Lecture 15: 25 Oct 2018

Andrew Evolution of Sex and Sexual Selection Review session Monday 3-415pm in Yenching

1. Sex is an anomoaly
   (a) Twofold cost to males: if a female can asexually reproduce then each female can reproduce from there but if you need males, need to find a mate and then some of the offspring are males. Double the efficiency with asexual females. In theory, a hermaphrodite should sweep through a population - eliminate males.
   (b) Balancing Selection (balanced polymorphism): sickle cell anemia example
   (c) Aggravation: spider example - male is killed and eaten
   (d) Disease
2. Asexuality is rare. Is facultative
   (a) short lived resource to be exploited to its maximum - asexuality arises. Ex. Aphids which is temporary but become sexual again at the end of summer
   (b) Phylogenetic distribution of asexuality is evolutionarily short lived
3. Benefits of Sex
   (a) Asexual vs sexual in antibiotics example. Sex enhances evolvability (the rate at which a solutianary response can occur)
   (b) Sex is favored in a highly variable environment. Climate change.
   (c) Red Queen Theory: species are all evolving just to stay in the same place. Lion vs zebra example
      i. Parasites attack most common individuals so better to be rare. Sex increases diversity or 'rareness'.
      ii. RA Fisher: sex rations are usually at parity. If one is in excess, the other is in demand. Good to be rare - more success
4. Departures from sex ratio parity

(a) Trivers & Willard: depends if you offspring will be better or worse than average

(b) Island of Rhum: Read deer in Scotland. Males fight amongst each other. Females will likely be mated, regardless of rank. High variance of male reproductive success but low variance in success in females.

(c) When females are healthy, can produce big baby boys. But if not as healthy, then can produce low rank females.

(d) Opposum experiment

5. Angiospermy

   (a) Choosy Females - more costs

   (b) Sexual Dimorphism: positively correlatd with strength of sexual selection

   (c) Role Reversal: some species switch. seahorse example

6. Inter vs intra sexual selection

7. Sperm Competition: polygamous vs monogamous and ejaculate volume. Dragonfly example.

8. How does inter sexual selection arise?

   (a) Runaway Model: widow-tailed birds (Fisher again)