

# Dissecting Owl Pellets

## An enquiry driven science investigation

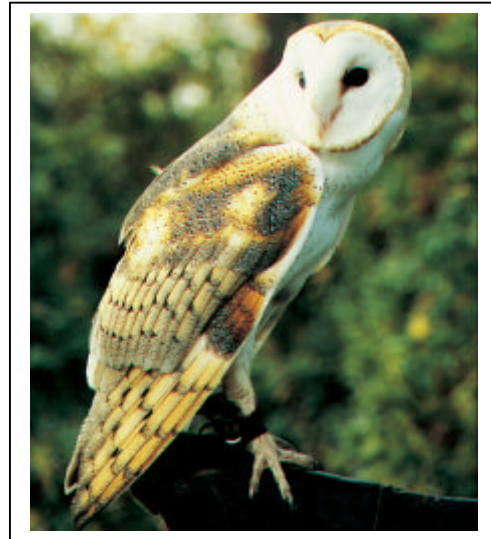
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### Introduction

Ask anyone you meet about owls and they will have a comment to make. Owls are very well-known to the community. By citing examples ranging from the Harry Potter novels to corporate logos, everyone will be able to tell you about owls. However, if you go on to ask people about their actual encounters with owls, very few will be able to confirm that they have ever seen an owl outside a zoo or wildlife sanctuary. The reason is obvious - owls are reclusive nocturnal predators. Being at the top of the food chain, they are not numerous, and being nocturnal, they are rarely encountered as part of our routine daily activities.

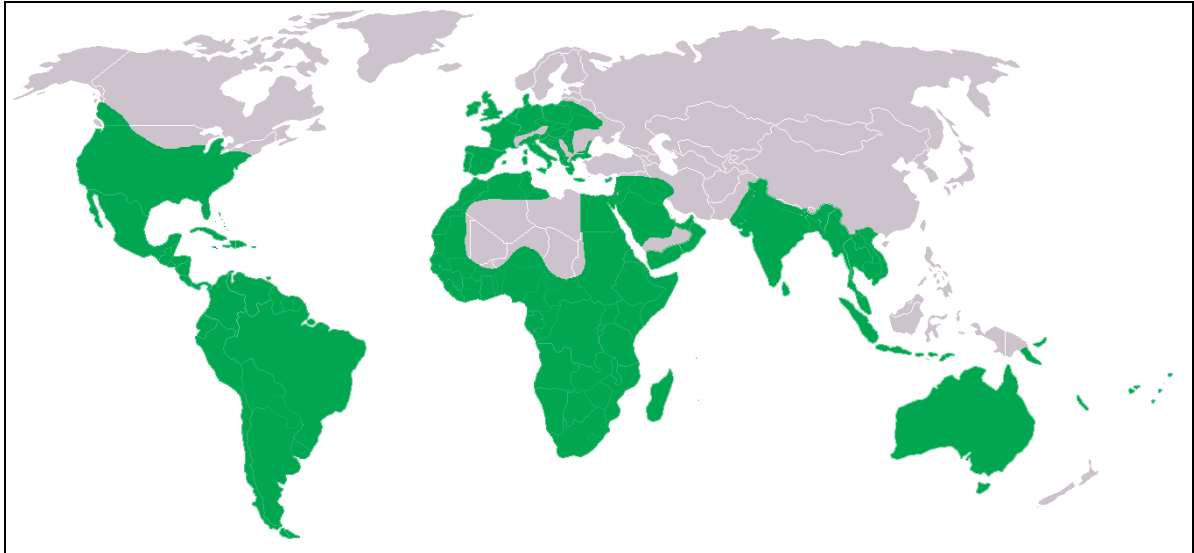
In ancient times, owls had a reputation for being evil omens associated with dark forces such as witchcraft and sorcery. However, as we have learned more about them, these misconceptions have given way to more benign associations. Today, owls are widely thought of being wise and benevolent.

Owls are an ideal topic for an enquiry driven science lesson because students will have all sorts of ideas and thoughts about owls. Many students will be quite interested in them because they will have seen them in movies and read about them in books. However, very few will have any knowledge or real understanding of these wonderful unique birds.



### The Barn Owl

The Barn Owl, *Tyto alba*, is found all over the world, including Australia, and can be recognized by its flat heart-shaped face. There are various sub-species as result of geographic variation, but they all exhibit the same general characteristics. Owls, like all raptors, tend to swallow their prey whole, or, if it is too large for that, they will tear it into large chunks. The indigestible parts of their food, such as bones, claws, teeth, feathers and fur are periodically regurgitated in the form of compressed pellets. Usually, these pellets quickly disintegrate when exposed to the elements, but in the case of the Barn Owl, the pellets are more long-lasting and can be collected from the environment for study.



