

The Barn Owl Pellet



Kristi Wells

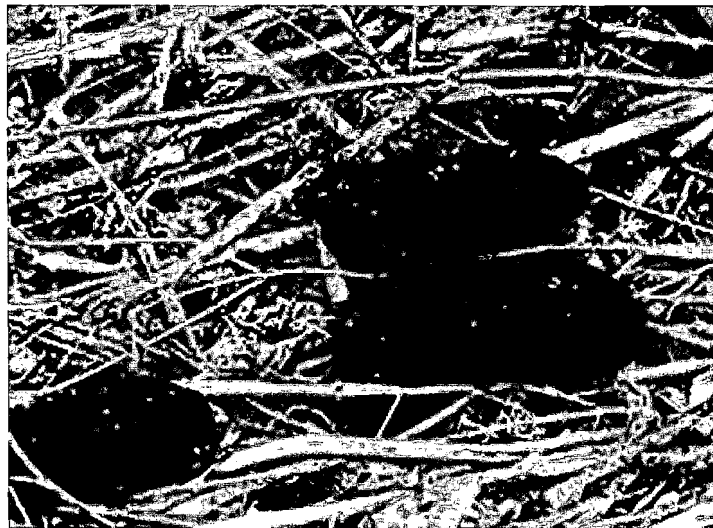
SCIENCE 3450
Science Methods 5-8

Solo Unit Project

12-04-07

Table of Contents

<u>Section</u>	<u>Lesson</u>
I.	Minnesota Academic Standard
II.	Day 1: Barn Owl Introduction
III.	Day 2: Dissection of Barn Owl Pellets
IV.	Day 3: Organization of Barn Owl Pellet Bones
V.	Day 4: Assembly of Vole Skeletons
VI.	Day 5: Authentic and Formal Assessments
VII.	Follow-up Activities
VIII.	Resources



The Barn Owl Pellet

I. Minnesota Academic Standard

Science K-12

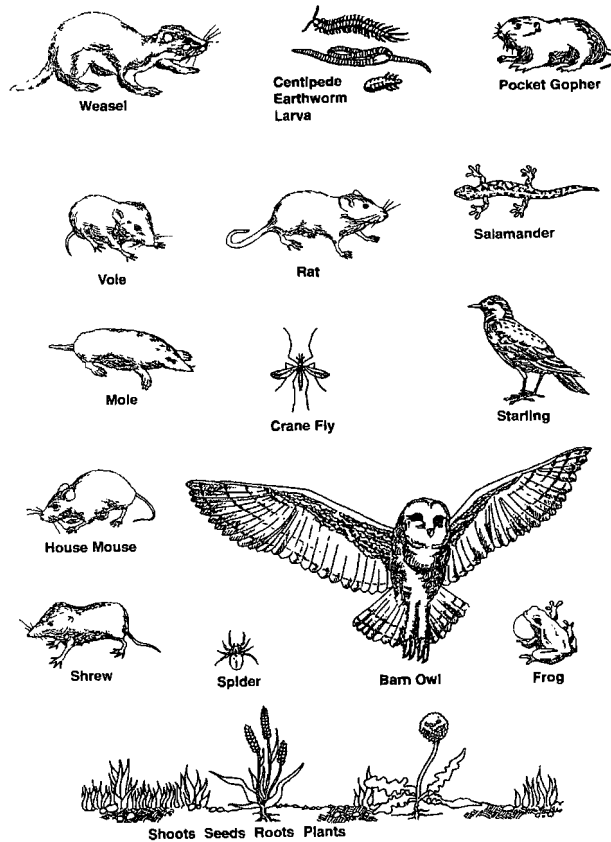
Grade Level: Grade 7

Strand: IV. Life Science

Sub-Strand: C. Interdependence of Life

Standard: The student will understand that within ecosystems, complex interactions exist between organisms and the physical environment.

Benchmark: 1. The student will explain the factors that affect the number and types of organisms an ecosystem can support, including available resources, abiotic and biotic factors and disease.



II. Day 1 Lesson: Barn Owl Introduction

Overview:

The barn owl plays an important role in the ecosystem. It is a consumer and is at the highest trophic level of the food web within its niche.

Objectives:

- A. The student will participate in an interactive class discussion and learn basic facts about the barn owl.
- B. The student will learn about the food web of the barn owl and its prey within its community.

