

Introduction to Behavior and Behavioral Ecology

1. Define behavior.
2. Distinguish between proximate and ultimate questions about behavior. Ask a proximate question and an ultimate question about bird song.
3. Explain how the classical discipline of ethology led to the modern study of behavioral ecology.
4. Define fixed action patterns and give an example.
5. Define imprinting. Suggest a proximate cause and an ultimate cause for imprinting in young geese.

Many Behaviors Have a Genetic Component

6. Explain how genes and environment contribute to behavior. Explain what is unique about innate behavior.
7. Distinguish between kinesis and taxis.
8. Distinguish between signal and pheromone.
9. Explain how Berthold's research demonstrated a genetic basis for blackcap migration.
10. Describe Insel's research on the genetic and physiological controls on parental behavior of prairie voles. Describe Bester-Meredith and Marler's research on the influence of social behavior on parental behavior of California mice.

Learning

11. Explain how habituation may influence behavior.
12. Describe Tinbergen's classic experiment on spatial learning in digger wasps.
13. Distinguish between landmarks and cognitive maps.
14. Describe how associative learning might help a predator to avoid toxic prey.
15. Distinguish between classical conditioning and operant conditioning.
16. Describe an experiment that demonstrates problem solving in nonhuman animals.

Behavioral Traits Can Evolve by Natural Selection

17. Explain how Hedrick and Riechert's experiments demonstrated that behavioral differences between populations might be the product of natural selection.
18. Use an example to show how researchers can demonstrate the evolution of behavior in laboratory experiments.
19. Explain optimal foraging theory.
20. Explain how behavioral ecologists carry out cost-benefit analyses to determine how an animal should forage optimally. Explain how Zach demonstrated that crows feed optimally on whelks.
21. Explain how predation risk may affect the foraging behavior of a prey species.
22. Define and distinguish among promiscuous, monogamous, and polygamous mating relationships. Define and distinguish between polygyny and polyandry.
23. Describe how the certainty of paternity influences the development of mating systems.
24. Explain why males are more likely than females to provide parental care in fishes.
25. Suggest an ultimate explanation for a female stalk-eyed fly's preference for mates with relatively long eyestalks.
26. Agonistic behavior in males is often a ritualized contest rather than combat. Suggest an ultimate explanation for this.

27. Explain how game theory may be used to evaluate alternative behavioral strategies.
28. Define inclusive fitness and reciprocal altruism. Discuss conditions that would favor the evolution of altruistic behavior.
29. Relate the coefficient of relatedness to the concept of altruism.
30. Define Hamilton's rule and the concept of kin selection.

Social Learning and Sociobiology

31. Define social learning and culture.
32. Explain why mate choice copying by a female may increase her fitness.
33. State the main premise of sociology.