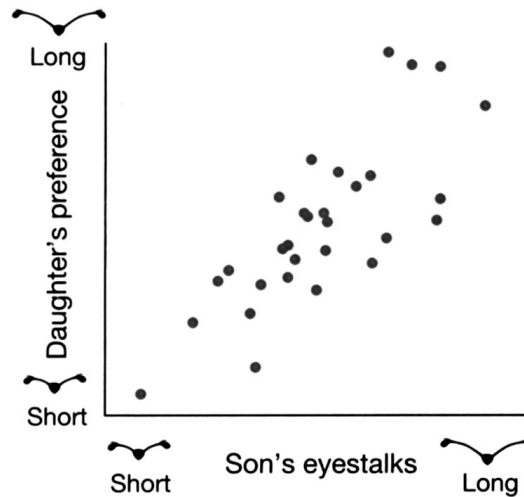


Genetic correlation

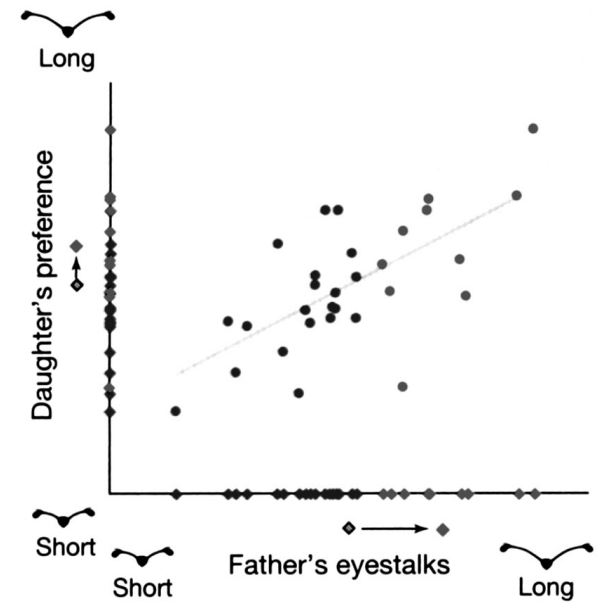
(a) Variation in eystalks and preferences should lead to assortative mating:



(b) Assortative mating should produce genetic correlations between sons and daughters within families:



(c) Selection on male eystalks should produce a response in female preference:

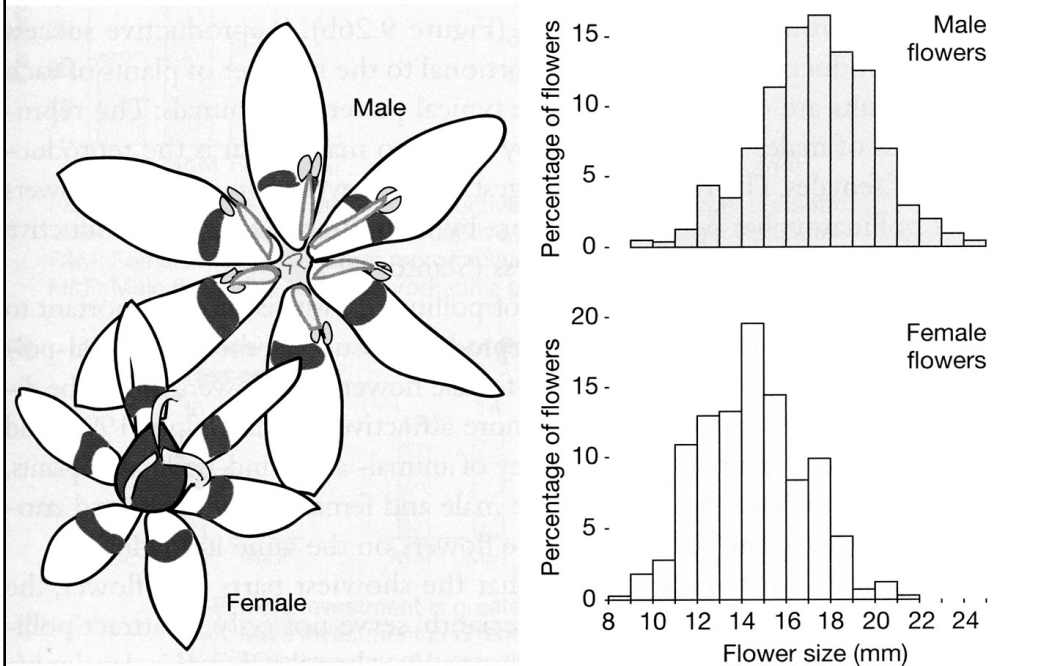


What about plants?



Sexual dimorphism in flowers.