Materials:

Barn owl photographs, barn owl pellets, and barn owl food web chart.

Procedures and Activities:

- A. Through direct instruction, provide the students with basic facts about the barn owl. The barn owl is a “cosmopolitan species” because it inhabits every continent in the world except for Antarctica. It is closely associated with man and agriculture because it is observed frequently in farmsteads where it eats the rodents that damage farmers’ crops. It lives in a territory covering about 1.5 square miles. It is about 14 inches from head to tail and has a wing span of about 44 inches. It weighs about 20 ounces, which is about the same as a large grapefruit. The face and sides are colored white and the back side of the owl is a golden-rust.

The barn owl is nocturnal and is busiest at night, and during the day it rests at a favorite roosting spot. They mate for life. The females lay two clutches of 3-5 eggs each, and as many as 11 eggs in some cases. The eggs hatch at different times. The parents help feed their young small rodents, and it doesn’t take long before the young can swallow a rodent whole. They stay with their parents in the nest about 75 days.

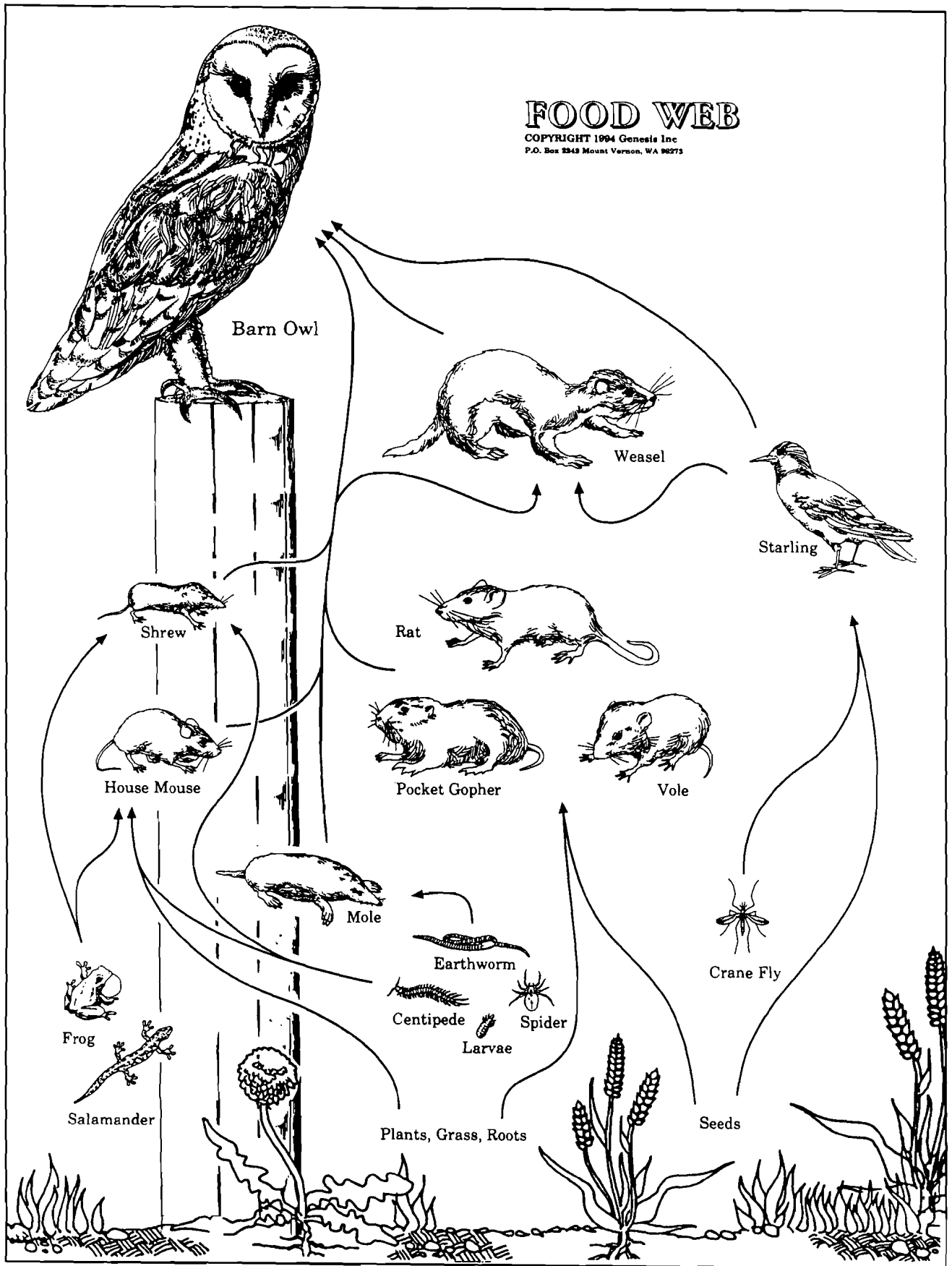
Tell the students that we can discover what role an owl plays in the ecosystem by dissecting an owl pellet. Owl pellets are regurgitated hairballs that contain a number of small bones from mammals that the owl has consumed. This has helped scientists map out different areas that small creatures occupy that would have otherwise been difficult to discover. The pellets measure about 1 ½ to 3 inches long. They are covered with dark gray fur and are filled with different kinds of skulls, jawbones, and whatever else you would find on a creature swallowed whole. Since fur and bones cannot be digested, the owls are forced to cough it up. They usually produce two pellets each day. Owl pellets are odorless and are clean of all flesh. They have been heat sanitized and treated to remove any insects, and wrapped in aluminum foil for preservation.

