

## Comments and Study questions for Dugatkin. Chapter 4. Individual Learning

Ethology and Behavioral Ecology  
Spring 2008

1. P110 – comment – the picture of the adult damselfly is misleading, Dugatkin is talking about damselfly nymphs (he says this once) which are aquatic predators and are preyed on by fish. Also note that fig. 2 gives the result of the first set of experiments implying an innate mechanism to avoid pike. The second, more interesting experiment that demonstrates learning is not illustrated but is explained. Understand (but don't memorize) this experiment (both parts).

2. Know what **phenotypic plasticity** is – be able to id examples of it and be sure you understand why learning also fits under this category. Does the concept of phenotypic plasticity necessarily involve traits that are to some degree heritable?

3. The sections on learning will be covered in much more detail in class and indeed some parts (operant learning) have already been covered in our history section. On the other hand, please understand the following terms which I don't generally use but which are useful: **single-stimulus, stimulus-stimulus, and response-reinforcer** and what types of learning each is typically applied to. Also know the definitions of **appetitive and aversive stimulus**. Read over the sections on blocking and overshadowing and understand what each is. What might these say reveal about the evolution of an animal's nervous system?

4. There is a nice review of some of the history of the nature-nurture conflict between pp 122 and 124. We have already covered these ideas and so you should be quite familiar with them.

5. Know the "**optimal forgetting**" concept and it is worth remembering the stomatopod example. Did we deal with this concept earlier without naming it when we considered the evolution of behavioral mechanisms?

6. Think about why might one predict that individuals from populations of a species that are social should learn new tasks more quickly than those from solitary populations. Carlier and Lefebvre's work on Zenaida doves was intriguing but did not cleanly answer the question of the source of differences. Design an experiment that helps clarify which of the two explanations presented at the bottom of p 127 top 128 is more likely correct. A hint on how to answer this question is presented in the next section on sticklebacks and anti-predator behavior.

7. The section on the model of the evolution of learning is very important and read it over and think about it. It will be covered also in class.

8. Stable (long retention), age-dependent learning (e.g., salmon example) commonly has a name in ethology that traces to Lorenz. Do you know this term?

9. Understand the argument about parental investment and learning about mates in the two sexes.

10. **In the context of aggression**, what (broadly) are **intrinsic and extrinsic factors** that influence the outcome of contests? Explain what **winner and loser effects** are, what they have to do with learning and speculate on why this sort of learning might or might not be adaptive. How might you test your notions?

11. Read the interview with Prof. Sara Shettleworth in the context of our historical discussions at the start of the course.