

BIO 45 -- BIOLOGY, ECOLOGY AND SOCIAL BEHAVIOR -- 2002

The last six lectures integrate many of the themes in the course. Besides cost-benefit thinking, optimality, game theory, sexual selection and inclusive fitness, we will examine the following:

- 1) How do biology and ecology affect social behavior within and between species
- 2) Why is looking over the entire lifetime of both sexes necessary to understand some behaviors
- 3) How can males and females have different factors affecting their reproductive success
- 4) How can very different social dynamics occur with apparently similar social structure?

I will focus on several groups of vertebrates in lecture; you should also look at other species Alcock discusses in his chapters on mating systems and social behavior -- look for general principles and the interplay of ecology and sexual selection and inclusive fitness.

I. The important difference between social structure and social dynamics:

Social Structure = number, sex, relatedness, and ages of animals in a social group

Social dynamics = patterns of: social bonds, aggressive interactions, mating patterns, aid-giving, cooperation, parent-offspring association, and dispersal.

II. Eusocial Animals

A. Inclusive fitness and ecology explain more than either alone

III. Carnivores -- Cats and Dogs

A. Biology and behavior - Canids and Felids

- Dogs are generally social and cats generally solitary
- Lions are the most social cat - why are they social?
- Hyenas - divergent social systems and ecology within a taxonomic family
- Some species have the same social structure - males + females. How do the dynamics differ?

B. Understanding lions means looking across lifetimes!

III. Ungulates -- “horses” (non-ruminants) and “cows” (ruminants)

A. Habitat and social structure - African ungulates

B. Structure is deceiving - Male harems **or** Female groups with male satellites?

- Horses - different ecology => different social structure and dynamics w/in species
- Elephants - extended female families and reproductive suppression

C. Red deer

- patterns in differential investment between the sexes
- different correlates of reproductive success for males and females

IV. Primates

A. More structure-dynamics -- female-female bonded versus male-female bonded social systems

B. Changing views of dominance hierarchies and reproductive success

C. Emerging areas of study

- reproductive suppression of females by females
- sex ratios for dominant and subordinate females
- long-term bonding, baboon 'friendships'

D. What if our ancestors were more like bonobos than chimps or baboons?