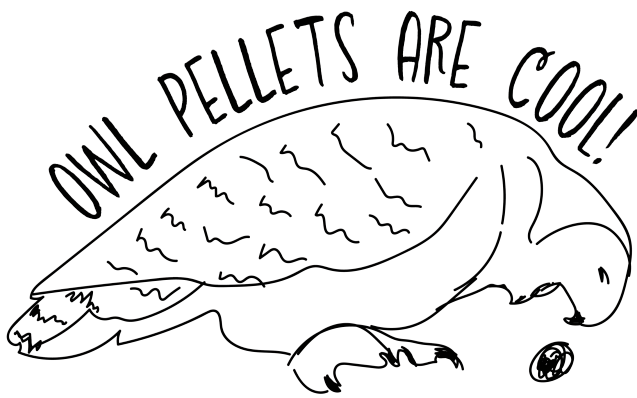




ALL ABOUT OWL PELLETS

WHAT IS AN OWL PELLET?

Owl pellets are the parts of their food that they can't digest. Owls don't chew their food- they don't have any teeth! Owls swallow their food whole, or in large chunks.



The digestive juices in an owl's stomach are not very strong, and can't break down all of the parts of the animals they eat. These parts can't be digested:

- Fur
- Feathers
- Teeth
- Beaks
- Bones
- Insect shells



Their stomachs pack all these parts into **pellets**, which are tight clumps with all the bones and hard bits in the middle, and the fur or feathers on the outside.

Then, the owls **cast** the pellets (cough them up- different than throwing up).



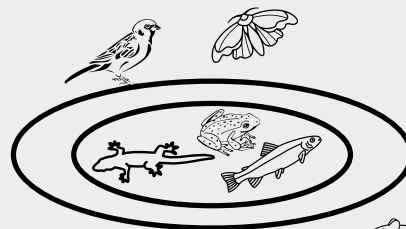
WHAT DO OWLS EAT?

Owls are predators. They eat other animals. Different species of owls like to eat different things.



Favorite foods:

- Voles, mice, squirrels, rabbits, other rodents
- Birds



Owls also eat frogs, lizards, snakes, fish, insects, and other animals.



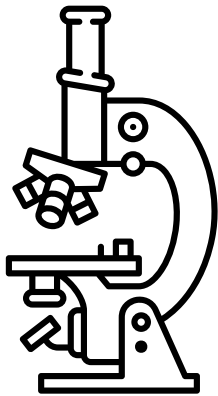
HOW OFTEN DO OWLS COUGH UP PELLETS?



Owls cough up pellets anywhere from 8 to 12 hours after their last meal. Once their stomachs are full, owls have to cast a pellet before they can eat again.



WHY DO WE STUDY OWL PELLETS?



ORI studies owl pellets to learn about owls and how they live.

We study owl pellets to learn what the owls are eating!

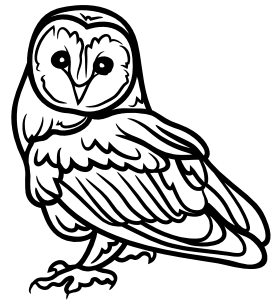
ORI researchers dissect the pellets, separating the bones from the fur. Then, we use the skulls and teeth in the pellets to identify the types of prey the owl ate.

ORI studies owl pellets to learn about owls and how they live.

We study owl pellets to learn what the owls are eating!

ORI researchers dissect the pellets, separating the bones from the fur.

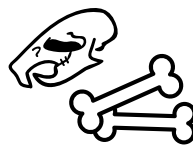
Pellets are also evidence of where an owl lives. Many owls like to roost in the same place for a few days in a row before moving to a different hunting spot, so if you find pellets on the ground you know an owl has been there!



Over the years, ORI researchers have dissected and studied over 40,000 owl pellets!

HOW TO DISSECT AN OWL PELLET

- If the pellet is wrapped in foil, unwrap it
 - Use your fingers, toothpicks, tweezers, or other tools to gently pull apart the pellet
- It's okay to touch pellets with your bare hands- they have been sterilized!*
- Separate the bones from the fur or feathers
 - Try to match the bones you find to the pictures on the **Bone Sorting Chart**



Bone Sorting Chart				
	RODENTS	SHREWS	MOLES	BIRDS
Skulls				
Jaws				
Loose Teeth				
Shoulder Blades				
Front Legs				
Hips				
hind Legs				
Assorted ribs				
Assorted vertebrae				



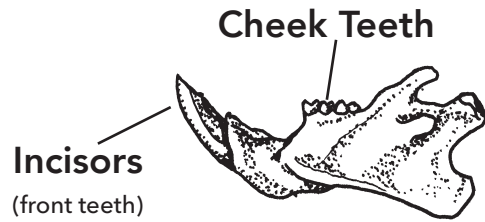
What kinds of animals did the owl eat?

How many of each type of bone did you find?

Remember to wash your hands after you're done!

