

1. What is parental care?

a) Definition (Robert Trivers 1972)

Parental Investment

Any investment by the parent in an individual offspring that increases the offspring's chance of surviving (and reproducing) at the cost of the parent's ability to invest in itself or other offspring

1. What is parental care?

- includes metabolic investment in the primary sex cells
- does not include effort in finding a member of opposite sex or subduing a member of its own sex (=mating effort)
- intensity of sexual selection = relative parental investment by males versus females (PI_{δ} / PI_{ϕ})

1. What is parental care?

b) Ecological benefits and costs

Benefits

- increased hatching
- increased growth
- reduced predation
- increased breeding success

Costs

- energy
- time
- increased predation (adult)
- decreased breeding success

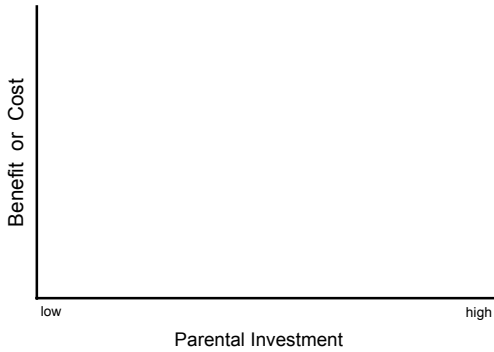
- Benefits are measured from the perspective of the offspring
- Costs are measured from the perspective of the parent

2. Patterns of parental care

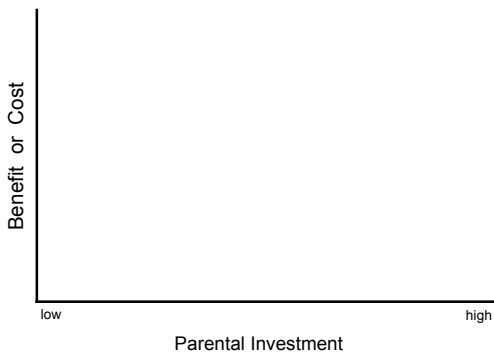
Parental Care ↔ Mating System

Birds	biparental	monogamous
Mammals	uniparental female	polygynous
Fish	uniparental male	promiscuous

3. Parent-Offspring Conflict



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Paternity and Parental Investment

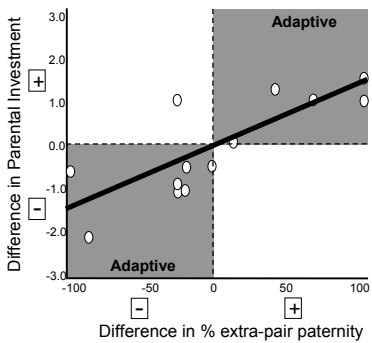
(Dixon et al. 1994)



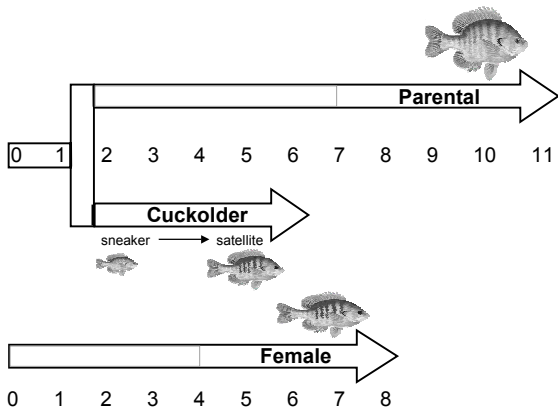
1. Reed buntings are a small socially monogamous passerine bird with biparental care.
2. Social pairs can produce two clutches in a single breeding season.
3. Females may mate with an extra-pair male (genetic polygamy).
4. Paternity off the social male varies from one clutch to the next.
5. Dixon et al. compared social male's paternity in successive clutches to their parental investment.

