Names: _____

Date of lab: _____ Due date: _____

❑ 01 ❑ 05
❑ 02 ❑ 06
❑ 03 ❑ 07
❑ 04 ❑ 08

SNC1D

Lab: Owl Pellet Analysis

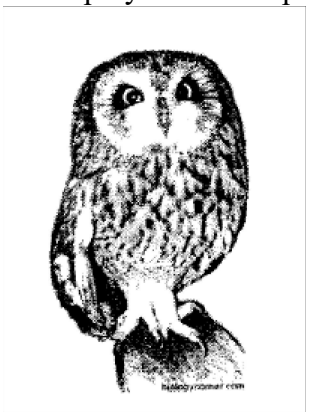
Owl pellets are masses of bone, teeth, hair, feathers, and exoskeletons of various animals preyed on by owls. Pellets are produced and regurgitated not only by owls, but also by hawks, eagles, and other raptors that swallow their prey whole or in small pieces. Owls feed early in the evening and regurgitate a single pellet approximately 20 hours after eating. The relatively weak stomach muscles of the bird form the undigested fur, bones, feathers, etc. into wet, slimy pellets. In this process, even the most fragile bones are usually preserved unbroken.

Objective/Learning Goal

- Students will demonstrate an understanding of ecological relationships, particular predator-prey relationships
- Students will develop a food web using inquiry skills to infer predator-prey relationships

Materials

- Owl pellet
- Tweezers, toothpick
- Bone chart
- Magnifying glass
- Tape/Scotch tape



Safety: Wash your hands when you finish this activity.

Procedure

1. Write the number of your pellet on your chart. Carefully unwrap your owl pellet on a clean working surface.

2. Inspect your pellet, noting the size and bones.

3. Very gently, pull apart your pellet. Be very **careful and gentle** so as not to break any bones.

4. Carefully separate the bones from the fur or feathers. Tweezers or toothpicks work well. Take special care removing skulls and jaws because they are the best way to identify the animal.

5. Roll the last bits of fur between your fingers to find little bones or teeth that may have been overlooked.

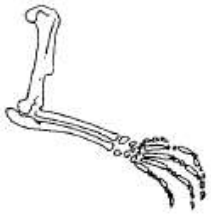
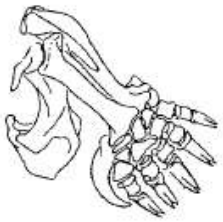
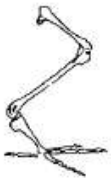
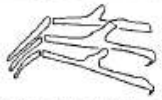
6. Use the bone diagram to help you identify your bones. Lay out the skeletons of the animals you have found directly onto the bone diagram.

7. Tape your bones to the chart and identify your animal. (4 marks)

8. Clean up the lab according to your teacher's instructions. Since we are using synthetic owl pellets, all "fur" can be disposed of in the garbage. (2 marks)

Pellet #: _____

Owl Pellet Bone Chart

	~~Rodent~~ Vole	Shrew	Mole	Bird
Skull				
Jaw				
Scapula				
Forelimb				
Hindlimb				
Pelvic Bone				
Rib				
Vertebrae				   

CB260780000

Carolina Biological Supply Company 2700 York Road, Burlington, North Carolina 27215

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Name: _____

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❑ 01 ❑ 05
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❑ 04 ❑ 08

SNC1D **Lab: Owl Pellet Analysis**

Analysis & Discussion

1. Tape your bones to the chart on page 2. Write your pellet #: _____

   Identify your animal: _____ (5 marks)

2. Southern Ontario's screech owls catch fish. What would you expect to find in a screech owl's pellet that would reflect this? Why? (3 marks)

3. Owls, hawks, and eagles are types of raptors. Those are 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 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 owl's. Do you think an eagle pellet would be as useful for dissecting as an owl's? Why or why not? Explain. (3 marks)

4. **Construct a food web** (of at least 5 links) with a minimum of 3 food chains and an owl as the top predator. Include the organism found in your owl pellet as well as the organisms found in the owl pellets of other groups. Remember, a food web is an interconnected series of **food chains**. Refer to the *Animal Reference Sheet* included on the next page as well as the *Web Anchor Chart* from your notes. (5 marks)

Food Web Checklist:
- ☐ minimum 3 food chains
- ☐ owl as top carnivore
- ☐ includes at least one producer
- ☐ includes at least one herbivore
- ☐ includes at least one carnivore
- ☐ includes at least one decomposer
- ☐ includes organism found in group's pellet
- ☐ includes organisms found in other groups' pellets
- ☐ names of animals are printed clearly
- ☐ arrows point in the correct direction
- ☐ food web is neatly constructed

5. .

