



Teacher's Guide

Sexual Selection in Female Animals **NATURE Science Education Series**

Grade Levels:

7-12

Subject Areas:

Life Sciences

Biology

Scientific Methods/Measurement

Synopsis:

This episode focuses on the latest scientific studies of the importance of female choice in mate selection. The courtship rituals of gelada, sage grouse, barn swallows, elephant seals, and African satyrid butterflies are followed in detail. These studies define the role of flamboyant displays, olfactory signals, and vocalization as female selection tools. Live-action film footage of scientists gathering and analyzing data highlights the importance of new technologies in affirming scientific theories regarding sexual selection and female choice.

Learning Objectives: Students will:

- Describe how biologists collect and analyze data to test theories of female choice in sexual selection.
- Provide examples of flamboyant displays, olfactory signals, and vocalization to attract a mate.
- Understand that female choice is a key factor in perpetuating the strength of succeeding generations.
- Understand that biologists are only beginning to understand how female choice influences sexual selection.

Vocabulary:

fembot, olfactory signals, vocalization, courtship rituals, hormones, testosterone, flamboyant displays, pheromones

Pre-Viewing Discussion:

What animals and birds perform courtship rituals? How strange do some of these appear to be?

What is the purpose of courtship rituals?

Is it always the male that initiates a courtship ritual? Does female choice play a part in the results? Can you think of any examples?

If you were a wildlife biologist, how would you set up an experiment or test a hypothesis about what attracts females in courtship rituals?

Post-Viewing Discussion:

How did Chadden prove that the density of color on the red patch of a male gelada's chest is a key factor in female choice? How did he collect data? How did he analyze the data? Did you observe any errors or distortion of evidence to support his theory?

How was a fembot used to discover what aspect of the sage grouse's courtship ritual attracts a female? Do you think the conclusions were valid? Why is more research required before a firm conclusion can be drawn?

What unusual conclusion was drawn in the studies of African satyrid butterflies? How did the biologist set up the experiment to test her hypothesis regarding the eyespots on a male butterfly's wings?

What conclusion was drawn from the studies of barn swallows and their choice of mates? In addition to color, what other factor in this study influenced female choice?

Further Activities:

Find another example of female choice in insect societies. Be prepared to illustrate and comment on the findings and the methods of data collection and analysis.

Read a book, written in the 21st century, on the topic of how female animals select certain mates. Be prepared to summarize the conclusions made by the author and to give your opinion on the validity of his or her arguments.

Discover how anthropologists study the topic of female choice in nonhuman primates. Be prepared to present some of their conclusions and to comment on their methods.

Investigate the theory that females choose mates on the basis of motor skills, assuming that elaborate acrobatic courtship displays indicate strength that will be passed on to the next generation.

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