



Carolina Biological Supply Company

Owl Pellet Inquiry: Analyzing Regional Variation



**www.caroliona.com
800-334-5551**

2008
Burlington, NC



CAROLINA
World-Class Support for Science & Math

Session Objectives:

- **Learn what owl pellets are and how they are formed**
- **Introduce a new and improved version of a familiar lab activity**
- **Use inquiry to compare/contrast Barn Owl pellets from 4 U.S. regions**



What Do You Know About Owls?



What Do You Know About Owls?

Eyesight



Feathers



Hearing



Feet/Talons



Diet

What Do You Know About Owl Pellets?

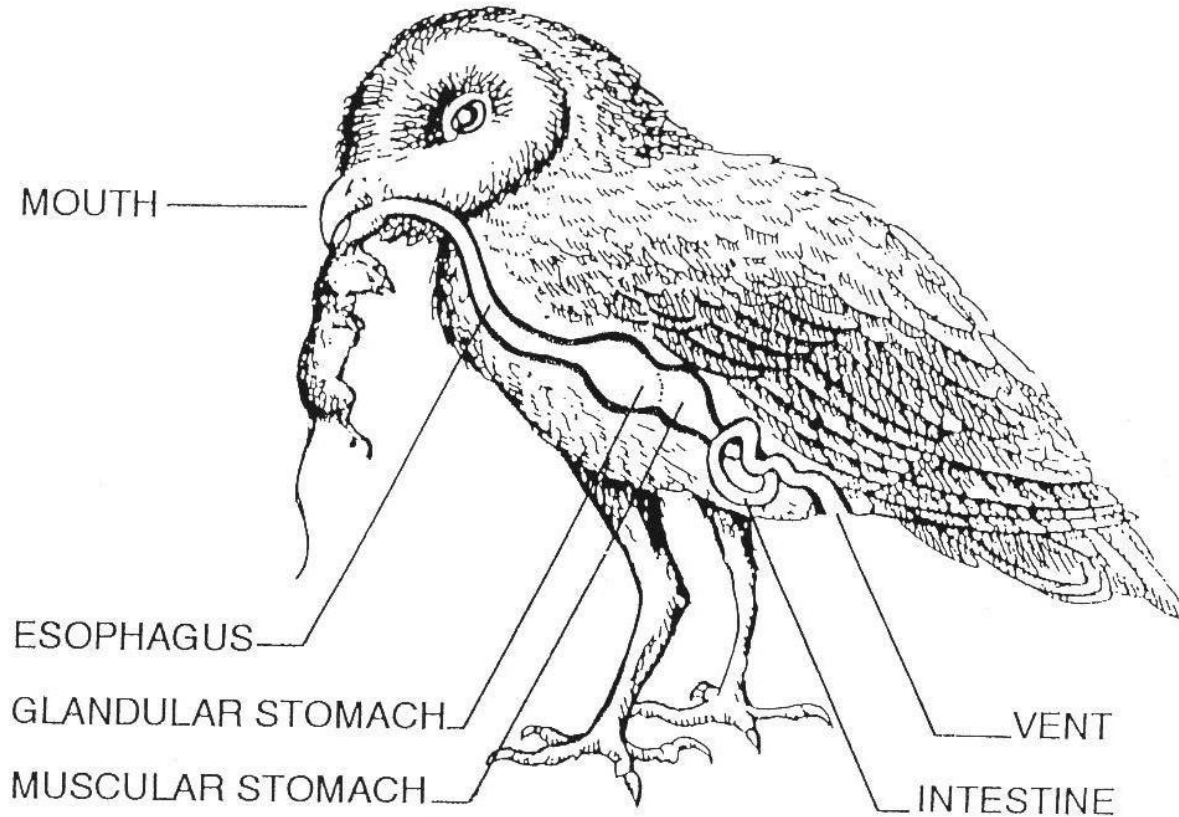
**End product of
digestive process**



**May contain bones, teeth,
hair, feathers, scales, and
insect skeletons**

How Do Owl Pellets Form?

HOW DO BARN OWLS MAKE PELLETS?