Bone Identification Chart

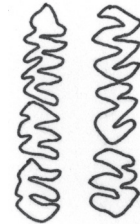
Teeth



Cheek
Teeth
Types



Lobed

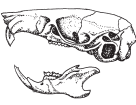
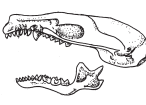
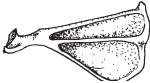
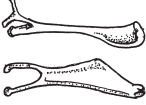
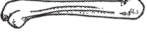
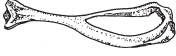
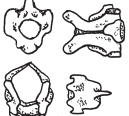


Angled

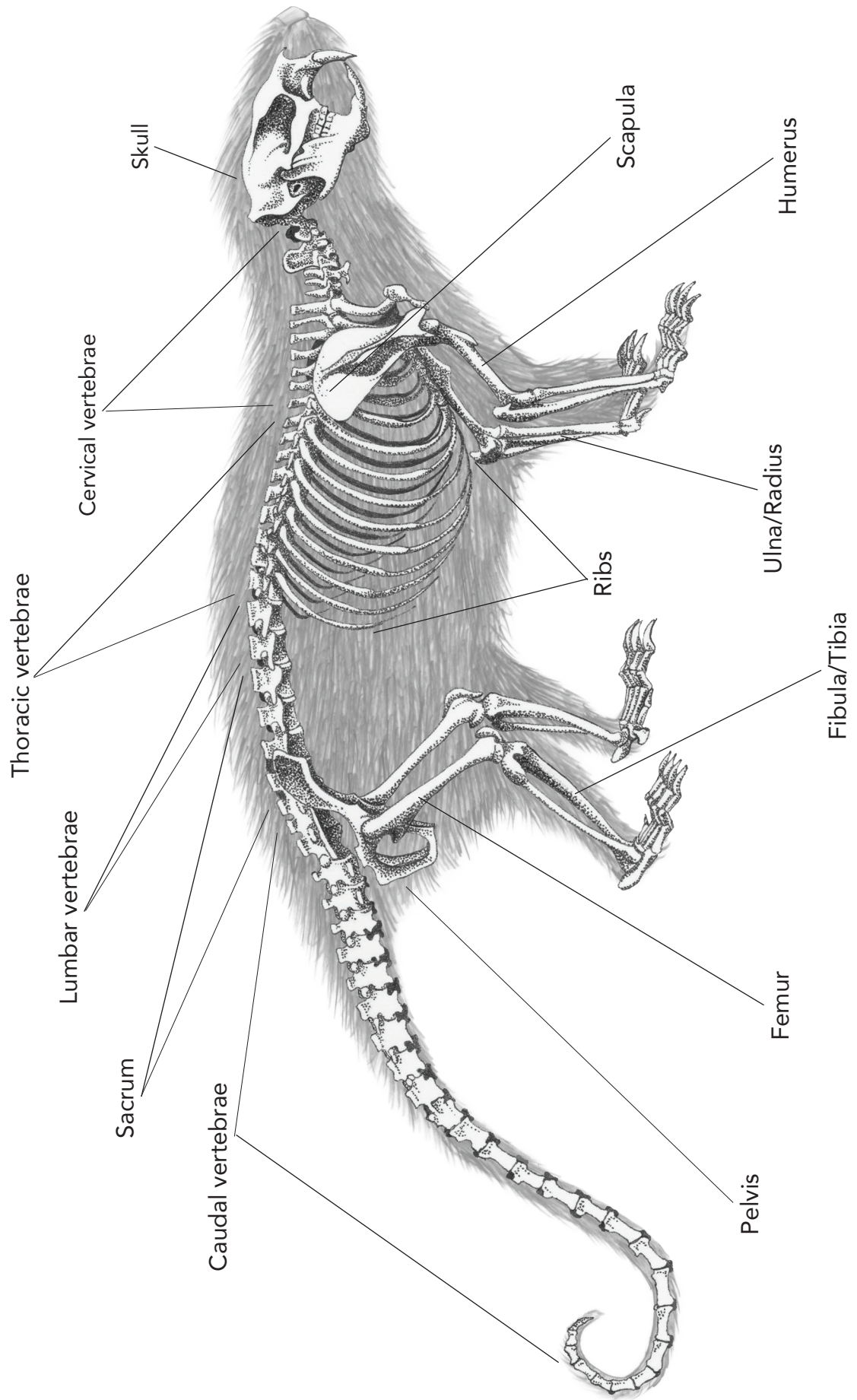


Pointed

Bones

	Rat	Vole	Mouse	Shrew	Mole	Bird
Skull & Mandible (jaw)						
Tooth Type	Lobed	Angled	Lobed	Pointed	Pointed	None
Scapula (shoulder blade)						
Pelvis (hip)						
Humerus (upper front leg)						
Radius/Ulna (lower front leg)						
Femur (upper hind leg)						
Tibia/Fibula (lower hind leg)						
Ribs						
Vertebrae (bones of back and tail)						

Rodent Skeleton Diagram



Owls from the inside-out:

Everything you've ever wanted to know* about

OWL PELLETS



HOW DO OWLS EAT?

