Animal Behavior Web Activity

According to early ethologist (scientist who studies animal behavior) Niko Tinbergen, four questions should be asked about behavior:

* 1. What stimulus elicits the behavior, and what physiological mechanisms mediate the response?
  2. How does the animal’s experience during growth and development influence the response mechanisms?
  3. How does the behavior aid survival and reproduction?
  4. What is the behavior’s evolutionary history?

**Proximate causation**, or “**how**” explanations, focus on the environmental stimuli that trigger a behavior or the genetic, physiological, and anatomical mechanisms underlying a behavior.

**Ultimate causation**, or “**why**” explanations, focus on the evolutionary significance of a behavior

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**Innate Behaviors in Gulls**

<http://www.sumanasinc.com/webcontent/animations/content/behaviors.html>

1. What is the proximate cause of the pecking behavior?
2. What is the ultimate cause of the pecking behavior?

**Rat Sexual Behavior**

1. Female rats exhibit lordosis, a behavior in which she arches her back and moves her tail to one side. This allows allows the male rat to insert his penis for copulation:

a. What questions would you need to ask to determine proximate causation for this behavior?

b. What questions would you need to ask to determine ultimate causation for this behavior?

c. What kinds of experiment(s) or investigation(s) you would propose to answer at least one of the questions you posed in either (a) or (b) above?

Click the following link to learn more about rat sexual behaviors:

* Read the introduction
* Go through the animation
* Do the quiz questions after the animation

<http://bcs.whfreeman.com/thelifewire/content/chp52/5202001.html>

**Territoriality in Lizards**

Click the following link and:

* Read the introduction
* Go through the animation
* Do the quiz questions after the animation

<http://bcs.whfreeman.com/thelifewire/content/chp53/5302001.html>

1. What is likely the proximate cause of lizards defending their territory?

b. What is the ultimate cause of lizards defending their territory?

c. What specific heritable genetic difference would natural selection act on to increase territoriality in lizards?

d. How would you design an experiment to determine if lizards use smell to detect another male?

**Foraging behavior in Bluegills**

Click the following link and:

* Read the introduction
* Go through the animation
* Do the quiz questions after the animation

<http://bcs.whfreeman.com/thelifewire/content/chp53/5302002.html>

1. In an environment with high levels of sunlight, daphnia populations soar because algae levels (their food source) are high. In an environment with relatively low levels of sunlight, daphnia populations have low densities because algal levels are relatively low. Based on the information you just read on Bluegill foraging behavior, draw a graph showing the proportions of daphnia size in the low sunlight environment versus the high sunlight environment.

Many bird species which are common in northern states of the U.S. during spring and summer, fly south in the fall to overwinter and feed in Central or South America. In the spring, they return to states in the northern U.S. to breed.

a. What questions would you need to ask to determine proximate causation for this behavior?

b. What questions would you need to ask to determine ultimate causation for this behavior?

c. What kinds of experiment(s) or investigation(s) you would propose to answer at least one of the questions you posed in either (a) or (b) above?

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Extension:

Click on the following link to learn about an experiment that was done to determine how pigeons orient themselves.

<http://bcs.whfreeman.com/thelifewire/content/chp52/5202003.html>