

## Bio 45 • Discussion #2 - Film on Oystercatchers • 17-19 Sept. 2002

### I. Purpose:

We will watch a film about birds, oystercatchers, that eat mussels and other marine invertebrates. Oystercatchers obtain mussels in one of two ways: stabbing and hammering. Stabbers sneak up on mussels and stab their beak between the shells (mussels in water have their shell open slightly to feed). Hammerers take a more direct approach and break through the shell to get at what is inside. Individual oystercatchers use only one of the two methods for their entire life. Interestingly, the offspring use the method their parents use.

This discussion section relates to three aspects of the course. First, it provides background on how animals find and capture food effectively -- foraging behavior. Second, it gives us an opportunity to explore the interplay of genes and environment in behavior. Finally, it provides a chance to explore the designing of experiments. After the film, you will design an experiment to answer the following question:

**"How do chicks acquire the feeding method their parents use?"**

### II. Readings:

Review Ch. 3 (genes and behavior) and Ch. 1 (testing hypotheses) in Alcock .

### III. Assignment:

Come to section with some possible answers to several of the questions below. Yes, you do have enough information to begin thinking about these questions! You will work together to design an experiment that will answer the questions below.

**Note: Attendance and participation in section are mandatory for this course. Coming to section unprepared counts as a missed section.**

### IV. Questions:

1. What is(are) the alternative hypothesis(es) for why there are two feeding methods in the population and how offspring end up feeding like their parents? Even if you have not seen the movie, you should be able to identify general hypotheses about how the chicks obtain their feeding method and propose tests of them.
2. How could you experimentally test between alternative hypotheses? Describe, your experiment in detail. What controls are necessary for your experiment?
3. There are several possible results for such an experiment. What are they and what would you conclude from each result?
4. Not only do chicks end up foraging like their parents, but stabbers and hammerers have quite different bill lengths and shapes. Look for this in the film. Ignatz claims that since the bills are different for the different foraging methods, the differences between stabber and hammerer must be genetic. Do you agree with Ignatz? Could bill length end up being different if the two feeding methods were learned? How?