- B. Show the students the barn owl food web chart. Describe how living and nonliving organisms are dependent upon each other. Plants and animals make up food chains demonstrating the importance of interrelationships. Food chains are the transfer of energy from the source in plants through a series of animals, with repeated eating and being eaten. Food webs result when food chains cross and interlock patterns. Show the students how the food web of the barn owl includes plants, grass, roots, rats, weasels, and gophers.



FOOD WEB

COPYRIGHT 1994 Genesis Inc
P.O. Box 2343 Mount Vernon, WA 98273



III. Day 2 Lesson: Dissection of Barn Owl Pellets

Overview:

Dissection of barn owl pellets provide a great way for students to learn many concepts such as environment, habitat, population, community, niche, ecosystem, producers, consumers, decomposers, food chains, and food webs.

Objectives:

- A. The student will dissect one owl pellet.

Materials:

Barn owl pellets, toothpicks, rubber gloves, Ziploc plastic bags.

Procedures and Activities:

- A. Distribute one barn owl pellet, toothpick, and Ziploc plastic bag to each student. Rubber gloves are optional, but not necessary, as the pellets have been heat sanitized and are safe to handle with bare hands. Demonstrate to the students how to dissect their pellets by first gently breaking the pellet in half. Then have them break off a piece using their fingers and rolling it between their thumb and index finger, feeling for any hard substance. Dissecting the pellet can be aided by using the toothpicks. The students should separate the bones from the fur and/or feathers and place the bones into a Ziploc plastic bag.



IV. Day 3 Lesson: Organization of Barn Owl Pellet Bones

Overview:

Identifying and organizing the bones from dissected barn owl pellets helps students learn the skeletal structure of rodents.

Objectives:

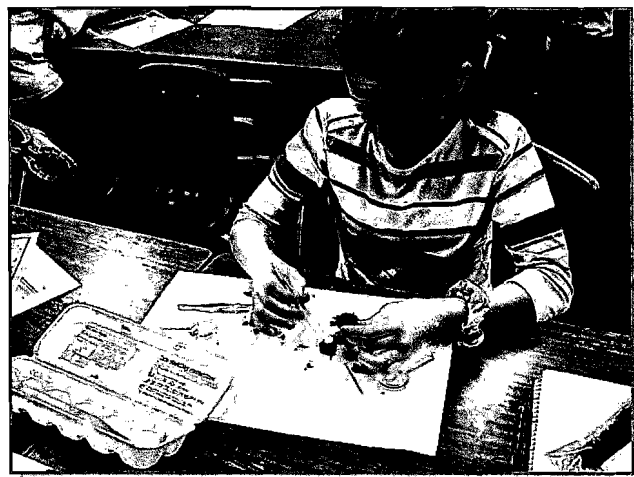
- A. The student will identify the animal skulls and other bones found in the pellet.
- B. The student will select and organize the necessary bones from their dissection from which to create an assembled vole skeleton.

