Barn Owl pellet dissection and analysis

What are owl pellets?

Barn Owls are predators. They use their amazing sense of hearing and ability to fly almost silently to catch prey living in rough grassland. Over 99% of their diet consists of small mammals like voles, mice and shrews. The remaining 1% of their diet consists of other prey items including the occasional amphibian, invertebrate, bird or bat.

A Barn Owl will usually eat 3-4 small mammals per night. They often swallow their prey whole. Once inside the owl's stomach, everything is digested except the fur and bones. These remains are regurgitated (brought up through the beak) in the form of a pellet. Each night an owl might regurgitate 1 or 2 pellets.

Why dissect a Barn Owl pellet?

Dissecting pellets enables you to discover what prey a Barn Owl has been eating and to learn more about its diet. Scientists have used pellet analysis as a way of surveying declining small mammal species like the Harvest Mouse and as a way to track the spread of invasive species like the Greater White-toothed Shrew.

Reg Charity No: 1201419
www.barnowltrust.org.uk

Waterleat, Ashburton
Devon TQ13 7HU

Identifying your pellet

Barn Owls are not the only birds that produce pellets. Other owls and birds of prey, corvids and many insectivorous birds produce pellets. The size, shape and colour of these pellets vary depending on the diet of the bird and its physical characteristics. Not sure which bird made the pellet you have found? Take a look at the image on our website at www.barnowltrust.org.uk/barn-owl-facts/signs-barn-owl-occupation/ to help you identify it.

Storing your pellets

When fresh, Barn Owl pellets are black and very moist. However, most pellets collected for dissection will have lain around in a barn for several months. During this time it is highly likely that clothes moths will have laid their eggs on the pellets. The resulting larvae consume the hair within the pellets before pupating into moths. They are completely harmless (except to wool!). The Barn Owl Trust stores pellets in a freezer on collection. This process kills any larvae within the pellets and allows them to be stored indefinately. The pellets are then defrosted prior to use.

Sourcing pellets

Pellets are usually found below a perching place where a bird regularly roosts (rests). However, please avoid collecting pellets from wild Barn Owl sites between March and August, when they may be breeding. Barn Owls are protected by law under the Wildife and Countryside Act 1981. This makes it illegal to disturb a Barn Owl whilst they are incubating eggs and raising owlets.

Pellect dissection packs are available to purchase from our online shop. When stocks allow we can also send out a limited number of individual pellets to schools for a small donation. Please contact info@barnowltrust.org.uk for more information.

Health and safety

We recommend that you sterilise owl pellets prior to dissection using the following method;

- Wrap pellets individually in aluminium foil. Place in pre-heated oven at 325°F (163°C). Bake for 40 minutes – this is hot enough to kill E. coli and Salmonella. Let them cool, then unwrap.

Please note that sterilising can dry out pellets. Spraying pellets with a little water prior to dissection will help prevent them being an inhalent risk.

The following safety guidelines are recommended:

- Carry out pellet dissection in a well-ventilated area. Participants with asthma or respiratory issues are advised to wear a face mask to reduce inhalation risk.
- Do not dissect pellets in areas used for food consumption nor eat or drink in the dissection area.
- Participants should avoid touching their face/mouth during the activity.
- Exposed cuts or grazes should be covered with dressings.
- Protective gloves should be worn and removed and disposed of safely at the end of the activity.
- Hands should be washed immediately after the activity with soap and water and dried with clean paper towels. A waterless sanitising gel can also be effective against microbial agents if it is comprised of at least 70% alcohol.
- Pellet analysis should be completed within one day. Unused pellets should be disposed of directly after the activity in an appropriate way.
- Clean all activity areas and equipment with an appropriate disinfectant/cleaning agent. Use disposable paper towels to clean areas and throw them away after use.

Dissecting an owl pellet

You will need:

- A plastic tray or similar
- A pair of disposable gloves
- A magnifying glass
- A pair of tweezers
- A cocktail stick or similar
- White paper

Method:

Pellets can be analysed wet or dry. For young children, it is easier to analyse dry or slightly damp pellets by gently teasing them apart with their fingers. Once pulled apart, tweezers and cocktail sticks can be used to gently pull the bones from the pellet. Placing the bones on a piece of white paper allows the bones to be seen more easily. If you wish to extract all of the small mammal bones, dried pellets can be soaked in water for 24 hours (a small quantity of disinfectant may be added if desired).

Barn Owl pellets will typically contain a wide range of bones including ribs, vertebrae, leg bones and hip bones along with the skulls and lower jaws of the small mammal the Barn Owl has eaten. These bones are easily recognisable and can be identified using the skelton diagram on the opposite page.

