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SCIENCE MYP GRADE 6 IB  
ECOLOGY LAB ACTIVITY # (200 POINTS)



TITLE: YUCK! THE OWL PELLETS LAB

PURPOSE:

Students will investigate the diets of owls as birds of prey. Students will measure the width, length and mass of the owl pellet. Students will then dissect the owl pellets to study the skeletal remains of the raptor's prey and, using a bone chart, identify the species consumed.

Students will use the skulls found in the owl pellet to identify the prey and determine the number of prey in the pellet.

Also, students will construct the skeleton from the recovered skeletal prey and mount and label the glued-down bones with their scientific names on a construction paper.

With their findings, students will also construct a food web, compiling a summary of the owl's diet in order to estimate the diversity of the prey available in the ecosystem. Students will also learn about energy transfer through food chains while observing skeletal features, which identify prey animals consumed.

RESEARCH:

Owl pellets are masses of bone, teeth, hair, feathers and exoskeletons of various animals preyed upon by raptors, or birds of prey. Pellets are produced and regurgitated not only by owls, but by hawks, eagles and other raptors that swallow their prey whole. Owls feed early in the evening and regurgitate a single pellet approximately 20 hours after eating. Pellets begin forming within the digestive tract of an owl as soon as the prey is swallowed. Unlike snakes, the enzymes and strong acids which occur in the digestive tract of raptors do not digest the entire meal. Digestive juices break down the body tissues in the prey, but leave the bony materials and hair or feathers undigested. This type of material has little nutritional value and any parts that are not digested cannot fit through the tiny intestine, and must be regurgitated.

The stomach forms all of the fur, bones, and other hard parts into a slimy pellet – nearly all of the bones end up in here. In this process even the most fragile bones are usually preserved unbroken.

One pellet usually has one or more complete skeletons in it, which may be examined to determine the diet of the bird.

Scientists take advantage of this adaptation by collecting these pellets and examining their contents, since owls are not very selective feeders; these pellets are used to estimate the diversity of available prey.

MATERIALS: owl pellets, forceps, magnifying glass, large paper clips, metric ruler, newspapers, gloves, bone chart, aluminum plates, white paper and brain cells!

**PROCEDURE:**

1. Put on your gloves and place your pellet on a sheet of white paper. Then unwrap your sterilized pellet.
2. Measure the length and width of your owl pellets.  
  
Length of your owl pellet\_\_\_\_\_ (cm)  
  
Width of your owl pellet\_\_\_\_\_ (cm)  
  
Mass of your owl pellet\_\_\_\_\_ (g)
3. Carefully examine the exterior of the pellet. Do you see any signs of fur? \_\_\_\_\_ any signs of feathers? \_\_\_\_\_
4. Gently pull the ends of the pellet until it comes apart.
5. Using forceps and /or large paper clips carefully separate the bones and teeth from the hair and feathers. Make sure that you get all of the bones, even those that are very tiny. Check over the fur thoroughly to make sure that you get all of the bones out. Some of the bones (especially the skulls) may be very fragile.
6. Clean the bones of debris and sort them according to type (for example, skulls, ribs, vertebrae, etc.) as these are the best bones for identifying prey.
7. Determine the number of prey in the pellet (by the number of skulls or jawbone pairs).
8. After you have removed all bones, you can begin to identify the prey using the bone chart.
9. Group bones of the same kind together.
10. Record how many animals you found in the table below.
11. Using the bone chart and skeleton guides, mount (glue) the bones to a sheet of construction paper to reconstruct the animal as close to its original shape as

possible. Then label the bones. Construction paper will serve as a mounting surface. Grade will be based on neatness, labeling and organization.

**RESULTS/OBSERVATIONS:**

Record all your observations in the table below:

Bone	Type	Number
Skull		
Jaw		
Scapula		
Forelimb		
Hind limb		
Pelvic Bone		
Rib		
Vertebrae		

**ANALYSIS:**

1. Describe an owl pellet.
2. What kinds of bones were the most numerous?
3. Were you able to put together a complete skeleton from the bones in the pellet? Describe your skeleton.
4. What animals were eaten by the owl? What does this tell you about the owl's feeding habits?
5. What animal is easy prey for the owl? Why?
6. What have you learned about an owl's characteristics from examining its prey?
7. What do we know about the digestive system of an owl based upon the pellets?
8. Owl pellets not only can give us information about the diet of the owl, owl pellets also provide a habitat for other animals, and in fact an owl pellet is a little ecosystem all on its own. What kind of animals are found in the

- owl pellet ecosystem (Hint: read the research at the beginning and your notes).
9. Other types of birds form pellets. What would you expect to find in the pellet of a seagull?
  10. Owls, hawks, and eagles are types of raptors, animals which have hooked beaks and sharp claws, and are therefore adapted for seizing prey animals. Hawks and eagles differ from owls in that they eat their prey animals by tearing them into small pieces, picking out the flesh and avoiding most of the fur and bones. They also have strong stomachs which can digest most of the bone material which they might eat. The relatively small amount of indigestible bone and fur that remain will be compacted by their stomach muscles into a pellet similar to the owls. Do you think an eagle pellet would be as useful for dissecting as an owl's? Why or why not?
  11. Construct a diagram of a food web (of at least 5 animals) with an owl at the uppermost food chain level. Use an arrow to show which organism is the consumer or predator.

**CONCLUSION/S:** What did you learn from this experiment? Explain what AOI'S you used in this lab? Was your hypothesis right or wrong? Explain.