Materials:

Dissected owl pellets, egg cartons, “Vole Stick Sheet,” and “Animals Found in Owl Pellet” sheet.

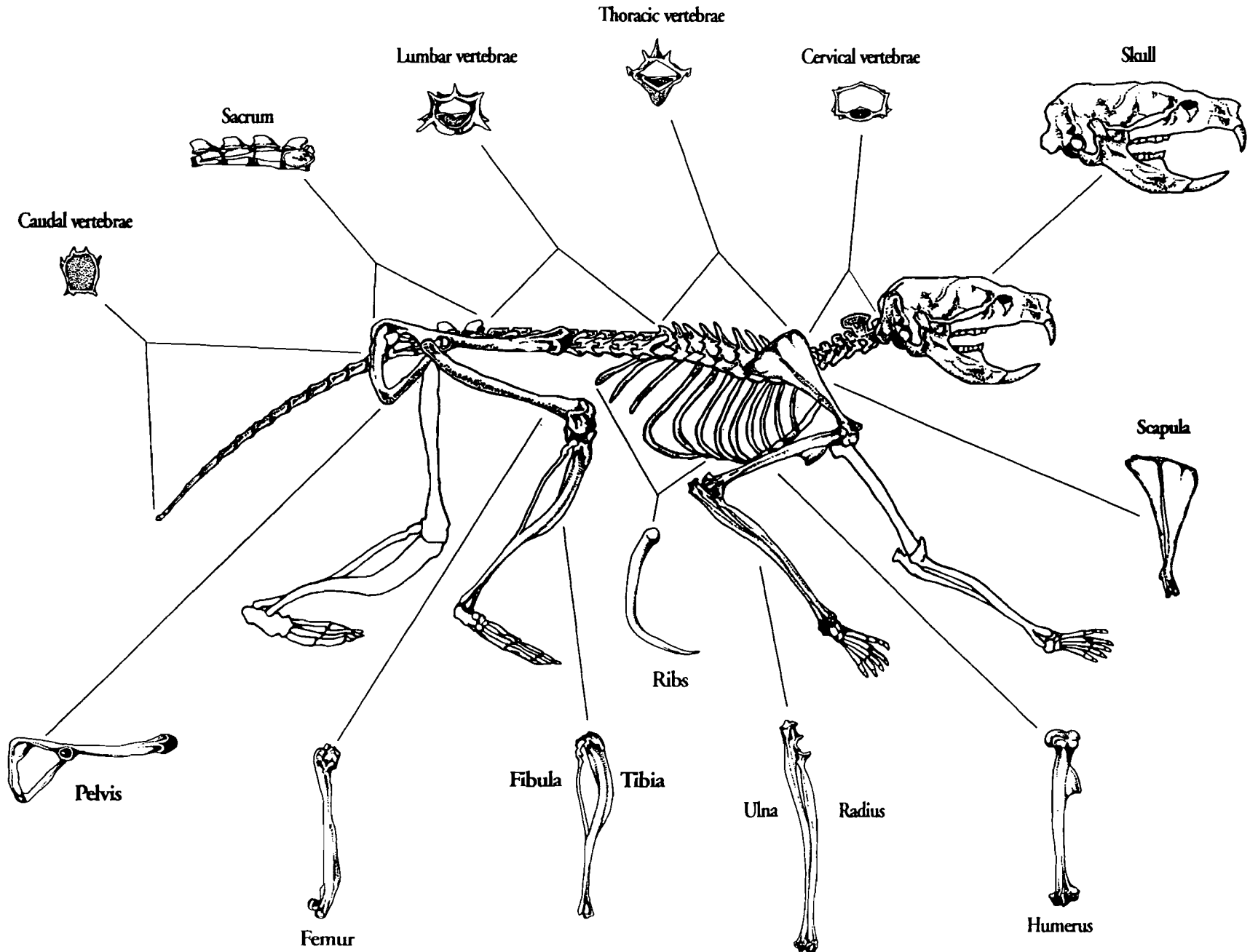
Procedures and Activities:

- A. Distribute the “Vole Stick Sheet” and “Animals Found in Owl Pellet” sheets to the students to help them identify bone structures.
- B. Instruct the students to identify the type of prey taken by the barn owl and the individual bones from their pellet by referring to the pictures in these sheets. Tell the students to sort the bones into piles of the same kind, and place them into the compartments of an egg carton for safekeeping. They may also label the compartments with the names of bones.