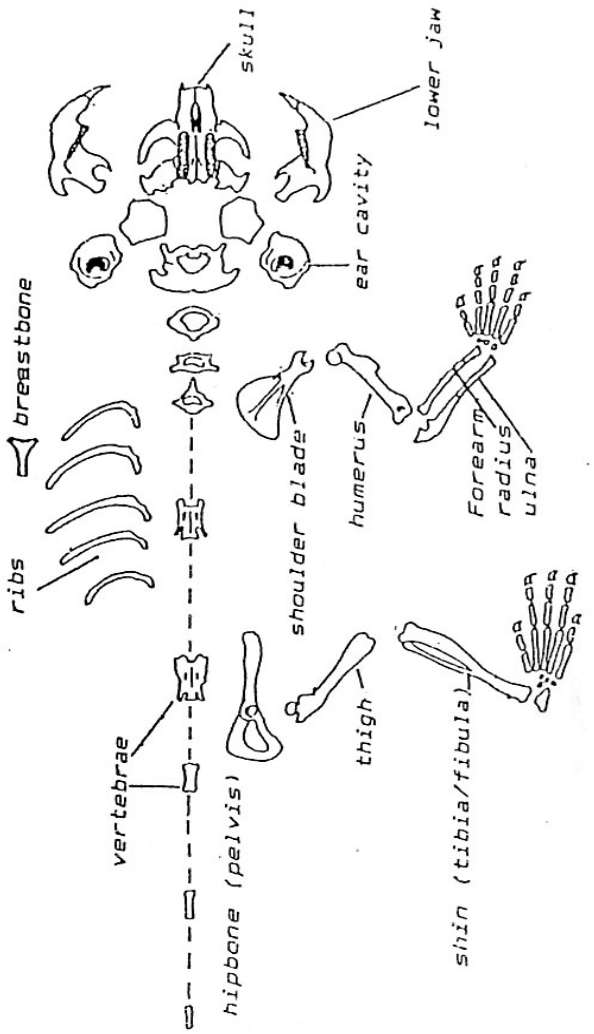


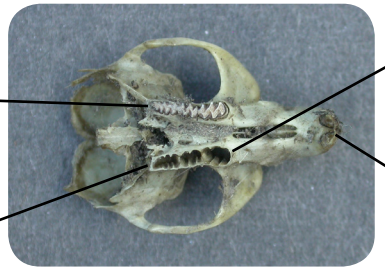
Diagram of a field vole skeleton showing the different bones you are likely to encounter.

Identifying small mammals

The three species most commonly found in British Barn Owl pellets are field vole, wood mouse and common shrew. Occasionally, more unusual mammal remains may be encountered such as harvest mouse and pygmy shrew. On rare occasions amphibians, bird bones and even bird rings are occasionally identified. A Barn Owl pellet from Essex was once found to contain a BTO ring which had been fitted to a wren in Northumberland!

To identify which prey your Barn Owl has eaten take a closer look at the underside of the skulls you have found. Small mammals can be identified by their teeth and the shape of their skulls. The types of teeth are related to their diet. You may need to pull out the teeth to reveal the tooth root pattern.

FIELD VOLE

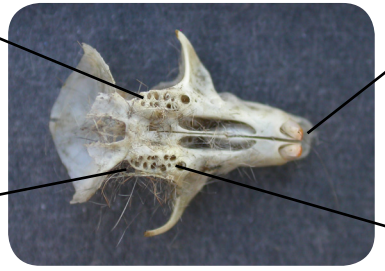


Teeth have zig-zag pattern

3 cheek teeth on each side with a single root hole

Cheek teeth (grinding vegetable matter)

Incisor teeth (cutting and biting)



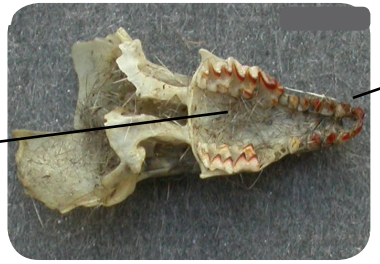
Cusped teeth

3 cheek teeth on each side. 1st molar has 4 round, root holes

WOOD MOUSE

COMMON SHREW

Long, narrow skull with pointed tip



Tiny, sharp teeth with red tips

Searching for shrews with the Mammal Society

Have you found something unusual in your pellet?

Would you like to help contribute to a science and research project?

The Mammal Society and the Barn Owl Trust are currently working together on a project called 'Searching for Shrews'. By analysing the small mammal remains in owl pellets, we hope to try to locate and map the spread of the non-native Greater White-toothed Shrew in Great Britain. This shrew is native to Europe, North Africa and some Channel Isles. In Ireland it is an invasive species and is thought to outcompete the native Pygmy Shrew. There are now concerns that it might do the same in Great Britain. It has currently been recorded in Sunderland and Nottinghamshire and the Mammal Society would like to know if it has spread further. We are encouraging volunteers to analyse Barn Owl pellets and send any possible remains of the Greater White-toothed Shrew to the Mammal Society for further identification. Alternatively, whole pellets can be sent to Freepost-MAMMALSOC.

If you would like to get involved or find out more about the project please visit mammal.org.uk/current-research/searching-for-shrews. More information can also be found at www.barnowltrust.org.uk/

Finding out more ....

Other useful publications -

Drewitt, E. (2024) Bird pellets: a complete photographic guide, Pelagic Publishing.

Ramsey, S.J. (2024) A photograpic guide to small mammal bones in barn owl pellets, The Mammal Society. This publication is available to download at www.mammal.org.uk/publications.

Thomas, L. & Sheilds, C. (2008) Guide to British owls and owl pellets, Field Studies Council. This publication is available in our online shop at www.barnowltrust.org.uk/product/fsc-guide-british-owls-and-owl-pellets/.

Yalden, D.W. (2020) The analysis of owl pellets, The Mammal Society.

www.barnowltrust.org.uk/barn-owl-facts/barn-owl-pellet-analysis/.

Barn Owls need your help

Barn Owls were once a fairly common farmland bird, but their numbers declined significantly mainly due to human influences. Changes in the landscape due to agricultural intensification resulted in loss of foraging habitat and the prey species upon which Barn Owls depend. This, along with the loss of traditional nest sites, road mortality and secondary poisoning from rodenticides resulted in a 70% drop in population size. As our weather becomes more extreme due to climate change, Barn Owls are at risk of declining again.

About the Barn Owl Trust

The Barn Owl Trust became a registered charity in 1988. It works tirelessly to protect and conserve Barn Owls and their environment. This is achieved through practical conservation work, provision of information, education, training and research. We also run a small owl hospital where we care for casualty owls.

Support our work

Please join us in helping to ensure that wild Barn Owls continue to be seen in our countryside. Visit www.barnowltrust.org.uk/support-us/ for more information.