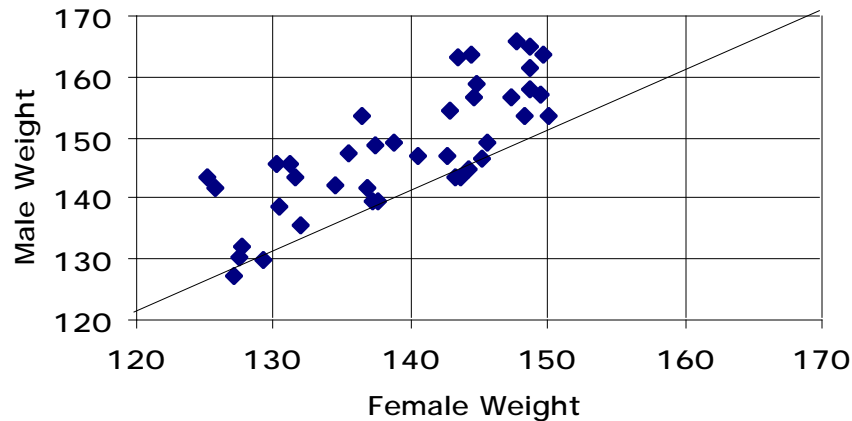


Sexual Selection

Chapter 9

I) Sexual Dimorphism – males and females are different.

Male versus Female Weight



A) Sexual Dimorphisms are difficult to explain

- 1) If characteristic is good for the male why not everybody (i.e., female)
- 2) Characters often appear to be maladaptive
 - a) bright red coloration and long tail feathers in birds

II) Sexual Selection

A) Definition – differences among individuals in attracting mates

B) Sexual reproduction is asymmetrical between males and females

- 1) Females generally make larger parental investments
 - a) larger cost in producing gametes
 - b) increased energy in producing offspring
 - c) increased energy in caring for offspring
 - d) reduced ability to produce other offspring

- 2) **Lifetime reproductive potential is lower in females**
 - a) **because of the above cost differences, females are limited in offspring production by the number of eggs (or pregnancies) she can have**
 - b) **males lifetime reproductive success is high, but limited by the number of females he can mate with.**

- 3) **Access to males is not a limited resource for females but access to females is a limited resource for males (i.e., females run the show).**

- 4) **consequences of asymmetrical fitness limits**
 - a) **males will compete for females**
 - b) **females will chose mates carefully (i.e., choosy)**

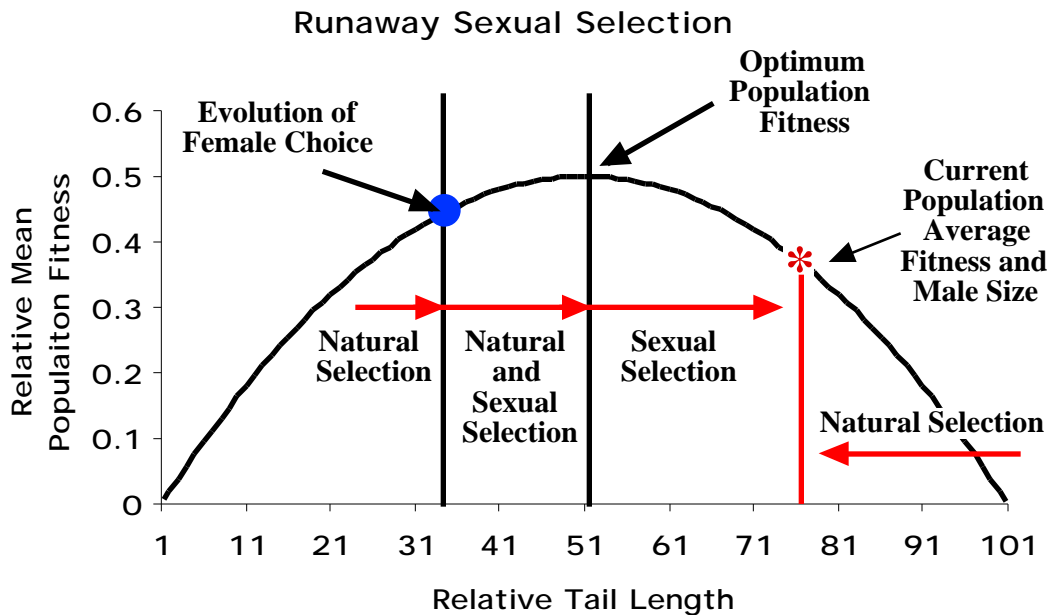
- C) **Male – male competition or Intrasexual competition – males compete with each other for access to mates.**
 - 1) **Combat – males physically interact with each other**
 - a) **gain physical access to females**
 - b) **hold limited resource (e.g., food) necessary for female**
 - c) **generally results in selection for larger body size, aggressive behavior, weaponry, armor, etc.**

 - 2) **Sperm competition – competition can be among the sperm from different males after copulation**
 - a) **when females are inseminated by more than one male, the male leaving the most sperm has higher reproductive success**
 - b) **can result in strategies like males may remove other males sperm, block future copulations, prolong mating, etc.**

 - 3) **Infanticide – when social structure is effected by outcome of male-male competition, new males kill any young they did not father.**
 - a) **reduces females reproductive success, but may not be avoidable.**

 - 4) **Selection for alternate strategies**
 - a) **sneaker males – small, female looking reproductively viable males.**

- D) Female choice – females select characteristics in males that increase their own reproductive success.**
- 1) Good Genes hypothesis – females may chose males that have the best, most fit genes so that the offspring will have good genes.**
 - a) Direct display – vigorous, good looking males are that way because they are genetically superior (e.g., feather color intensity and mite density in cliff swallows)**
 - b) Handicap – any male that can maintain an energetically expensive or risky character is more fit.**
 - 2) Good Father hypothesis – females chose males that can best provide for their offspring**
 - a) large territories with lots of food, best nest, most devoted, etc.**
 - 3) Preexisting Sensory bias – females preference for a particular characteristic evolved first for different reasons then male mating display followed (frog calls and species identity).**
 - 4) Sexy Son hypothesis – female choice can be arbitrary relative to current reproductive success (i.e., fitness).**
 - a) once a particular male characteristic is favored by females then selection on females will increase the frequency of the favorable trait (i.e., females will produce sons that are more attractive to females)**
 - b) Runaway Sexual Selection – expensive and/or elaborate male characteristics may be preferred by females but result in a lower mean population fitness than if not.**



E) Exceptions prove the rules – in cases where the initial assumption of access to males not being a limited resources for females but access to females is for males is known to be false, predictable outcomes are observed

- 1) Emperor penguins – males and females share rearing and care and there is no sexual dimorphism**
- 2) Pipefish – males incubate and rear young and females compete for access to males.**