Social relations
Bees do it. Birds do it.

Overview
- Interactions of organisms and their environment...
- Behavioral ecology
- Basic biology: increase your fitness—pass on your genes to the next generation
- So...
  - Organisms need to find a mate, and
  - 'Develop' ways to get along with one another

Patterns of reproduction
- Asexual: form new individuals that are genetically the same as the parents
  - Always?
- Sexual: haploid gametes combine to form diploid zygotes
  - Offspring are genetically different
  - But, since only providing half of your genes, mate selection is important

The Red Queen Hypothesis
- Lewis Carroll's *Through the Looking Glass*
  - The Red Queen tells Alice, "[I]t takes all the running you can do, to keep in the same place."
- Sex allows species to evolve (run) to keep from going extinct (same place) due to deadly parasites
  - Infection causes sterility

Sexual selection
- In general, females are picky, males are not...why?
- So, males often compete among themselves ($\alpha$sexual selection) to be selected by females for $\beta$sexual selection reproductive access
- Hence, females rule
- Leads to evolution of mating traits
  - Secondary sexual characteristics

Sexual selection (2)
- Darwin (1871) first hypothesized that elaborate antlers, plumage were related to sexual selection because they did not make sense in terms of 'typical' natural selection
An example with guppies

Which one is the male? Why?

Poecilia reticulata
Native to the Caribbean

Fig. 8.4

Guppies: mesocosms

- Any costs to attracting females?

Fig. 8.7

Guppies: streams

- But does it occur in the field?

Fig. 8.8

An example with scorpionflies

Fig. 8.9

Panorpa latipennis
Male adult

Eating a spider
By, Zbigniew Urbanczyk

Mate choice in scorpionflies

- What do females want?

Fig. 8.10
Scorpionfly body size matters

- Male competition for nuptial offerings leads to...

Figs. 8.12 & 13

Intersexual selection

- Can we sum up these examples?
- Two types: resource-based selection and genes-only selection

Leks and lek behavior

- Although not common, it's widespread among animals (insects, frogs, birds, and mammals)
- Type of selection?

Can't we all just get along?

- Instead of an entirely cutthroat world, some individuals cooperate in groups to succeed (i.e., sociality)
- Usually involves exchanges of resources or assistance (e.g., defending against predators)
- However, something appears to not make sense:
  - Individuals in groups appear to have fewer chances to reproduce compared to those not living in groups
  - How could this be selected for?

An example with lions

- Explain this picture

An example with lions (2)

- Protection

Packer & Pusey 1997
An example with lions (3)

- Feeding

An example with lions (3)

- Raising young

An example with lions (4)

- What about the males?

The more the merrier?

- Why should unrelated males help?

Kin selection

- Members of groups can benefit while helping raise and defend offspring that are not their own because they can…?