Barf Bag

THEME
Owl pellets can open a window into the secretive habits of these nocturnal birds.

SUB THEMES
1. Owl pellets are more than just throw up.
2. Anyone can learn to identify the contents of owl pellets.
3. Examining pellets is important in helping biologists learn about and protect owls.

VOCABULARY
Species, pellets, dichotomous key, classification

ACTIVITY MATERIALS
Anatomy diagram of pellet formation, pellet display, clipboards, datasheets, pencils, paper plates, forceps, latex-free gloves, rulers, scales, bone ID sheets, dichotomous keys, 'Barf Bag' of pellets

INTRODUCTION
Introduce yourself and state the title of the activity. Preview the main points of the activity and give students an idea of what they will be doing. Conversationally state the theme and sub themes. Explain that owl pellets contain the non-digestible material (hair, bones, insect wings, and feathers) from prey such as rodents, birds, and insects. All birds of prey (raptors), crows, and some other birds produce pellets. Show the anatomy diagram and demonstrate how the pellets are formed 6 to 12 hours after the owl consumes its prey. Pass around the owl pellet display.

ACTIVITY
Break the group up into teams of two and pass out a clipboard and data sheet for each team. Demonstrate how to complete the data sheet. Next, have each team sit at a place setting under the tent. Each place setting contains a paper plate, two pairs of forceps, two pairs of latex-free gloves, pencil, rulers, scales, bone type identification sheet, magnifier, and a dichotomous key. Hand out the pellets from the bag labeled 'Barf Bag.' Instruct the teams to delicately tease apart their pellet to separate the bones from the hair. Tell the students to be very gentle so as to keep the bones intact, especially the skulls, which they will use later. Allow the students 10-15 minutes to dissect their owl pellets.

Next, walk the students through the process of using a dichotomous key using the rodent skull example. Explain that using the key helps anyone learn to easily identify to the species level of classification. Ask: **What are the different levels of classification?** Kingdom,

Teacher's Corner

Grade Level(s)
High School

State Performance Indicators
CLE 3210
-Inq.3: Determine appropriate tools to gather precise and accurate data.
-Inq.5: Defend a conclusion based on scientific evidence.
-2.1: Predict how population changes of organisms at different trophic levels affect an ecosystem.
-2.4: Predict how various types of human activities affect the environment.
-2.5: Make inferences about how a specific environmental change can affect the amount of biodiversity.
-5.6: Infer relatedness among different organisms using modern classification systems.

ACTIVITY (cont.)
Phylum, Class, Order, Family, Genus, Species). Show the students the proper way of writing down the binomial scientific name on their data sheets (i.e. *Sorex longirostris*). Allow the teams 15-20 minutes to complete their identifications. Review the results of the data sheets as a group. Encourage students to point out key characteristics that helped them to identify the skulls (i.e. red-tipped incisors indicate a shrew, etc.).

Bring the group back together for the discussion.

DISCUSSION
Now that the students have had a chance to examine owl pellets first hand, ask: **Why do you think biologists would take the time to dissect owl pellets?** Explain that it helps scientists analyze what types of prey owls eat and how many they eat per day, week, month, and year. With this information, biologists can determine not only the quality of the prey, but also where the owls are getting their meals. This is important for the conservation of owls, as scientists can then monitor how development and other habitat changes impact owl populations. For example, if suddenly a certain prey item is no longer found in an owl's pellets, it may indicate that the prey are no longer available. In this case, biologists look to see what is happening in and around the owl's habitat to impact the available prey. They can also determine how an owl's diet changes from season-to-season. Ask: **How would fewer prey items impact the long-term success of the owl? What happens to the prey populations when there are fewer owls? How does this impact humans** (negative impacts to agriculture, pest control, etc.)?

WRAP-UP
Let the group know that the activity is coming to an end. Conversationally review the theme and sub themes. Collect the data sheets. Give the teachers any of the materials that students are able to take home with them.

BRINGING IT TO THE CLASSROOM
Using data from this activity have the students analyze the food contents of their pellets. The students will calculate the % biomass and frequency of each food species found in the owl pellets. For full details, refer to the "Data Sets Barf Bag" lesson plan found on the Butternut Valley Virtual Nature Center (www.butternutvalleynaturecenter.com/DataSets.htm). Lead the students in a discussion about their results and how these results would be important in making decisions about owl conservation.

ACKNOWLEDGEMENTS

- Activity developed by Melissa Squirlock; February 2008.
- Durrell, Gerald. (1988). A Practical Guide for the Amateur Naturalist. Knopt: New York. pp. 270-1.