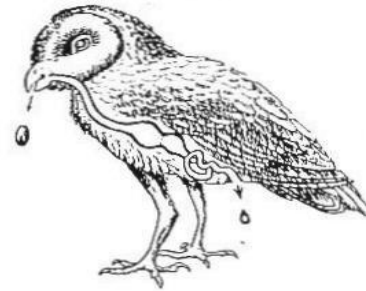
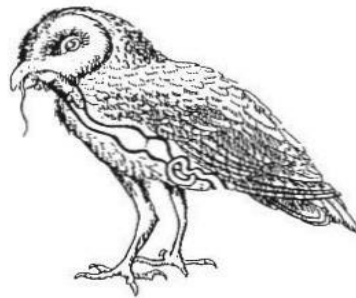
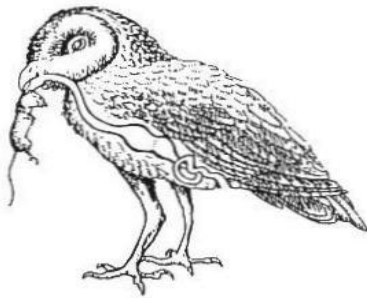


How Do Owl Pellets Form?



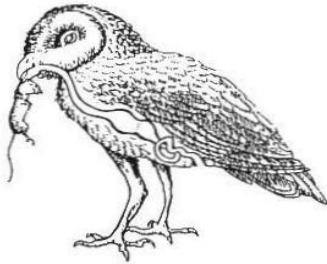
Can you describe each step?

HOW DO BARN OWLS MAKE PELLETS? ANSWER SHEET

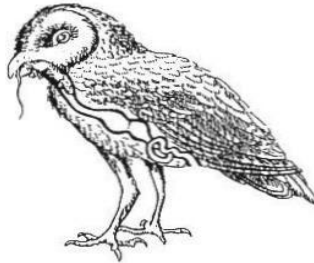


Owl Pellet Formation:

HOW DO BARN OWLS MAKE PELLETS? ANSWER SHEET



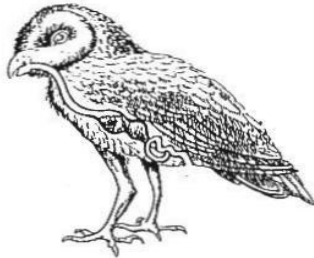
Prey is positioned head-first in the beak.



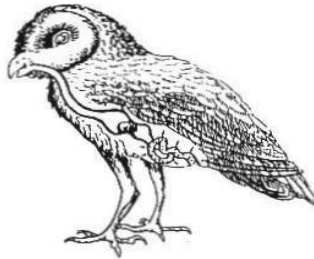
Prey is swallowed and passes through the esophagus.



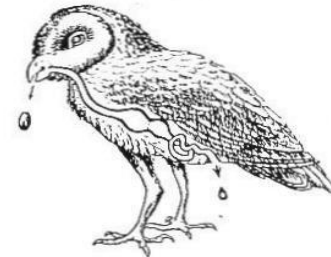
Prey enters the glandular stomach.



Enzymes break-down the prey and nutrients pass through the muscular stomach.



Nutrients are absorbed into the body from the intestine. Hair is pressed around the bones of the prey.



Waste is excreted through the vent. Pellet is orally expelled.

Why Study Owl Pellets?

- Learn about feeding habits
- Study ecosystems
- Determine availability of prey in an area