Vole Stick Sheet

Genesis • P.O. Box 2242 Mount Vernon, WA 98273



Name

Date

Animals Found in Owl Pellet

1. Vole (Field Mouse)



2. Pocket Gopher



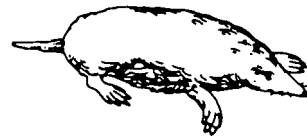
3. Shrew



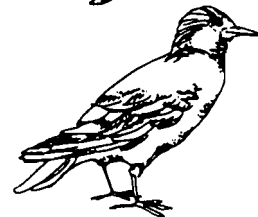
4. Rat



5. Mole



6. Bird



V. Day 4 Lesson: Assembly of Vole Skeletons

Overview:

Identifying and assembling the bones from dissected barn owl pellets helps students learn the skeletal structure of rodents.

Objectives:

- A. The student will assemble the bones from their dissected barn owl pellet to create a three-dimensional vole skeleton, with bones appropriately labeled.

Materials:

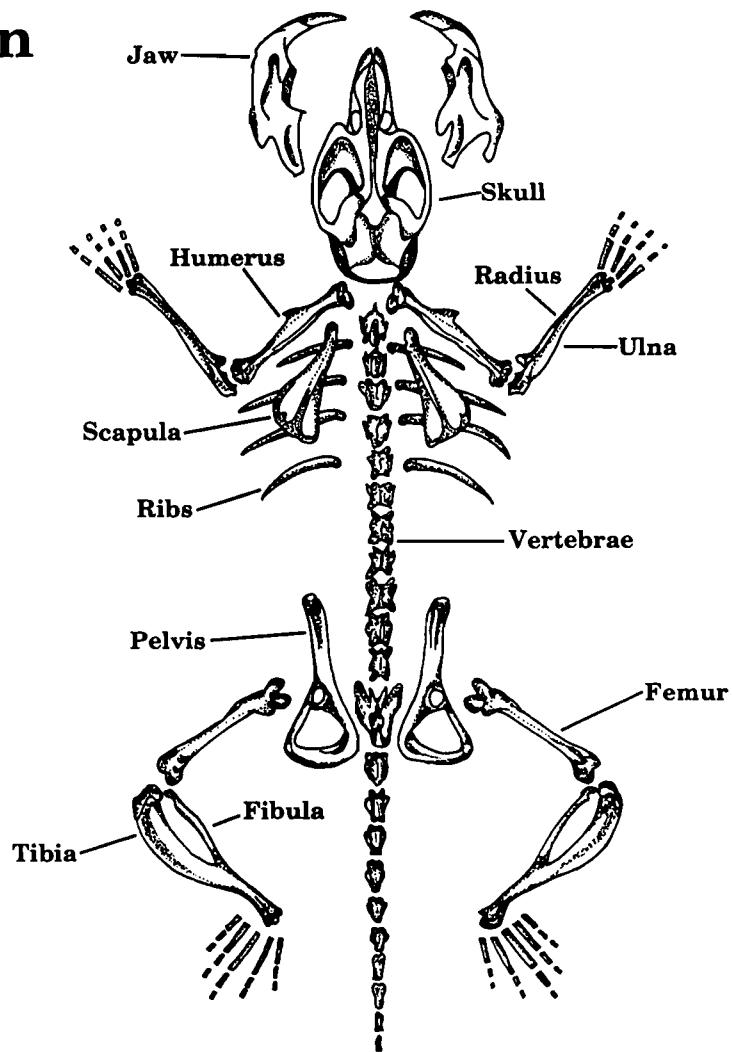
Dissected barn owl pellet bones, "Vole Skeleton Sheet," and glue.

Procedures and Activities:

- A. Distribute the "Vole Skeleton Sheet" to the students. Instruct the students to assemble their bones into a vole skeleton by gluing them onto the "Vole Skeleton Sheet" in the appropriate areas. Have the students place the extra bones in a small box in front of the classroom so that other students may find the bones that they need. If their pellet does not contain a vole, they should be able to get the different bones from someone else in the class that has found 2 or more voles in their pellet or from the extra bones the class may have.



