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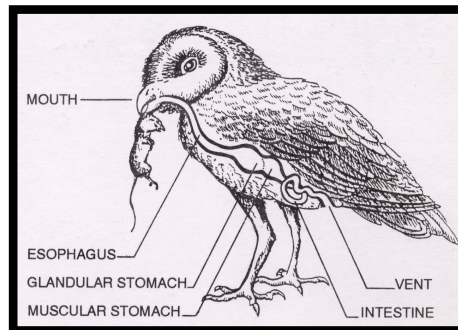
Owl Pellet Dissection

Background:

Owl pellets are masses of bone, teeth, fur, and feathers. Owls swallow their prey whole. The soft parts of the prey are dissolved by **proteolytic enzymes** (protein digesters) and strong acids, which occur in high concentrations in the stomachs of owls and other raptors. The relatively weak stomach muscles of the owl form the undigested material into pellets. Each whole owl pellet usually contains virtually complete skeletons of the animals that the owl ate the night before the pellet was formed.

You will be dissecting the pellets from the barn owl, _Tyto alba_. These owls feed early in the evening and regurgitate the pellet 18 to 20 hours after the feeding. The kinds of prey species in each pellet varies, the averages are: 2.5 voles (_Microtus_), 0.7 shrews (S_orex_), and 0.1 other species. Major factors that determine the kind of ratios of species found in owl pellets are where the owl lives and what prey are seasonally most abundant.

Materials:

    Owl pellet
    Sheet to glue skeleton on
    Toothpicks

Procedure:

1. Place a pellet on a sheet of white paper and gently pull the pellet apart using the toothpicks provided.

2. Clean the bones of debris and sort them according to type (skull, vertebrae, leg, etc.) Use the keys provided to help you sort the bones properly. Clean the skulls thoroughly as possible since these are the best bones for identifying the prey.

3. Use the "Key to Skulls of Common Barn Owl Prey" to identify the prey species.

4. Record your species on the class data sheet on the white board.

5. Examine the bones that have been separated out and grouped according to type. Lay these bones out corresponding to their position in the natural skeleton (use the example to help you out). Glue these bones on the card stock provided and label the mammal.

6. Create a data table that will include all of the class data, this should include name of prey and number of prey recorded. Graph the class results of species eaten using a bar graph.

Name _____ Date _____ Period _____

Data: You can copy this on your own paper

Number of skulls (or pairs of jaws) found in your pellet ____

Species and number of prey found in your pellet
      Species   # of individuals

      _____   _____

      _____   _____

      _____   _____

The class record
      Total number of prey animals found   _____

      Total number of pellets examined   _____

      Average number of prey animals per pellet   _____

Analysis:

1. What part of the prey skeleton was most common in the pellet? Why do you think that this bone was the most common?

2. Which animal appears to be eaten most frequently by the owl?

3. Assume that an owl forms one pellet each day and that your pellet is average. How many animals would an owl eat in a week? In a month? In a year?

4. Barn owls are nocturnal species. Do you think that the prey count from the classroom data is an accurate representation of the prey species available in that area <u>all day long</u>? Explain your answer.

5. What trophic level does the barn owl occupy?

6. Why do you think farmers like having barn owls on their farm?

7. What would happen to the barn owl population if there were a drought? Explain your answer.

8. Create a food web that illustrates the species interaction of the organisms you analyzed.

Conclusion:

Barn owls belong to the group of birds called raptors. These birds are on the top of the food chain. Pesticides used by farmers can accumulate in the fat of animals in a process called biological magnification. Use your text and the Internet to look up this concept and discuss the implications of DDT and the barn owl population.