

Owl Pellet Dissection



Swansea
University
Prifysgol
Abertawe



This worksheet accompanies our
'The Science in our Skies' module.

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What are we learning?

Birds of Prey have lots of **adaptations** to help them hunt but they also have adaptations for when they've caught their prey.

We will explore the behavioural and physiological adaptations that keep Birds of Prey safe when they eat.

What's the difference between a behavioural and physiological adaptation?

How do Birds of Prey eat?

Right after a bird has caught its prey it is vulnerable to attack, so they have adaptations to keep them safe as they eat.

Large birds of prey, such as eagles, are considered **apex predators** – they are at the top of their food chain and have no natural predators – nothing is trying to eat them.

They don't need to protect themselves as they eat, but they do need to protect their food from being stolen. To do this they hide their kills by spreading their wings over their kill to hide it. This is called **mantling**.

How do Birds of Prey eat continued...

They will also eat as quickly as possible to minimise the time they are on the ground, but they don't digest the food straight away. They store the food in their **crop**; an adaptation in their throat that acts as a storage pouch until the bird is safe and can digest its food safely.

Smaller birds of prey, such as kestrels, do have predators above them in the food chain. When they catch their prey, they carry it to a safe location to eat.

Kestrels eat 3-4 small mammals such as voles a day. They will aim to catch all of these in one hunting session then store them to eat at the end of the day – so they never go to roost hungry.

Owls also eat their prey as quickly as possible usually by swallowing it whole. However, owls don't have a crop, so the food passes straight to their digestive system - this means they end up swallowing all the indigestible parts of the animal, such as bones and fur.

The undigested parts are compressed into a **pellet**, and then coughed up by the owl. Because owls don't chew their food, many of the bones remain whole. We can use these to work out what kinds of prey an owl eats.



Common Buzzard mantling its prey



Owl pellet

Tell me more!

Owls make pellets because they have a specially adapted stomach that has 2 parts.

The first part is called the **proventriculus** this produces enzymes and acids to chemically breakdown the food.

The second part of the stomach called the **ventriculus**, although it is more commonly known as the **gizzard** which separates the digestible and indigestible food. The gizzard is very muscular and grinds the food. The digestible food is ground down small enough to pass into the small intestine. The undigestible part makes a **pellet**.

How do owls stop other animals stealing their food?

What do owls have to filter out the indigestible parts of their prey?

What do owls eat?

Different species of owl eat different kinds of prey, so their pellets contain different indigestible parts:

Small owls, such as little owls, eat lots of beetles and other insects. Insects don't have bones but do have indigestible wing cases (elytra). You can usually see these tiny, black, shiny elytra in the pellets of these small owls.

Medium sized owls, like tawny owls, eat lots of small mammals. This means their pellets tend to be full of fur and bones.

You can find feathers and beaks in the pellets of owls that hunt in the day, such as short-eared owls. They are able to prey on small birds that are also active during the day.

The biggest owls, like eagle owls, do eat small mammals but can also take on bigger prey. The most common is rabbits, but they have been known to attack ducks, foxes and even small deer! These larger animals are too big to swallow whole, so the eagle owl has to tear them up with its beak. Lots of the indigestible material gets left behind, but fragments of larger bones can still end up in their pellets.



Little Owl



European Eagle Owl

Activity

Match the owl to its Prey

Draw a line to match the owl to its prey.

ACTIVITY SHEET



Short-eared Owl



Skylark



Little Owl



Rabbit



Eagle Owl



Beetle

Activity

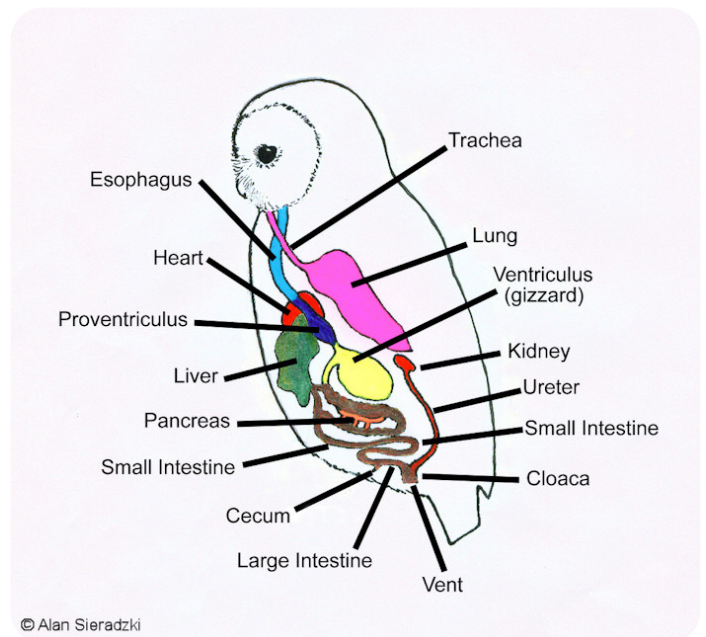
Owl pellet dissection

ACTIVITY SHEET

We can tell a lot about an owl just by looking at their pellets. In this activity you will dissect the owl pellets of several different species to investigate the differences.

Materials

- A dissecting tray
- Tweezers
- Owl pellets of at least 2 different species
- Identification guide
- Gloves



Instructions

1. Use the identification guide provided to work out which species of owl produced each pellet. The size of the pellet as well as its appearance should help.

What differences can you see between the pellets themselves?

- Carefully pull apart each owl pellet to find the indigestible parts of the owl's prey. You can use the tweezers or your hands, but be gentle. Identify the parts using the identification guide.

List each species of owl in the table below and tick what you have identified in its pellet.

Species of Owl	Indigestible material in pellet					
	Bird feathers	Mammal fur	Large rodent bones	Small rodent bones	Bird bones	Insect elytra (wing cases)
<i>Example: Tawny Owl</i>						

- Have a look at what you have found in each pellet. How diverse is each species' diet? Does each species of owl seem to have a preferred type of prey? Fill in the table below with your answers.

Species of owl	Number of different prey species identified	Most common species of prey identified

Are there any similarities between the time of day the owl hunts and its prey?

You can determine what time of day an owl hunts by looking at the colour of its eyes. Owls that hunt at dawn and dusk (crepuscular owls) have orange or yellow eyes, which help them to make use of the longer wavelength red light at these times of day when the sun is low on the horizon. Owls that hunt in the day tend to have bright yellow eyes. Many owls are nocturnal and hunt at night, so need dark eyes for camouflage so they can sneak up on their prey.

Notes & doodles



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Teacher information

Curriculum links

Key Stage 3 Science (Interdependence of organisms): 4. the interdependence of organisms and their representation as food webs, pyramids of numbers and simple energy-flow diagrams

Area of Learning and Experience: Science and Technology: The world around us is full of living things which depend on each other for survival

- The role of owls as predators within a food web, and the diversity of prey items they take.
- Physical and behavioural adaptations of owls to enable them to hunt successfully.

Resources to be sourced:

- ID guides: www.field-studies-council.org/shop/publications/owls-and-owl-pellets-guide/
- Owl pellets from different species
- Owl pellet dissecting equipment also needed



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