

# Social Relations

## Chapter 8



**Behavioral Ecology: Study of social relations. Studies interactions between organisms and the environment mediated by behavior**

# Some differences between males and females...besides the obvious!!!

- Females produce larger, more energetically costly gametes.
- Males produce smaller, less energetically costly gametes.
  - ❖ Female reproduction thought to be limited by resource access.
  - ❖ Male reproduction limited by mate access.



<http://www.youtube.com/watch?v=NjnFBGW3Fmg&feature=related>

# Hermaphrodites

- Hermaphrodites

- ❖ Exhibit both male and female function.
- ❖ Most familiar example is plants.

**So, how do organisms choose their mate???**

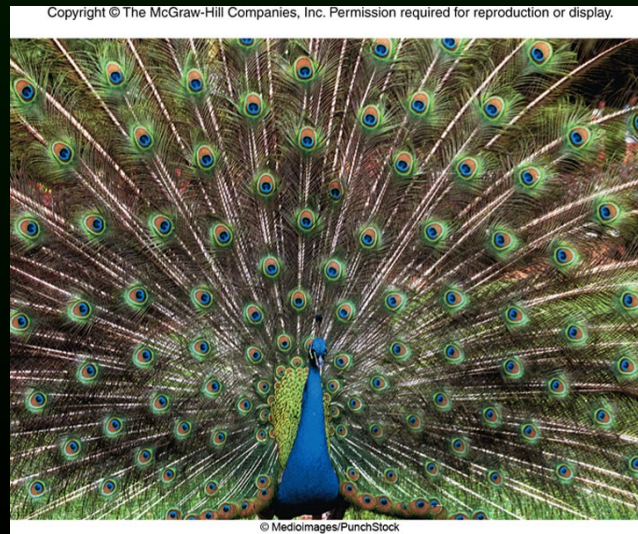


# Mate Choice

## Sexual Selection

- ❖ Differences in reproductive rates among individuals as a result of differences in mating success.
  - **Intrasexual Selection:** Individuals of one sex compete among themselves for mates.
  - **Intersexual Selection:** Individuals of one sex consistently choose mates among members of opposite sex based on a particular trait.

[http://www.youtube.com/watch?v=eYU4v\\_ZTRII](http://www.youtube.com/watch?v=eYU4v_ZTRII)

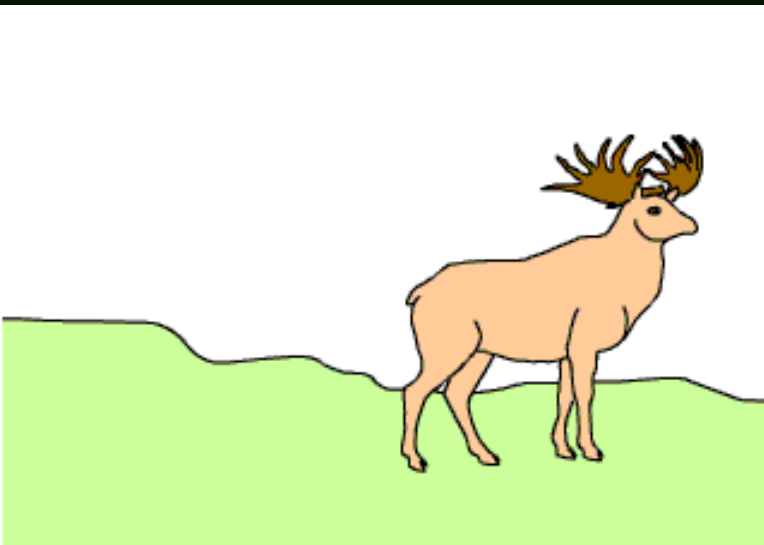




## How much is too much???

- Darwin proposed that sexual selection would continue until balanced by other sources of natural selection
- Given a choice, female guppies will mate with brightly colored males.

However, brightly colored males attract predators.



**It's a trade-off!**

## **Class Activity!!!**

- In groups, using guys in a bar looking for dates example, come up with a scenario of sexual selection either going too far or succeeding!!!

