Lecture: Conflict Resolution (Ch. 11)

- **Why do conflicts occur? What are some of the resources over which conflicts arise?**
  - Occur at any time two individuals simultaneously attempt to gain access to the same valuable resource
    - Food
    - Mates
    - Shelter
    - Territory
- **What do we mean by the value of a resource? What does the value of a resource depend on? How might the value of a resource differ between individuals?**
  - Food: may increase in value if scarce or unevenly distributed
  - Mates: value of a female may increase with body size, age
  - Shelter: value may increase if shelter contains offspring
  - Territory: value is that it contains food, shelters, mates, offsprings
  - Value = fitness gained by winning – fitness lost by losing
  - Overall value depends on objective properties (size, quality), abundance of resource, and needs of the contestant
- **Why should competitors signal when their interests are opposed?**
  - Both competitors would benefit from not having to pay the cost of a fight
- **What kinds of information are generally conveyed by aggressive signals?**
  - Resource holding potential
  - Motivation
  - Experience
- **What is resource holding potential? What is an example of a signal conveying RHP?**
  - Probability of successfully defending a resource against a challenger
  - Example: larger males win wrestling contests over smaller males 17:3
- **What is motivation? What is an example of a case when the motivation of two competitors differs? How can this affect the outcome of an interaction?**
  - Opponents differ in their need for a resource & value they place on resources
  - Example: older territory individuals (may have lower RHP) tend to win encounters
  - Territory residents value location more; winning represents a higher payoff
- **What is experience? What is the winner-loser effect? What is an example of the winner-loser effect?**
  - Previous wins and losses affect outcomes of future contests
  - Winner-loser effect: an animal that has won previously more likely to win; an animal that has lost more likely to lose
  - Differences may be mediated by physiological changes (testosterone, etc.)
  - Example: world cup soccer matches, college basketball game

Lecture: Conflict Resolution Part 2 (Ch. 11)

- **What are agonistic signals? Why are aggressive signals and agonistic signals not exactly the same?**
    - Agonistic signals include signals of fighting ability, motivation/intent to attack, dominance, de-escalation/submission
    - Have mechanisms to retain reliability: index signals, receiver retaliation costs, handicap energy costs
- **Be familiar with the different ways animals may convey their resource holding potential—in terms of body size, stamina, and weapons. What are some examples of these RHP signals?**
    - Body size indicators: important in determining conflict outcome. Size-enhancing structures may be handicaps. Acoustic body size indicators: the vocal tract length determines what frequencies will be amplified (formants) and can be highly constrained by body size. As vocal tract length increases, spacing between formants increases (formant dispersion = index signal of size)
    - Stamina indicators: stamina is affected by body condition, energy stores, metabolic rates and immune response. Stamina determines how long an animal can continue in a contest and therefore fighting ability. Lateral compression display (lizards) is energetically costly
    - Weapons: affect ability to inflict injury on opponent. Weapons are susceptible to bluffing, as in fiddler crab
- **Be familiar with the different levels of aggressive motivation animals may convey by signaling—challenge signals, general aggressive motivation signals, and offensive threat signals. How is the intensity of aggressive motivation conveyed in song sparrows? What is the benefit of these different levels of signaling? How do they differ?**
    - Challenge signals: often given at a distance. Song-type matching predicts subsequent approach toward rival, but not attack
    - General aggressive motivation signals: higher display rates often indicate intent to persist. Higher song rates reveal motivation to challenge territory owner, does not reliably predict attack
    - Offensive threat signals: intent to attack. In close proximity. Reliability maintained through receiver retaliation costs
- **Be familiar with different types of dominance signals—status signals and territory ownership signals. What is the dear enemy effect? How does this relate to territory ownership signals?**
    - Status indicators: used as mechanism to reinforce dominance hierarchies ("badges of status")
    - Territory ownership signals: territory owner is dominant within its territory. Signals of territory owners tend to have individual signature. "dear enemy" effect is when respond more aggressively toward stranger song than neighbor song

Conflict Discussion: Badges of Status in House Sparrows

- **What are badges of status? What is the evidence that dark melanin patches have a dominance signaling function in sparrows?**
    - Badges of status are status indicators to reinforce dominance hierarchies
    - In Harris's sparrows, males darker than females, adults darker than juveniles
    - Darker birds more likely to win aggressive interactions with lighter birds: patch correlated with aggressive success
    - Plasma testosterone positively correlated with badge size
- **What is the social control hypothesis? What predictions can be made from the social control hypothesis regarding badge manipulation? Do the results from Gonzalez et al. 2002 support or refute this hypothesis? Why or why not?**
    - Large badges have a receiver-dependent cost, because they elicit attacks by other individuals
    - Badge indicating strength is costly because it provokes attacks by strong individuals
    - Support
- **What is the immunocompetence handicap hypothesis? Why is this suggested to maintain reliability of badges of status in sparrows? What predictions can be made from this hypothesis regarding testosterone manipulation? Do the results from Buchanan et al. 2003 support or refute this hypothesis? Why or why not?**
    - Suppression of immune system enhances fertility. Allocation of limited resources between development of ornamental traits and immune system
    - Badges require production of melanin, which in turn weakens immune system/other tissues
    - Testosterone → enhances fertility, weakens immune system
    - Support

<u>Lecture: Mate Attraction and Courtship (Ch. 12)</u>

- **What is sexual selection? What is the difference between inter- and intra-sexual selection?**
    - Males and females often differ in investment in each of the phases of the reproductive cycle, leading to conflict between the sexes
    - Anisogamy: difference in size/mobility of gametes
        - Females produce large, nutritionally provisioned ova
        - Males produce small, highly mobile sperm
    - Differential gametic investment and recovery periods lead to a male-biased operational sex ratio: receptive males to receptive females
- **What is sexual dimorphism?**
    - Differences between the sexes resulting from sexual selection acting differently on males and females
- **What is the general pattern of behavior between males and females in terms of which chooses partners, and which competes for mates?**
    - Intrasexual selection:
        - Competition within a sex for mates