- Learn about *whoo* eats *whoo* in a food web



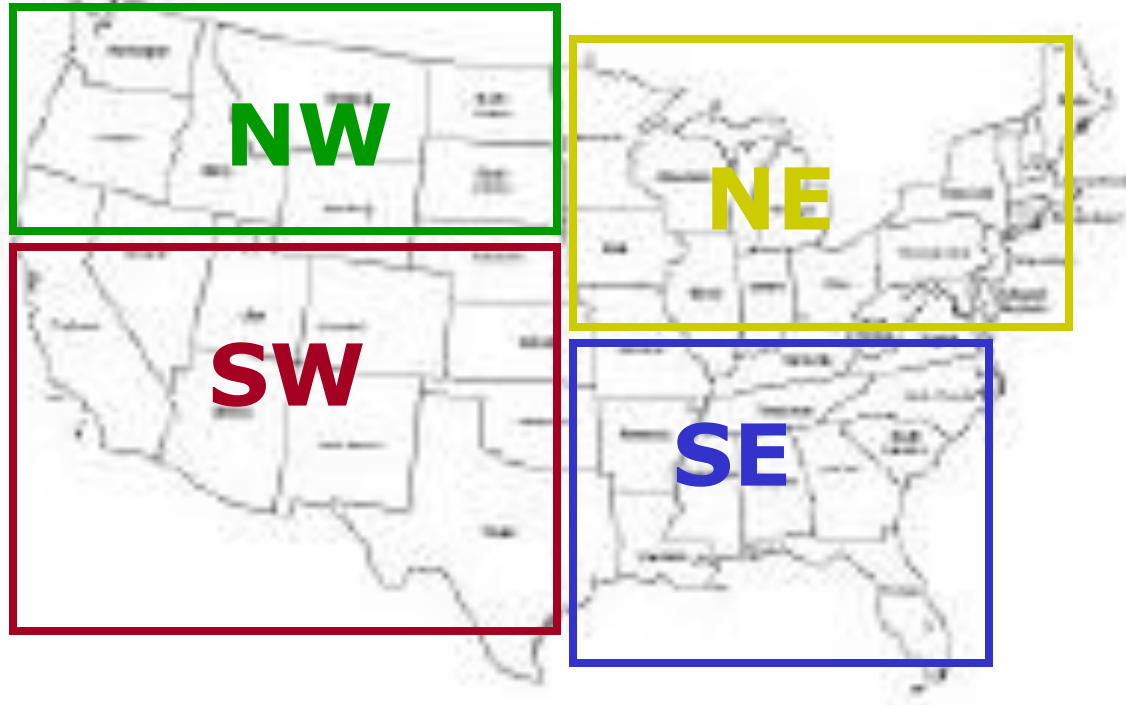
National Science Education Standards:

- **Science as Inquiry Standards K–12**
 - Abilities necessary to do inquiry
 - Understanding about scientific inquiry
- **Life Science Standards K–12**
 - Organisms & environments
 - Populations & ecosystems
 - Behavior of organisms
- **Science in Personal and Social Perspectives Standards K–12**
 - Characteristics & changes in populations
 - Populations, resources, & environments
 - Population growth

Dissection Materials:



Four Regions Compared:



PREDICT: Differences and Similarities

Observe the Pellet:



How do they differ?

- **Note color, size, and texture**
- **Compare to others at your table**

Begin Dissection:

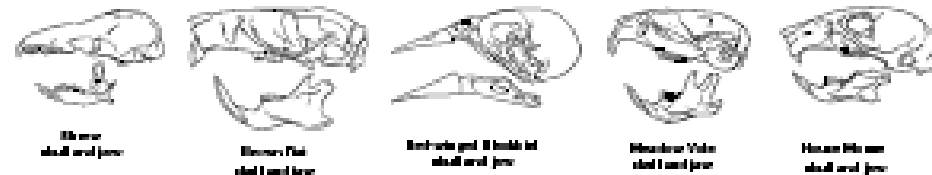
- **Carefully separate bones from fur**



Categorize Contents of Pellets:

Owl Pellet Bone Chart				
	Rodent	Shrew	Mole	Bird
Skull				
Jaw				
Scapula				
Forelimb				
Hindlimb				
Pelvic Bone				
Fib.				
Vertebrae				

