

9.20

Class #2: Video on Stickleback Fish & Tinbergen's 4 questions.

*Questions on the in-class video presentation concerning studies of the Three-spined Stickleback fish (*Gasterosteus aculeatus*), a small fish used in many studies by ethologists, observational and experimental.*

1. What is a “zig-zag dance” of s stickleback fish?
2. On causation: the sensory triggers of innate behavior: Describe how “dummy stimuli” were used to discover properties of females that attract male sticklebacks motivated for mating.
3. On the adaptive purpose of the above behavior: What quantitative analysis of female stickleback fish provided support for a major purpose?
4. How did a study of development show the importance of early experience of developing sticklebacks in shaping their escape behavior patterns?
5. How can one obtain evidence concerning the evolution of behavior patterns?
6. Why does a male stickleback fish drive the female away immediately after he inseminates her eggs in his nest?

Classes #2-3: Introduction to ethology; Niko Tinbergen's 4 questions. Field studies of birds.

Questions on readings: Tinbergen. (Read his chapter first.)

1. Describe the equipment used by Oxford student Ms Cullen, working under Tinbergen's supervision, to study Kittiwakes on the Farne Islands of the UK. There were three key items.
2. What is the reason why Kittiwakes have evolved to be much less disturbed by human observers than by other gulls?
3. At the same time, Kittiwakes spend more time fighting and threatening each other than do other gulls on their breeding grounds. Why?
4. Describe the behavior of a male-female pair of Kittiwakes that indicates that they are forming a pair successfully.
5. Describe a clear difference between the behavior of recently hatched Kittiwake chicks and chicks of other gulls (Herring gulls, or Black-headed gulls), and why this should be expected. How was this difference shown to be innate?

Questions on readings: Scott. (These may be discussed in session 3.)

6. Why has it been useful for humans to know about behavior of animals – at least some animals? Give examples.
7. Why are both observation and experimentation important in studies of animal behavior?
8. Will computer simulations of behavior ever replace the study of living animals? What is the value of simulations?
9. Niko Tinbergen, the British ethologist, in a 1963 paper, described four different “why?” questions about animal behavior. Give an example of each of these four. (Covered in Scott book and in video shown in class.)
10. How could a particular behavior pattern found in nature be (or become) maladaptive? Is this common?
11. Why do black-headed gulls remove eggshells from the nest? How did Niko Tinbergen discover the answer to this question? (Which kinds of “why” question might I be asking here?)
12. Imprinting is a particular kind of learning, first described in birds. What is it, how is it unique, and what are its advantages for animals of some species?

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