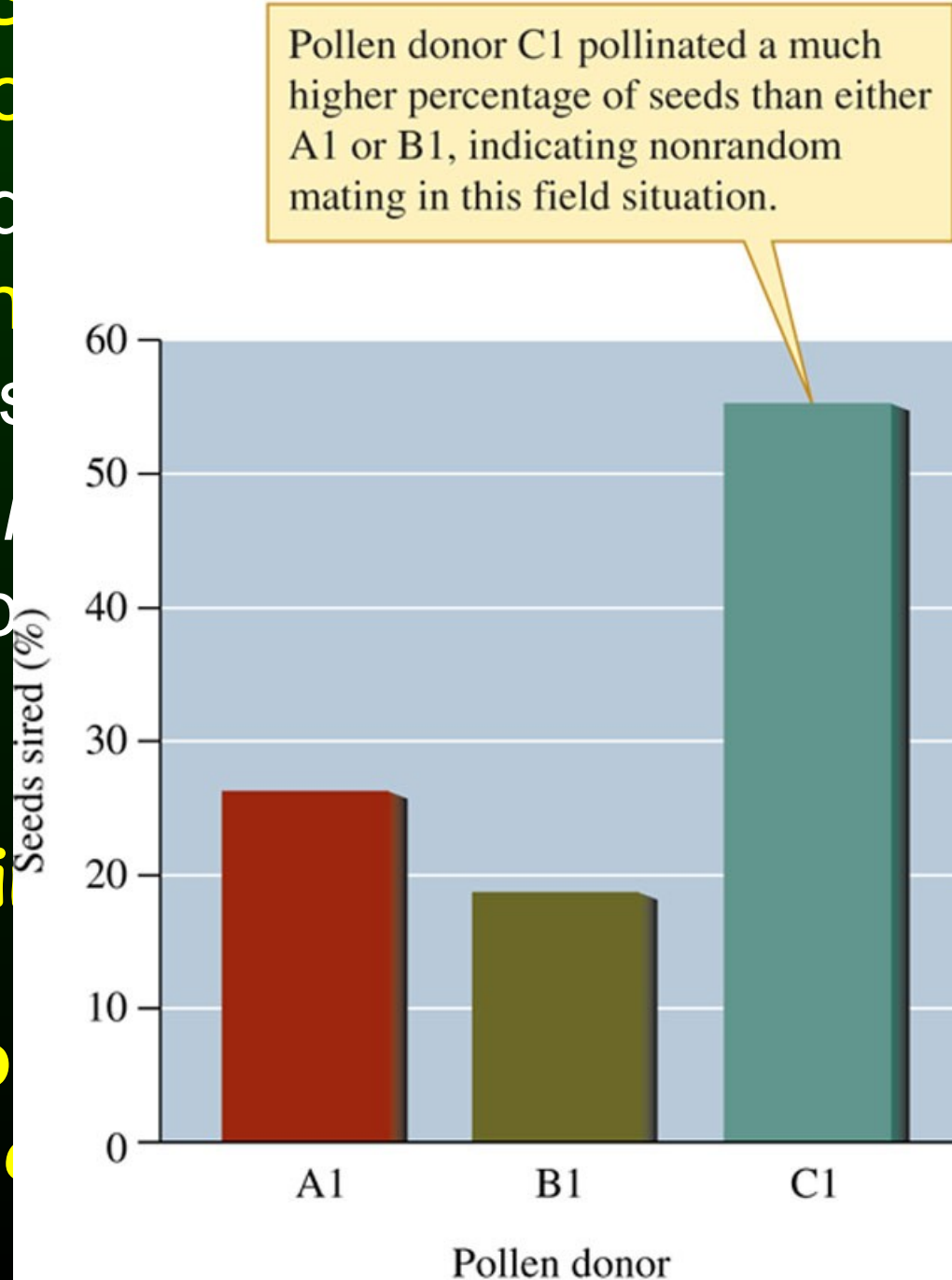
**Be creative!!!**

## Nonrandom

- Wild radish (stamen cannot self)
- *Marshall* radish p

What's going

Competition among pollen



??  
Wild Radish

s, but

in wild



# Sociality

- Evolution of **sociality** is generally accompanied by:
  - ❖ Cooperative feeding
  - ❖ Defense of the social group.
  - ❖ Restricted reproductive opportunities.
- Cooperation generally involves exchanges of resources or other forms of assistance.

[http://  
www.youtube.com/watch?v  
=QT7ZWfXCd7o](http://www.youtube.com/watch?v=QT7ZWfXCd7o)





# Sociality

- Eusociality

- ❖ More complex level of sociality.
  - Three major characteristics:
    - Individuals of more than one generation living together.
    - Cooperative care of young.
    - Division of individuals into non-reproductive and reproductive castes.



# Cooperative Breeders

- Species living in groups often cooperate in rearing offspring.

❖ What benefit do helpers gain?

How does this work with evolutionary ideas??? Passing on YOUR genes to the next generation! Darwin struggled with this!



**Let's listen to something cool!!!**

So, cooperative breeding could lead to...






- **Inclusive fitness:** Improve survival and reproductive rates of family members.
  - **Inherited territory:** May increase helper's probability of future reproduction and recruiting helpers.
    - **Kin Selection**

**So...your genes still get passed on...just not as directly!!!**


# Kin selection appears to play a key role in the evolution of eusociality

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Division of labor in both leafcutter ant colonies and naked mole rat colonies is based on size.

Leafcutter ants		
Caste		Activity
Queen		Reproduction
1.0 mm Gardeners and nurses		Tending fungus garden, feeding larvae, "parasol" riding, defense against aerial attack
1.4 mm		Processing leaves, feeding queen, garden reconstruction
2.2 mm		Cutting leaves, carrying leaves, defending against small invaders, excavation
3.0 mm		Defense

3.0 mm  
Scale

Naked mole rats	
Caste	Activity
Queen	Reproduction
	
Small nonbreeders ~ 20–40 grams	Excavation, nest building, foraging
	
Large nonbreeders ~ 40–60 grams	Nest defense against snakes and other mole rats
	



