

WLF 419 - Waterfowl and Wetlands Ecology and Management

Lecture 2 - Mating Systems

Next Time - Courtship and Pair Formation

How fitness of individuals with different reproductive strategies is affected by ecological and evolutionary factors?

! Natural selection should favor individuals that behave in a way that allows them to maximize their contribution (genetic) to future generations

! Given the range of ecological and evolutionary diversity in waterfowl, we should expect a variety of mating systems

Rich History

! Darwin (1871) - The descent of man and selection in relation to sex

! Classification

" Monogamy - one mate at a time

" Polygyny - more than one female mate at a time

" Polyandry - more than one male mate at a time

" Promiscuity - indiscriminate mixture

Predictions

! How do sexes cooperate or compete to maximize fitness?

Is ... What is good for the goose is good for the gander?

! Male reproductive success should be limited by access to females, because males can fertilize more than one female

" Monogamy not favored

! Reproduction costly (energetically, demographically) for females L share cost with male

" Favors monogamy or polyandry

Mating System also influenced by ...

! Parental Care

" Ex. Emperor Penguin

! Spacing Pattern

" Food resources

- " Breeding sites
- " Predators?
 - e.g., lack of territorial defense may enhance non-monogamous mating system

What do we observe?

! Perennial Monogamy

- " Anserini, Cygnini, and Dendrocygna
 - Male defense of mate
 - Male assistance in brood care
 - Males incubate in some species (Black Swan)
 - Low frequency of EPC and mate switching

! Annual Monogamy

- " Anatini, Aythini, Oxyurini
 - New mate each year
 - Range of duties
 - N Male defense of mate from conspecifics to
 - N territory defense (Northern Shoveler)
 - No incubation or brood care by males
 - Forced copulation

! Polygyny

- " Rare
- " Magpie Goose
- " Ruddy Duck only NA species

! Polyandry

- " Unknown

Why is monogamy dominant?

! Perennial or annual monogamy in about 93% of waterfowl

! But ...

- " Young are highly precocial
- " Males participate in brood care in few species
- " Males rarely incubate, therefore
 - Males are emancipated from many duties ...which should lead to polygyny

- ! However,
 - " Female biased parental care does not promote polyandry
 - however, precocial young are costly and require acquisition of substantial nutrients prior to breeding
 - " Male biased sex ratios (not primary)
 - Product or cause of mating system?
 - Male-Male competition
 - Acquisition of nutrients - social dominance
 - Feedback
 - " Female biased philopatry (fidelity)
 - Product or cause
 - Feedback
 - " Breeding ground resources are not highly defensible - no resource-defense polygyny
 - " Monogamy by default because ...
 - No basis for polyandry
 - No resource-defense polygyny - on breeding grounds

Alternate Mating Strategies

- ! Forced Copulation
 - " Mostly by paired males
 - " Directed at fertilizable females, particularly in the morning
 - " Female solicitation?
- ! Serial Monogamy
- ! Double brooding
 - " Wood Duck
- ! Brood Parasitism
 - " Redhead and Canvasback