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 ____ as the parents
  - Always?
- **Sexual**: haploid gametes combine to form diploid zygotes
  - Offspring are genetically ______
  - 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 (sexual selection) to be selected by females for ______ 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

Irish elk: antlers 12' wide, 90 lbs

Bdelloid rotifer
Hydra
Mating damselflies
Potamopygus antipodarum
Trematode parasite
Research by Curt Lively

Human egg & sperm
Pheasants
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. 8.4

Guppies: mesocosms

- Any costs to attracting females?

Fig. 8.7

Guppies: streams

- But does it occur in the field?

Fig. 8.6

An example with scorpionflies

Eating a spider
By, Zbigniew Urbanczyk

Panorpa latipennis
Male adult

Fig. 8.9

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

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

Although not common, it’s widespread among animals (insects, frogs, birds, and mammals)

Type of selection?

Leks and lek behavior

Gunnison sage grouse

Type of selection?

An example with lions

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An example with lions

- Explain this picture

An example with lions (2)

- Protection
An example with lions (3)
- Feeding

An example with lions (3)
- Raising young

An example with lions (4)
- What about the males?
- Male coalition

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…?

Fig. 8.17

Fig. 8.24 & 25