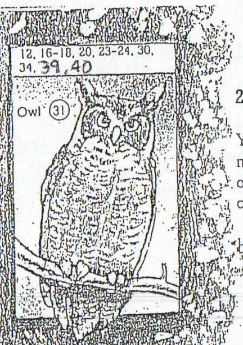
a. If your animal loses its habitat due to urbanization, explain how that would impact one of the food chains in the food web above. (3 marks)

b. Based on your answer to question 5(a), how will the owl population respond and adapt? (3 marks)

SNC1D1/1D3

Owl Pellets Lab:

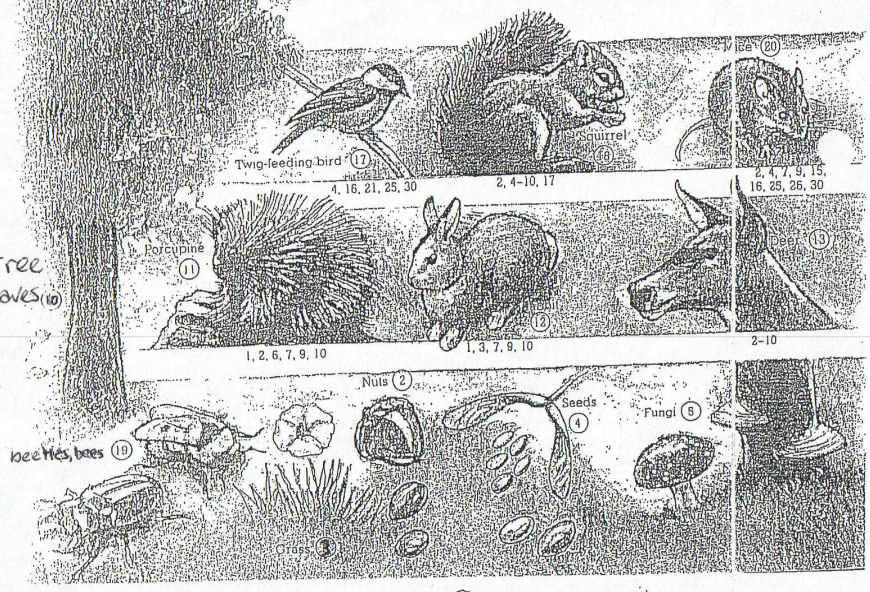
Animal Reference Sheet

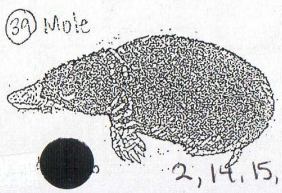


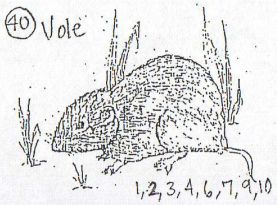
2.9 Linking Food Chains

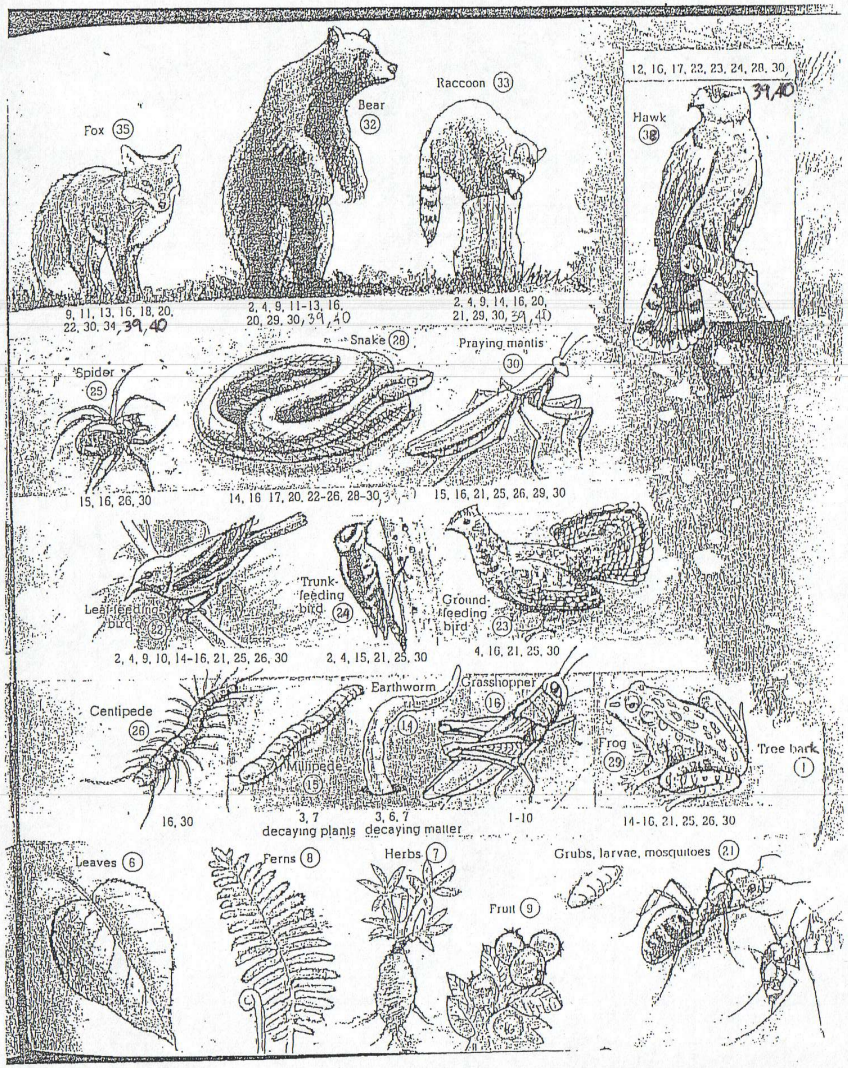
You have looked at examples of simple food chains. In a natural ecosystem, there are so many organisms feeding on other organisms that the various food chains become very complex.