Vole Skeleton



VI. Day 5 Lesson: Authentic and Formal Assessments

Overview:

The students' level of understanding of the unit will be assessed through authentic and formal assessments. Their ability to recall facts from the discussions and experiences from the activities will demonstrate that the objectives have been fulfilled.

Objectives:

- A. The student will construct a three-dimensional vole skeleton as an authentic assessment.
- B. The student will create a "Barn Owl Food Web" diagram as a formal assessment.

Materials:

Dissected barn owl pellet bones, "Vole Skeleton Sheet," glue, "Food Web Animals" sheet, blank paper, and scissors.

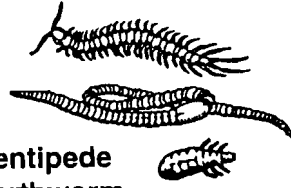
Procedures and Activities:

- A. The students have previously constructed a three-dimensional vole skeleton from the "Day 4 Lesson." Their projects will be examined for levels of preparation and participation, accuracy of bone location, and overall project appearance. (A rubric for evaluation is provided.)
- B. Give the students the "Food Web Animals" sheets with diagrams of 15 different animals and plants, arranged in random order. The students will cut out the animals and plants, and glue them onto a blank sheet of paper into the correct configuration of the barn owl food web. When they have finished, their projects will be examined for levels of preparation and participation, accuracy of animal/plant location and names, and overall project appearance. (A rubric for evaluation is provided.)

Food Web Animals



Weasel



Centipede
Earthworm
Larva



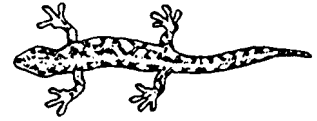
Pocket Gopher



Vole



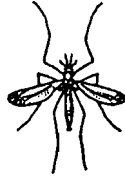
Rat



Salamander



Mole



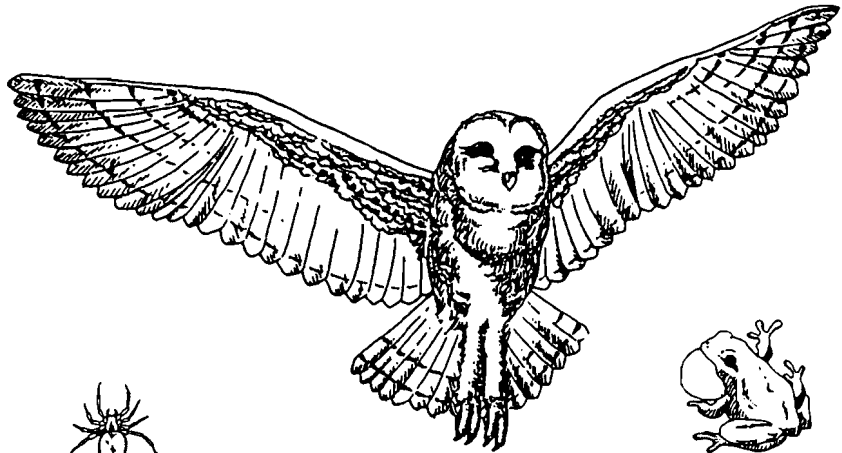
Crane Fly



Starling



House Mouse



Barn Owl



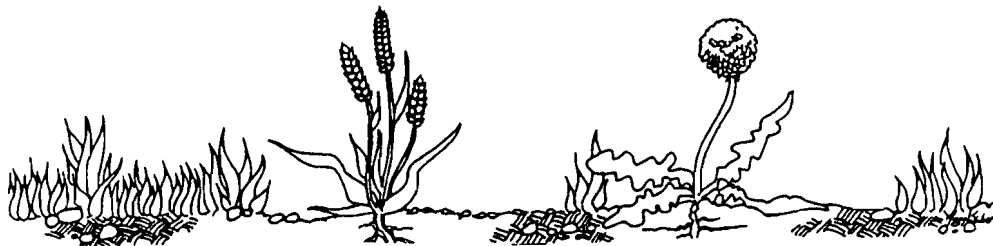
Shrew



Spider



Frog



Shoots Seeds Roots Plants

RUBRIC

VOLE SKELETON PROJECT

Criteria	0 points	1 point	2 points	3 points
Preparation and Participation	No attempt to glue bones onto paper.	Glued 60% of bones onto paper.	Glued 75% of bones onto paper.	Glued 100% of bones onto paper.
Location of Bones	No bones are glued onto paper.	At least 60% of bones are in correct place.	At least 75% of bones are in correct place.	At least 90% of bones are in correct place.
Project Appearance	Did not complete project.	Bones are glued in a messy manner.	Bones are glued in a semi-neat manner.	Bones are glued in a very neat manner.