*Global distribution of T. alba* source = wikipedia

Owl pellets are quite abundant in many parts of the United States, which is where we obtain our supplies. They can be easily dissected with tweezers and a pointed probe to reveal the small bones of the animals that the owl ate. Typically, you will find skulls, jaw bones, pelvic bones, vertebrae and ribs. In North America, owl prey commonly includes small birds, mice, moles and shrews.

## **Safety Aspects**

Owl pellets are completely safe to handle. They are heat sterilized after collection, then, on arrival in Australia, they are again sterilized, this time by irradiation under AQIS supervision. We recommend using standard laboratory practice when handling biological materials. For example, wear a lab coat and eye-protective safety glasses. Latex gloves are not necessary, but are considered to be a good idea in some quarters. All students should thoroughly wash their hands after completing the activity.

## **Conducting an Owl Pellet Enquiry**

1. Have students work individually or in small groups of two or three. Begin the exercise by discussing what students already know about owls. For example, ask about their physical characteristics, habitat and food sources.

What do owls eat?

What do students know about owls that support their ideas about owls' diet?

2. Provide each group with a wrapped owl pellet and have them consider the following questions **without unwrapping** the pellet:

What do you think the pellet will look like? Think about colours and textures.

What do you expect to find inside the pellet?

Does anyone already know something about owl pellets that supports your predictions?

What do you think about the number and size of the bones that might be in the pellets?

What do you think the bones will be like? For example, will they be:

Hard or soft?

Strong or weak (easily broken)?

Flexible or rigid?

- Now have the students unwrap their pellets and make some observations and measurements. For example,
- Describe the colour and texture and Students may now begin to dissect their pellet and explore its interior. Allow them to separate and group/classify the contents of the pellets **without** referring to the bone identification chart. This helps them to consider form and function instead of simply matching the bones to the diagrams in the chart. You can guide students by asking questions such as:

How are the bones similar?

How are the bones different?

Do the bones provide any clues about the animal from which they came?

Are the bones from more than one animal?

Discuss the evidence.

Have students record their observations.



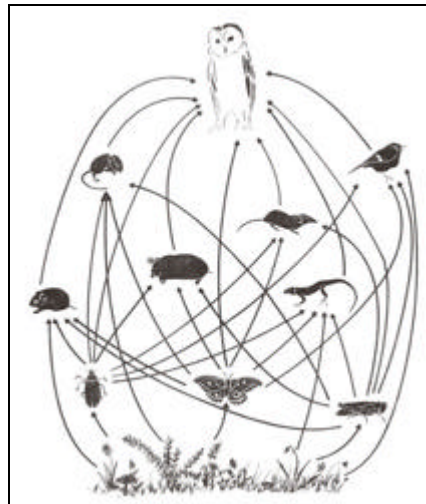
*Images courtesy of Carolina Biological Supply Company*

- Provide the bone identification chart to the students and ask them to identify as many of the bones as they can. Examine the relationship of form and function. For example, how do forms such as ball/socket joints and length/thickness of hind limb bones relate to the animal's movement?

OWL PELLET BONE CHART				
	SKIBBET	SKIBBY	WOLF	DOG
SKULL				
EAR				
SCAPULA				
HIND LIMB				
FORE LIMB				
PELVIC BONE				
HIP				
FOOT BONE				

6. Take this exercise further by assembling groups of bones in press-seal bags or by gluing bones to a piece of dark card that can be stored in a petri dish or CD case. It is also possible for younger students to glue bones so as to construct an imaginary animal and describe aspects such as how it moves and what it eats (with reference to form and function).

This study can lead into a discussion of food webs and other aspects such as the role of enzymes in digestion.



Food Web source = Carolina Biological Supply Company

## Results Database

The results of your students' owl pellet dissections can be saved into an online information database. Individual results can be compared with other data gathered from owl pellets collected from various regions in the US. To access the database, visit the following link:

<http://www.carolina.com/category/teacher+resources/owl+resources/owl+pellet+interactive+database.do>

## Further Information

For a large amount of information about owls, visit the resources section of the Carolina Biological Supply Company website:

<http://www.carolina.com/category/teacher+resources/owl+resources.do>

There is also a comprehensive Australian (Queensland) based website on owls:

<http://www.owlpages.com/index.php>

For an actual example of a scientific study that examined owl pellets in order to determine the diet of Barn Owls in Australia, see the following article:

Further Dietary Items of the Eastern Barn Owl *Tyto javanica* in Diamantina National Park, Queensland

By S. J. S. Debus, A. J. Ley and A. B. Rose

Published in *Australian Field Ornithology* September 2008, **25**(3), 149-152

(available on-line or contact Southern Biological)