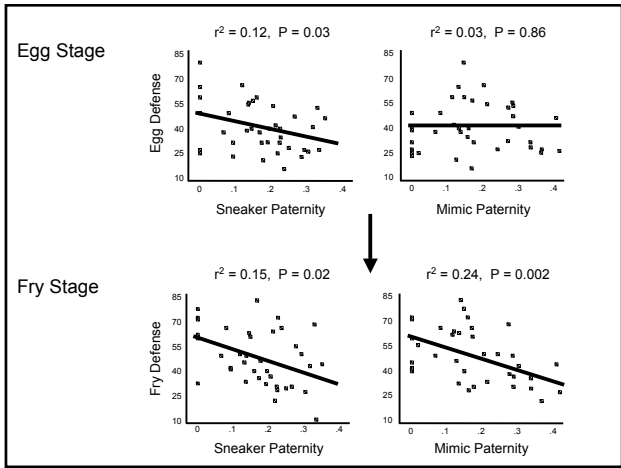
Paternity and Parental Investment

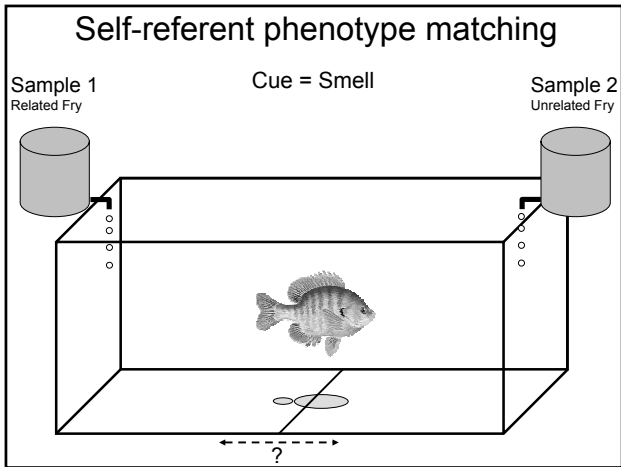
Reed Buntings

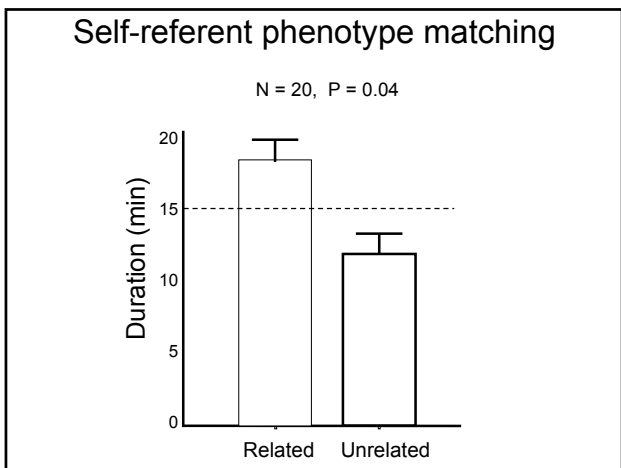


Bluegill Reproductive Life Histories

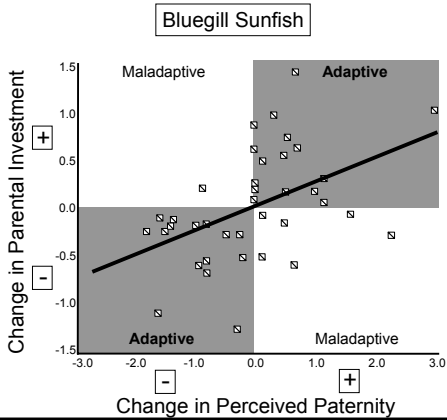








Paternity and Parental Investment



1. If a parent must choose between which offspring to invest into, how might the choice be made? Use a graph to support your answer.
2. You are studying an exotic lizard from the Galápagos and discover that offspring mortality is highest early in life when the offspring is small, but quickly drops off as the offspring grows. Females have broods of two offspring and they lay eggs about 1 week apart. Would you expect the female to show favouritism during parental care? Use a graph to explain your answer.

3. A brood consists of two young. One is 50% related to the care-providing parent, while the second is only 25% related to the parent. In relative terms, how much food will each offspring demand from the parent and how much food is each likely to get?

4. You are studying parental care behaviour in a bird species that has female only care, egg parasitism and is semelparous. You are watching two nesting females: female A has been parasitized such that only two of the four eggs in her nest are her own; female B has laid all four of her eggs. Which female will provide more care and why? Be sure to use a graph to support your answer.
