

### Study Questions for Exam 2, part #3

1. You are a behavioral ecologist interested in understanding why Bald Eagles choose certain prey types and not others. What types of questions would you ask?
2. How would you determine the Profitability of a certain type of fruit eaten by Capuchin monkeys. Why is it important to quantify profitability?
3. Draw a saturating curve of energy gain versus time spent foraging. What do negative x-values represent? What do positive x-values represent? According to the marginal value-theorem, when would it be best for a foraging animal to stop foraging in that area (or on that item) and move onto another search? Illustrate this result graphically.
4. What do the following ratios represent?
  - a.  $E/T$
  - b.  $e/h$
  - c. How would you utilize the preceding two ratios to determine when a forager should accept or pass on a particular food item.
5. Like our species, most animals do not settle down and raise their own family in the exact location of their parents. Why might it be beneficial to leave your birthplace (offer 3 reasons). Even though there may be many reasons to leave one's birthplace, there are also some costs involved in leaving. Offer 3 reasons why an organism might not want to leave their birthplace.
6. How is migration different from other movements by animals?
7. Tendencies for long-distance migration in birds may have first arisen from short-distance movements that increased foraging or reproductive success. Even given these benefits, why might an organism not evolve long-distance migration tendencies?
8. In some areas, a given population of birds includes both migratory and non-migratory individuals. In the case of species that are never territorial, such as Canada Geese, what would you predict about the survival of individuals that stay versus migrate? (Hint: could this be an ESS?)
9. You are a scientist studying gray wolf behavior. You are trying to determine if these wolves are truly territorial. What type of data would be needed to prove true territoriality?
10. An animal's territory often changes in size from year to year. How should changes in (1) food density, and (2) density of neighbors (competitors) change the optimal territory size?
11. Mitani and Rodman predicted that primates would be territorial under what conditions?

12. Given that day length in early summer always increases toward the poles, and that birds can raise larger clutches of offspring the longer they have to forage, why don't all migrating birds travel to the northern-most land areas to breed? (Hint: think of the costs of breeding in the far north).
13. What is THE essential defining condition of an ESS with two or more coexisting behavioral phenotypes? An example of such an ESS is the 'jack' vs. 'parr' types in salmon.
14. In a species in which 'Hawk' individuals routinely pay appreciable costs of injury from escalated fights, why is the 'Bourgeois' strategy an ESS?
15. In a mixed population of Hawks and Doves, the 'Anti-bourgeois' strategy (owner always retreats, intruder always wins) is just as much of an ESS as is the 'Bourgeois' strategy (although the two strategies cannot coexist). When then in nature do we find the 'Bourgeois' strategy in nearly all species?
16. In what ways is an ideal-free distribution 'ideal' and 'free'?
17. In the following table of three arbitrary strategies A, B, and C, fill in numbers for the payoffs in such a way that B is an ESS.

		Against an opponent of type:		
		A	B	C
Payoff To an individual of type:	A			
	B			
	C			

18. After all individuals looking for habitats to settle in have had a chance to choose, which habitat (the richest, the poorest, something in between) will have the individuals with the highest average fitness, assuming they behave according to an ideal-free distribution? Explain your answer. How would your answer change if individuals in the best habitats used force or other means to limit how many individuals could settle in the best habitat? Does your answer help explain anything about the immigration policy of the United States of America?