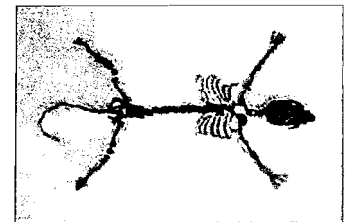
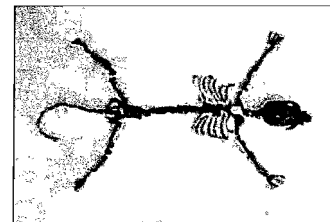
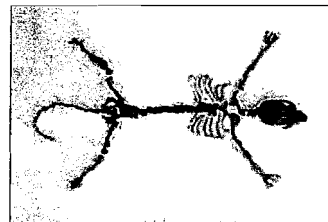
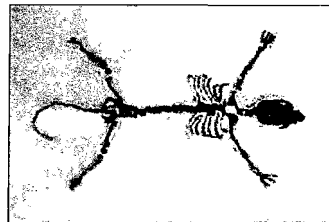
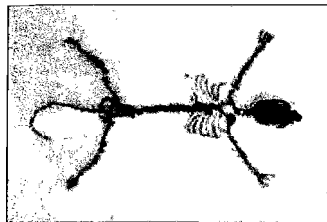
Grading Scale: Total Points = 9

8-9 points = A

6-7 points = B

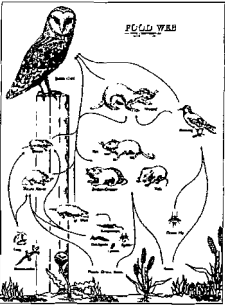
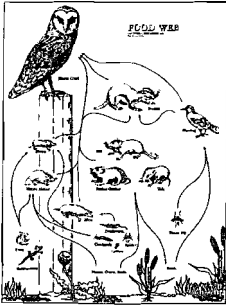
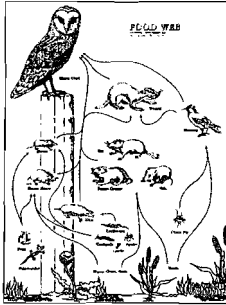
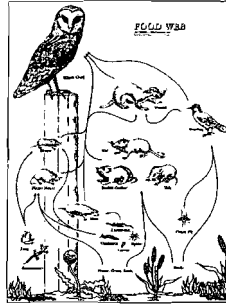
4-5 points = C

3 points or below = Not Yet



RUBRIC

BARN OWL FOOD WEB PROJECT

Criteria	0 points	1 point	2 points	3 points
Preparation and Participation	No attempt to glue animals/plants onto paper.	Glued 60% of animals/plants onto paper.	Glued 75% of animals/plants onto paper.	Glued 100% of animals/plants onto paper.
Location of Animals and Plants	No animals/plants are glued onto paper.	At least 60% of animals/plants are in correct place.	At least 75% of animals/plants are in correct place.	At least 90% of animals/plants are in correct place.
Project Appearance	Did not complete project.	Animals/plants are glued in a messy manner.	Animals/plants are glued in a semi-neat manner.	Animals/plants are glued in a very neat manner.
<p>Grading Scale: Total Points = 9</p> <p>8-9 points = A 6-7 points = B 4-5 points = C 3 points or below = Not Yet</p> <div style="display: flex; justify-content: space-around; align-items: center;">     </div>				

VII. Follow-up Activities:

1. To extend this lesson, the students can be taken on a field trip to the outdoors. They could go to an area where barn owls live, and hunt for pellets. They could also visit a bird refuge facility to see a barn owl up close.
2. The students could use the internet and go to the website:

<http://www.theowlcam.com/>

At this site, the students will be able to view live footage of barn owls from a web camera. They can see lots of pellets on the floor too!

VIII. Resources:

Genesis, Inc., Mount Vernon, WA. *Elementary Owl Pellet Pak, Instructor's Guide.*

<http://www.youtube.com/watch?v=TtEPkRK1tlo&NR=1>

<http://www.theowlcam.com/>

