

Comments and Study questions for Dugatkin Chapter 10. Foraging

Ethology and Behavioral Ecology
Spring 2007

Although this is a long chapter, the examples are interesting and moreover, I will cover much of what is in here in some detail. As with other cases like this, concentrate on the examples and questions listed below.

1. The section on OFT will be covered extensively in class. Read it for general ideas that I will not spend too much time on – this section should help you put all the important ideas regarding OFT together.

When two types of prey are available, one profitable and one less so, what is the "rule of thumb" (see Krebs interview at the end of the chapter) as to which should be taken. How would you predict which item to take and what ratio? Note question #3 at the end of the chapter. The box relates to something called Hollings' disc equation, we will cover it extensively in class and will read an article related to this model.

2. Rate optimizing models (marginal value theorem) and nutritional constraint models will be covered in class – just read the examples in the text.

3. Be sure you understand the notion of risk sensitive – risk adverse and the logic for pursuing one or the other tactic in different situations.

4. The learning section is truly innovative and follows a major theme of the course. Concentrate on this part of the chapter.

a. Dugatkin really believes in relationships with brain size. Does fig. 10.17 convince you of a strong relationship? Read table 10.1 carefully – some of the behaviors are truly remarkable, others pedestrian. Think about this "innovations" table and what we learned in the cognitive and learning sections of the course. What are some of the potential problems (i.e., critique) with Sol and Lefebvre's work.

b. What is the **relational theory of learning** as compared to more traditional models?

c. What are the advantages of group foraging? What is the difference between group foraging (broadly writ) and cooperation?

d. We have considered the pigeon example (Lefebvre again) earlier when we discussed social learning. Notice additional data about rate of acquisition of piercing behavior. What are **producers** and **scroungers**? Be able to recount the experiments that showed how the presence of scroungers cut back on social learning.

e. Relate the concept of **public information** to other advantages of group foraging.

5. The molecular stuff is at a very early stage. Notice that the author goes on and on about expression of the *per* locus (we learned about this one earlier in the course) but never really explains why it might be important to express in forager bees as compared to those who do not leave the hive (nurse bees). Do you have any ideas? Do you think *per* expression is required to measure time when a bee is outside of the hive or might it have a more important function?

6. John Krebs is a giant in ethology. Read the interview with him very carefully as it is excellent. In particular, pay attention to his idea of optimal rules of thumb as compared to optimal solutions (in a mathematical sense) – also especially noteworthy is his belief that OFT may well be important in conservation biology.

7. Questions 3.4. and 5 are very good to think about. (p377).