First, it is important to understand how owls eat. Owls use their sharp, powerful talons to catch and kill prey, then gulp it down whole. Even nestlings can swallow whole or large pieces of prey by the time they are only a couple weeks old.



When the prey is too large to swallow, the owl will eat it in pieces. Minimal plucking and tearing is done with the beak if it can't be eaten whole.

DIGESTION BEGINS

Next, the food moves down the long esophagus and into the digestive



A Great Gray Owl chick swallows a vole whole as its mother and sibling watch. This chick is the youngest of 4, and 12 to 13 days old. Image from the Great Gray Owl live cam on Explore.org.

system. Owls, like all birds, have a two-part stomach. The food enters the first stomach called the **proventriculus**, or glandular stomach. The proventriculus secretes digestive enzymes that are acidic and will break down the food.

Soon, the food passes into the second stomach, or **ventriculus**, which is often called the 'gizzard.' The muscular contractions of the ventriculus help to soften and mix the food with the digestive enzymes.

Since owls eat mostly fats and proteins, their gizzards function slightly differently from those of other birds and do not have to grind the food as much. The soft, digestible materials and liquids are pushed into the small intestine for the next phases of digestion, and eventually any remaining waste is ejected through the vent with liquid waste from the urinary system. (We call this 'whitewash').

PELLET FORMATION

Back in the ventriculus, the stomach acids are unable to break down



Northern Saw-whet Owl pellets collected and dissected by ORI as part of our pellet research.

indigestible materials such as fur, feathers, and bones. All the leftovers are held back in the stomach and compacted by muscular contractions into a solid mass with the bones packed inside the fur: a nice, tidy package called the **pellet**.

IT'S NOT PUKING: PRODUCING PELLETS

Next, the formed pellet is egested.

Egestion moves the waste back up through the esophagus and out of the mouth- also called *casting the pellet*. This process is quite different than "throwing up." When an owl is casting a pellet, contractions called

anti-peristalsis begin in the second stomach and move up.

You can sometimes tell that an owl is about to cast a pellet by the look it gets: the facial disc changes shape, the owl may look slightly strained, then opens its mouth wide and out drops a pellet.

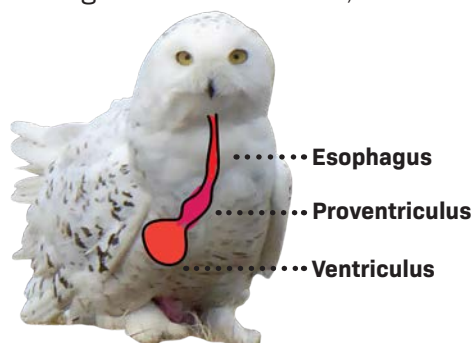


Photo | Jennifer Sperry ; illustration | ORI



*Probably more than you wanted to know



A Meadow Vole, one of the most common prey items we find in owl pellets in our research areas.

- Owls swallow whole animal prey.
- Their stomach doesn't grind up the food very much, like in other species of birds that eat grains, plant matter, or insects.
- Other raptors digest more bone because they have more acidic stomachs.

IS IT POOP OR A PELLETT?

Pellets will have whole bones, and will be more spongy, with fur or feathers.

Poop will be a harder mass with tapered ends, and rarely whole bones.



HOW BIG IS AN OWL PELLETT?

Pellets are roughly the size of the stomach, and so smaller owls have smaller pellets (and vice versa). The size of the pellet also can reflect when and how much the owl ate. Smaller pellets from smaller owls may only contain 1/2 to 1 prey animal, whereas pellets from larger owls can contain up to 7 prey items in one pellet!



HOW LONG DOES IT TAKE AN OWL TO CAST A PELLETT?

It depends on how much the owl has eaten. After a single meal, if the owl has not eaten again, the pellet will be fully digested and cast within about 8 to 12 hours. However, if the owl eats more, the digestion process starts over until all of the food is fully digested. When the stomach is full, the owl must cast a pellet before it can eat again.

NOT JUST AN OWL THING

Did you know that many species of birds actually produce pellets? Owl pellets are the most distinctive because:

OWL PELLETT RESEARCH



Owl researchers dissect (separate the bones from the fur) the pellets to find prey remains, and identify species in the owls' diet, to figure out what they eat.

By collecting pellets from active nest and roost sites, ORI has been able to do extensive diet analysis on many owl species. Over the years, we have collected and dissected thousands of pellets.



Beth in the lab dissecting owl pellets.

Species	# of pellets collected	# prey identified
Long-Eared Owl	25,000	41,900
Snowy Owl	14,000	43,626
Short-Eared Owl	800	606
Northern Saw-whet Owl	200	200
Great Gray Owl	76	213
Northern Hawk Owl	40	45
Boreal Owl	Not whole pellets-remnants found in nest boxes	226

By collecting pellets from active nest and roost sites, ORI has been able to do extensive diet analysis on many owl species.

This chart shows the number of pellets we've dissected, and the number of prey items we've found in those pellets, for 7 different owl species.

A few odd and interesting things we've found in pellets include: bird bands, wood chips, crawdads, and plastic.