

What are Skeleton Pellets?

Skeleton Pellets found in the wild are masses of bones, teeth, hair, feathers, scales and insect skeletons. They are produced and regurgitated, not only by owls, but also by hawks, eagles, and other raptors, which swallow their prey whole or in large pieces. The soft parts of the prey are dissolved by proteolytic enzymes (protein digesters) and strong acids which occur in high concentrations in the stomachs of raptors. The relatively weak stomach muscles of the bird, vole & mole form the undigested fur, bones, feathers, etc. into wet, slimy pellets. In this process, even the most fragile bones are usually preserved unbroken. Because the pyloric opening of the stomach into the intestine is narrow, only finally divided materials pass into the intestine. As a result, tiny bones only occasionally pass through the digestive system.

Each whole Skeleton Pellet from the wild contains virtually complete skeletons of the animals which the owl ate for a meal the night before the pellet was formed. Your Skeleton Pellet will always contain an entire skeleton inside. The included Skeleton Pellets are 100% synthetic making them completely safe and sanitary to dissect. You don't even have to wear gloves to dissect them.

Individual and Group Experiments

Either every student can do every experiment, or students can break into groups of three and observe the other group lessons.

1. Dissection of Skeleton Pellet: Unwrap the pellet, being very careful when pulling the bones out so as not to break or destroy the bones. Gently pull apart the pellet with your fingers and toothpicks or tweezers. Toothpicks are helpful in pulling the fur away

from the skulls and vertebrae. Study the bones closely with a magnifying glass. Once all the bones inside the pellet have been found, put aside in a container. After the pellet has been dissected look at the provided charts and try to identify the bones inside the pellet and what type of animal might be in the pellet. What size is the animal in the pellet? What other types of animals do barn owls eat? How do Skeleton Pellets work?

- 2. Making a Skeleton from the Pellet Bones:** Use a dark-colored sheet of tagboard to construct your skeletons. You will need three pellets for this experiment, a vole, a mole, and a starling. Pour the skeletal remains for all three animals onto the tagboard, each on a separate one and classify the bones by their shape using the provided charts. Observe the different types of bones inside the pellets and locate particular bones such as the femur, pelvis, ribs, skull, etc. Using all three skeleton charts, try to reconstruct the three skeletons on your tagboard. Once you are satisfied with the skeletons, glue the bones onto the tagboard. Compare the human skeleton with the mammal bones from the Vole, Starling, and Mole.
- 3. Ecology of the Barn Owl:** A lot can be found out about an owl by dissecting its prey. Skeleton Pellets also provide a habitat for other animals. Compare the three skeletons from the above experiment. What differences do you see? What structural adaptation does each animal possess? Compare each skeletal pattern and note the differences, along with the number of vertebrae, bones, the vertebral column, and skull. What kinds of animals are found in the owl pellet ecosystem?
- 4. Skeleton Pellets in the Wild:** Wild Skeleton Pellets can be collected most easily in old barns. Owls will roost in the rafters of open barns. They hunt at night and regurgitate their

pellets the next day. Hundreds of pellets can be found on the floor beneath the roost of a family of barn owls. Leave 2 pellets outside and unprotected for two days. After 2 days bring them in, dissect, and compare to the ones left inside. What happened?

- 5. Energy Flow:** Owls and their prey are consumers. Green plants are producers who make their own food using energy from the sun, and decomposers break down waste products (ex. fecal matter and owl pellets) and dead organisms for food. This experiment will demonstrate the flow of energy through a food chain beginning with sunlight and including producers, consumers, and decomposers. Begin by drawing the owl's food chain and write a paragraph describing the food chain. What is the owl's role in this food chain? What could happen if there are no owls to eat the rodents?

Discussion Questions

1. What do we know about the digestive system of an owl based upon the pellets?
2. What are ecosystems? Are Skeleton Pellets ecosystems and why? What kinds of animals are found in the owl pellet ecosystem?
3. Barn owls occupy the highest level of its own trophic pyramid and are used as a biological indicator. What is a biological indicator? Can you think of other examples of an animal or mammal being the highest on its trophic pyramid?
4. What is ecology? What is energy transfer? How do these scientific principles apply to Skeleton Pellets?
5. What kinds of information do you think scientists can obtain by dissecting Skeleton Pellets?

Notes

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Skeleton Pellets made in China.
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