Look at the illustration of forest food chains. The numbers below each organism indicate the organisms it eats.









Marking Rubric for: Owl Pellet Lab

Criteria	Level 4	Level 3	Level 2	Level 1	R
Question #1 (5 marks)	☐ All bones are taped to the chart ☐ Bones were handled very carefully. Therefore, none or very few of the bones appear to be broken ☐ Animal correctly identified (4.5 – 5 marks)	☐ Most bones are taped to the chart ☐ Most of the bones are not broken ☐ Animal correctly identified (3.5 – 4 marks)	☐ Most bones are taped to the chart ☐ Most of the bones are not broken ☐ Animal incorrectly identified (3 marks)	☐ Very few bones taped to the chart OR ☐ Many of the bones are broken ☐ Animal incorrectly identified (2.5 marks)	☐ No bones are taped to the chart OR ☐ Many of the bones are broken ☐ Animal incorrectly identified (0 – 2 marks)
Lab cleanliness (2 marks)	☐ Station completely tidy, all specimens disposed of properly, & all equipment returned (2 marks)			☐ Station not completely tidy OR not all specimens disposed of properly OR not all equipment returned (1 marks)	☐ No tidying up attempted (0 marks)
Question #2 (3 marks)	☐ Completely uses critical/ creative thinking processes with a high degree of effectiveness in formulating answer to question (3 marks)	☐ Uses critical/ creative thinking processes with considerable effectiveness in formulating answer to question (2.5 marks)	☐ Uses critical/ creative thinking processes with some effectiveness in formulating answer to question (2 marks)	☐ Uses critical/ creative thinking processes with limited effectiveness in formulating answer to question (1.5 marks)	☐ Does not use critical/ creative thinking processes when formulating answer to question (0 – 1 marks)
Question #3 (3 marks)	☐ Completely uses critical/ creative thinking processes with a high degree of effectiveness in formulating answer to question (3 marks)	☐ Uses critical/ creative thinking processes with considerable effectiveness in formulating answer to question (2.5 marks)	☐ Uses critical/ creative thinking processes with some effectiveness in formulating answer to question (2 marks)	☐ Uses critical/ creative thinking processes with limited effectiveness in formulating answer to question (1.5 marks)	☐ Does not use critical/ creative thinking processes when formulating answer to question (0 – 1 marks)
Question #4 FOOD WEB (6 marks)	☐ See *Food Web Checklist* ☐ Fulfills success criteria in construction of food web with minimal (0-1) error. (5.5 – 6 marks)	☐ See *Food Web Checklist* ☐ Fulfills success criteria in construction of food web with few (2-3) errors. (4.5 – 5 marks)	☐ See *Food Web Checklist* ☐ Fulfills success criteria in construction of food web with some (4-5) errors. (3.5 – 4 marks)	☐ See *Food Web Checklist* ☐ Fulfills success criteria in construction of food web with many (6) errors. (3 marks)	☐ See *Food Web Checklist* ☐ Fulfills success criteria in construction of food web with too many (more than 6) errors. (0 – 2.5 marks)
Question #5a (3 marks)	☐ Completely uses critical/ creative thinking processes with a high degree of effectiveness in formulating answer to question (3 marks)	☐ Uses critical/ creative thinking processes with considerable effectiveness in formulating answer to question (2.5 marks)	☐ Uses critical/ creative thinking processes with some effectiveness in formulating answer to question (2 marks)	☐ Uses critical/ creative thinking processes with limited effectiveness in formulating answer to question (1.5 marks)	☐ Does not use critical/ creative thinking processes when formulating answer to question (0 – 1 marks)
Question #3 (3 marks)	☐ Completely uses critical/ creative thinking processes with a high degree of effectiveness in formulating answer to question (3 marks)	☐ Uses critical/ creative thinking processes with considerable effectiveness in formulating answer to question (2.5 marks)	☐ Uses critical/ creative thinking processes with some effectiveness in formulating answer to question (2 marks)	☐ Uses critical/ creative thinking processes with limited effectiveness in formulating answer to question (1.5 marks)	☐ Does not use critical/ creative thinking processes when formulating answer to question (0 – 1 marks)