Orchid *Catasetum barbatum* male (left)
female (right)



<- In *Wurmbea dioica*
male flowers larger

Begonias (below)

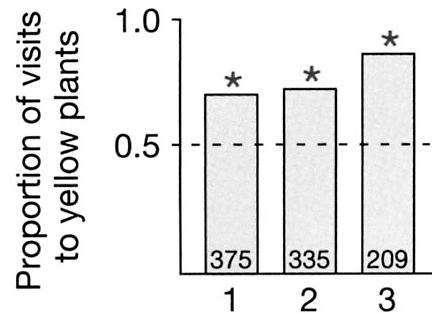


Plant sexual selection

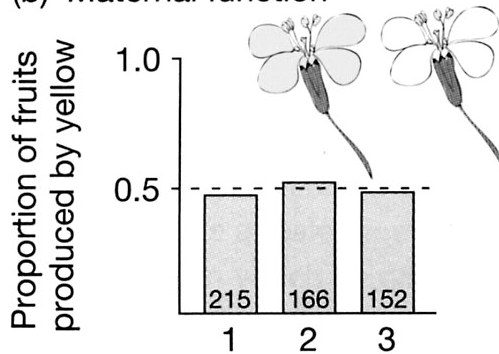
- Male gametes, pollen, small numerous
- Female gametes, ovaries, large limited
- Female makes added investment
- Pollen may compete for pollinators
 - Pollinators might limit male RS more than female

Wild radish, *Raphanus raphanistrum*

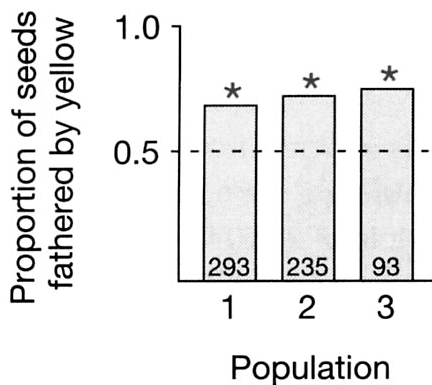
(a) Pollinator discrimination



(b) Maternal function



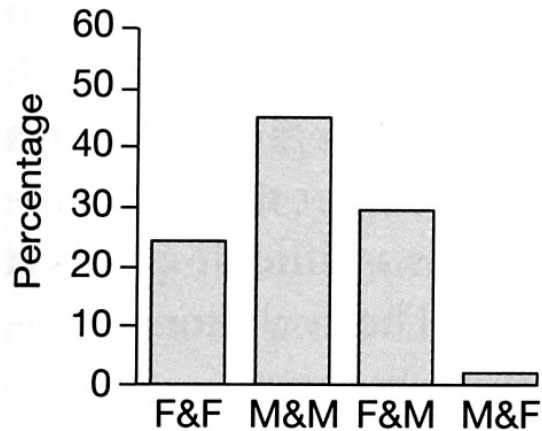
(c) Paternal function



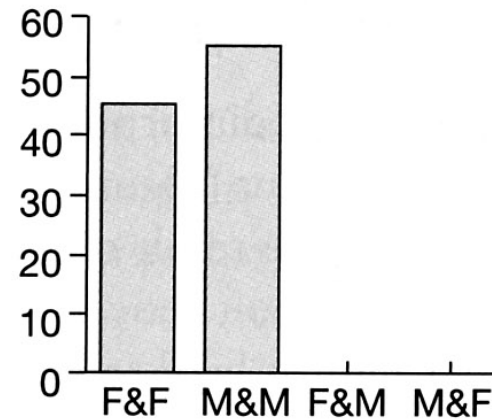
- Insect pollinated, outcrosser
- Populations with 50% white and 50% yellow flowers
- (a) Pollinators prefer yellow
- (b) no effect of that on female reproduction
- (c) big effect on male reproduction

Flower selection for male function

(a) **Animal-pollinated species**



Wind-pollinated species



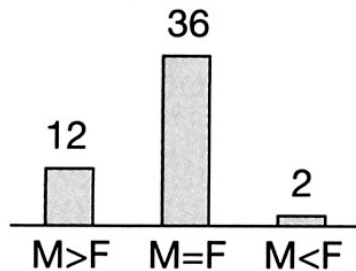
F&F: Female flower has larger reproductive parts and the larger perianth.

M&M: Male flower has larger reproductive parts and the larger perianth.

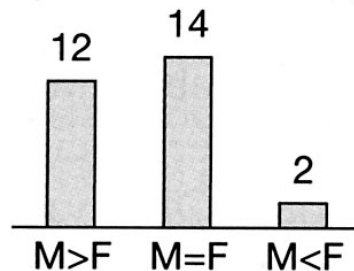
F&M: Female flower has larger reproductive parts, but male has the larger perianth.

M&F: Male flower has larger reproductive parts, but female has the larger perianth.

(b) **Number of flowers per inflorescence**



Strength of floral odor



Quantity of nectar