Bone Chart



**Use bone charts
to identify
bones and prey**

Record Data : Group & Region

Owl Pellet Regional Variation: NW

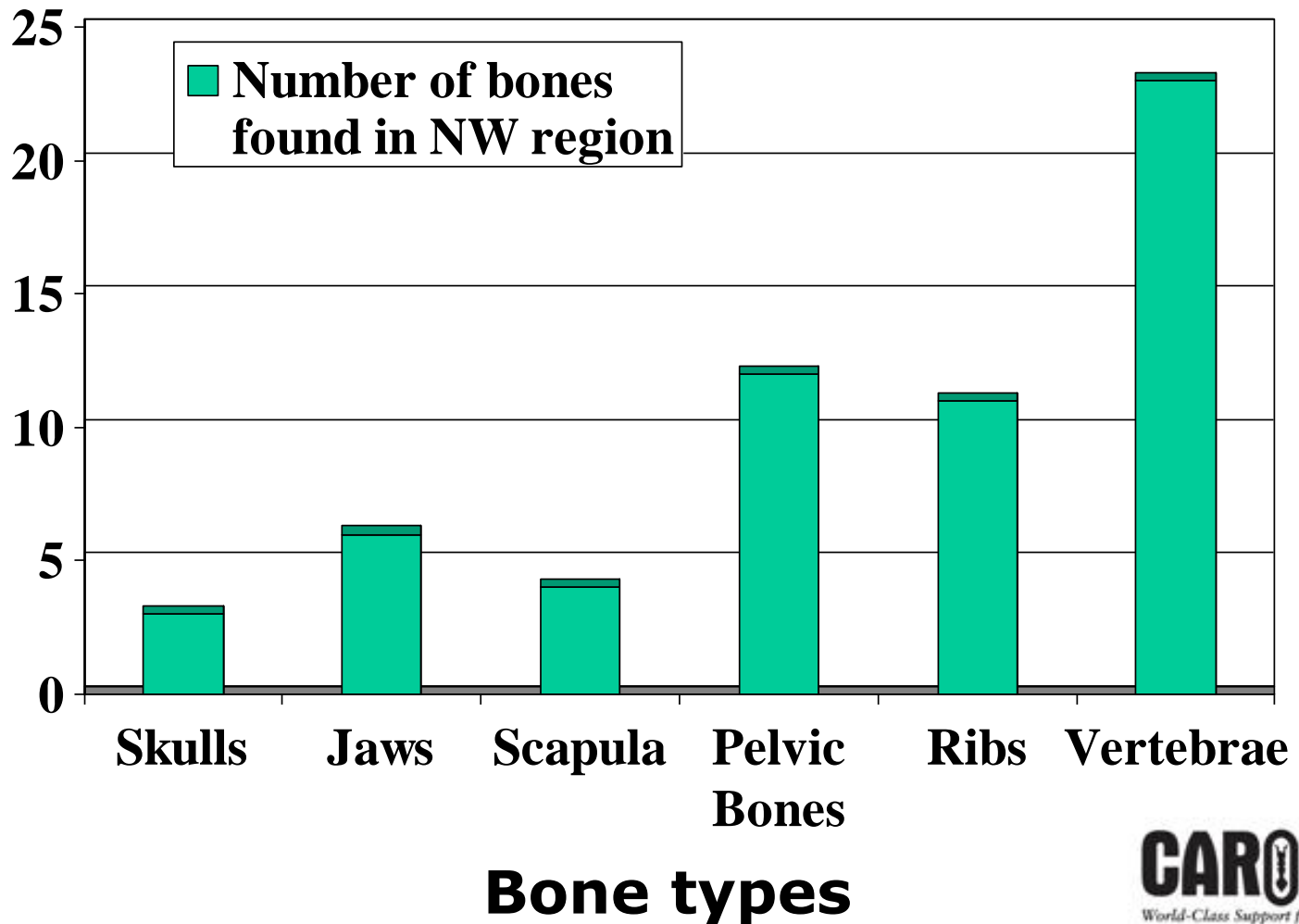
Bone Types	Skulls	Jaws	Scapulae	Pelvis	Ribs
# bones found	3	6	4	12	11
Skull and jaw types	1 large rat 2 shrews				

Observations of nonbone material: light gray fur, fur not dense, 2 thin white feathers on outside, few pieces of straw found outside

Sample notebook entry

Graph Regional Data:

Owl Pellet Regional Variation: NW



Analysis of Class Data:

- **Discuss differences and similarities in pellets of different regions**
- **Observe patterns or trends in:**
 - Rodent skulls or jaws**
 - Color/texture of fur**
 - Soil particles in pellets**



How can this info be used to understand Barn Owl ecology?

Enter Data Into Database:

Go to
www.carolina.com/owls



The Secret Lives of Owls

Barn Owl Pellet Interactive Study

Students can interact with our Barn Owl online database to see how the contents of their pellets compare with those of other Barn Owl pellets from all over the United States. After your students have examined their pellets, they can enter the information, **one pellet at a time**, into the form below. [Click here to view the current results.](#)

Bone charts for owl prey species identification

- [Bird skeleton chart](#)
- [Mole skeleton chart](#)
- [Rat skeleton chart](#)
- [Bone identification chart](#)
- [Skull identification chart](#)

1. Please enter your two-letter region code from the owl pellet packaging:
2. The pellet exterior consisted of:
 - fur
 - feathersOther:
3. Number of vertebrae found:
4. Number of scapulas found:
5. Number of ribs found:
6. Number of tibias/fibulas found:
7. Number of humeri found:
8. Number of femurs found:
9. Number of pelvic bones found:
10. Type and number of animal skulls found from dissected pellets of that region:

Number of rat skulls found: <input type="text"/>	Number of shrew skulls found: <input type="text"/>
Number of mice skulls found: <input type="text"/>	Number of mole skulls found: <input type="text"/>
Number of vole skulls found: <input type="text"/>	Number of bird skulls found: <input type="text"/>
Other animal skulls found: <input type="text"/>	Number of skulls: <input type="text"/>

Current Online Data:



The Secret Lives of Owls

Barn Owl Pellet Interactive Study Results

The pellet exterior consisted of fur

Northeast	95.2%
Northwest	97.7%
Southeast	94.3%
Southwest	96.6%

The pellet exterior consisted of feathers

Northeast	17.9%
Northwest	13.9%
Southeast	24.1%
Southwest	15.5%

The pellet exterior consisted of other items

Northeast	0%
Northwest	7%
Southeast	14.7%
Southwest	13.1%

Average number of pelvic bones found per pellet

Northeast	3.2
Northwest	3.5
Southeast	3.6
Southwest	3.8

Average number of vertebrae found per pellet

Northeast	9.6
Northwest	11.3
Southeast	11.4
Southwest	9.8

Average number of scapulas found per pellet

Northeast	2.9
Northwest	3.2
Southeast	3.4
Southwest	3.6

Average number of ribs found per pellet

Northeast	17.2
Northwest	17.3
Southeast	14
Southwest	17.4

Average number of tibias found per pellet

Northeast	4.9
Northwest	4.6
Southeast	3.5
Southwest	5.3

Average number of humeri found per pellet

Northeast	4.4
Northwest	3.9
Southeast	3.6
Southwest	4.1

Average number of femurs found per pellet

Northeast	3.9
Northwest	4
Southeast	3.6
Southwest	3.9

Percentage of owl pellets with rat skulls

Northeast	47.3%
Northwest	40.9%
Southeast	49.7%
Southwest	41.4%

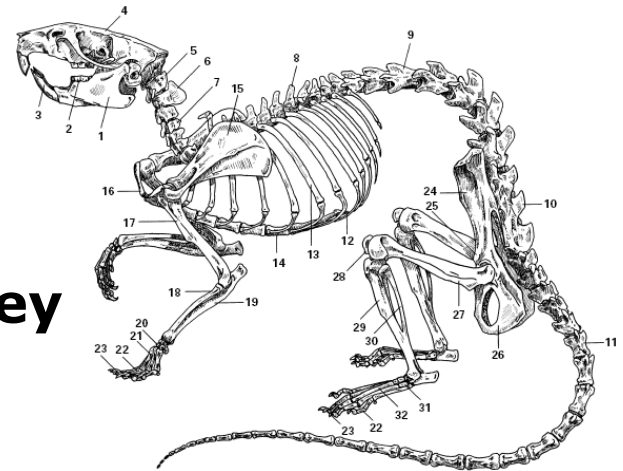
Average number of rat skulls in pellets containing rat skulls

Northeast	2.7
Northwest	1.8
Southeast	2.4
Southwest	2.6

**View results
daily!**

Activity Extensions:

- Use bone charts to create articulated skeleton
- Create bone display
- Research natural history and geographic distribution of prey found

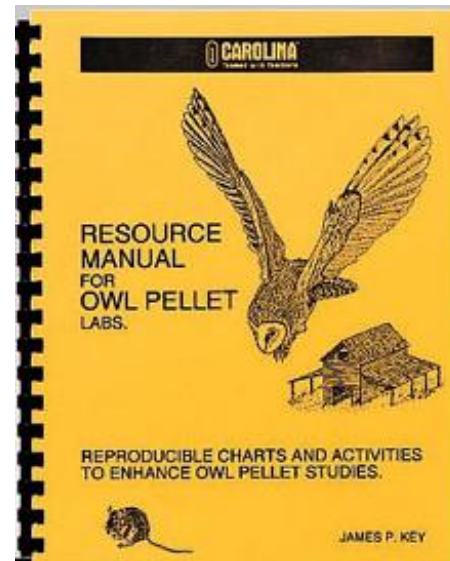


Additional Resources!



**Kits, posters,
manuals, bioramas,
and much, much
more!**

**Carolina
can meet
"owl"
your
needs!**





Carolina Biological Supply Company

Thank you for investing your time and viewing our presentations.

We look forward to helping you with your science education needs!