SILENT HUNTERS – Discover the World of OWLS

The Houston Audubon Society is proud to present live virtual field trips! This program is an investigation into the fascinating world of owls. Texas is home to an amazing variety of owls that the students will learn about while investigating their habitat requirements, natural history and conservation. The presentation includes live owls, sights and sounds of native owls, folklore, owl pellet dissection and more.

OBJECTIVE: This program focuses on owls. Students will learn about the variety of owls that live in Texas and the U.S. They will understand their role in the natural world and their amazing adaptations.

GENERAL INFORMATION: Owls are birds of prey, occupying by night the hunting and feeding niches, which the hawks hold by day. Superb, specialized predators, owls are adapted to find, catch and kill prey quickly and efficiently. In addition, they have been doing it for ages; owl fossils found in the Midwest in rocks of the Eocene period date back about 60 million years.

Taxonomists divide owls (order Strigiformes) into two families, Tytonidae–barn owls and Strigidae – typical owls. Texas has records of 17 species of owls with 19 species across North America.

The plumage of owls is dense and soft, making them look heavier than they actually are. Their drab-colored feathers blend into the background of shaded daytime roosts and the darkness of night; the feathers on owls' legs provide insulation and protect against bites by prey. Both sexes are colored essentially alike, but females are usually larger and heavier than males of the same species.

Some unusual and highly effective adaptations help owls survive. Extremely large retinas make their vision 50 to 100 times more efficient than human sight at distinguishing small objects in dull light. In addition, the retinas are packed with rods (light-gathering cells). An owl cannot distinguish colors well, but it possesses binocular vision: each eye views the same scene from a slightly different angle, thus improving depth perception. Eyes are fixed in the skull; to look to the side, an owl moves its head, and some species can twist their necks over 270 degrees - almost all the way around. Owls have 14 neck bones. Owls' eyes are protected by a nictitating membrane, which can be closed at will. The motion of the membrane removes dust and debris from the surface of the eye.

> **Binocular vision:** Have a volunteer student help you with this demonstration. Facing the student, hold a pencil vertically at waist-height. Ask student to cover one eye and then quickly place their finger directly on the tip of the pencil, without hesitating. The student will fail! After a couple more tries, have them repeat with both eyes open. This demonstrates the effect, called binocular vision, of both eyes seeing the same point. Ask students to get a partner and try this out. Discuss the adaptive advantages of binocular vision in hunters. (Pinpoint position of prey).

An owl's head is large and broad to accommodate two widely spaced and highly developed ears. Owls hear sounds well below the threshold of human hearing; even in complete darkness, a barn owl can catch prey by using its hearing alone. The conspicuous "ears" or "horns" of great horned, long-eared, and screech owls are really tufts of feathers that have little effect on their hearing.

> **Hearing in Owls (Triangulation):** Explain that most owls' ears are different sizes and located at different places on the sides of their heads (not symmetrical like ours). The right ear is usually the longest and there can be a 50% difference in the size of each ear. The asymmetry of the ears means that the sound window, or the hearing on one side of the head is the mirror image of that on the other, except that the right one is displaced 10-15 degrees higher. In practice, this means that if a sound source (e.g. mouse) moves away from the line of sight while the owl remains stationary, the reception in one ear will decrease with extreme rapidity while it will do so more slowly in the other. The owl will turn its head to equalize the sound signals, thus placing the mouse directly in front of it (in its line of vision). To demonstrate to the students, have two students placed at different points in the room. They are each an owl "ear". Ask them to close their eyes and hold out one finger pointed at you. Ask them to follow the sound you will make by pointing their fingers. When you stop, ask the class to observe the triangle made by the lines (direction of the pointing fingers). They come together at the point where the prey is. This phenomenon is known as "triangulation".

The leading parts of a night hunter's wings – which cut the air when the bird flies – have soft, serrated edges. These soft leading edges, lightweight wings and a large wing surface area let an owl fly and glide in total silence. As its flight is noiseless, an owl easily hears other sounds while hunting.

An owl grips and kills prey with its talons. Two of these strong, sharp claws branch off the front toes of the foot, and two off the back toes. If the prey is small enough, the owl swallows it whole; otherwise, it holds the kill with its talons, tears the carcass apart with its hooked beak. The owl's stomach absorbs nutritious portions and forms indigestible matter (hair, feathers, bones, claws, insect chitin) into round pellets regurgitated about seven hours later.

Owls do not build nests, preferring to take over abandoned crow or hawk nests or use holes in trees or banks. They may add lining material to existing nests. Early nesters, some even lay eggs in late winter; by the time fledglings leave the nest, offspring of other wildlife abound and are fairly easy prey for the inexperienced young owls.

Owl eggs are rounded, white and undecorated, usually 3-5 in number. Incubation is generally the female's responsibility, while the male hunts and brings food to the female. After the eggs hatch, both female and male feed the young.

Nestlings wear thick white or light gray down. Young found in the same nest are invariably of different sizes, because incubation starts as soon as the female lays the first egg and therefore this egg hatches first.

SOUNDS: http://www.allaboutbirds.org/guide/Great_Horned_Owl/sounds

VOCABULARY:
Nocturnal - adj. belonging to or active during the night; of or relating to or occurring in the night
Diurnal - adj. having a daily cycle or occurring every day; belonging to or active during the day
Crepuscular - adj. like twilight; dim
Predator - noun any animal that lives by preying on other animals;
Prey - noun animal hunted or caught for food;
Carnivore - noun any animal that feeds on flesh; a terrestrial or aquatic flesh-eating mammal
Habitat - noun the type of environment in which an organism or group normally lives or occurs
Adaptation - the process of adapting to something (such as environmental conditions); the ability of a species to survive in a particular ecological niche, especially because of alterations of form or behavior brought about through natural selection.
Raptor - noun any of numerous carnivorous birds that hunt and kill other animals
Triangulation – the process by which an owl locates prey using sensitive, directional hearing
Migration – seasonal, periodic movement of animals; to pass periodically from one region or climate to another

POETRY: Ask students to write a poem about owls

http://www.readinglady.com/index.php?module=pagemaster&PAGE_user_op=view_page&PAGE_id=37

There came a gray owl at sunset,
There came a gray owl at sunset,
Hooting softly around me,
He brought terror to my heart.

- Translated from a Pima Indian song

WEBSITES:

- North American Owl Fact Sheets:
  http://www.owlpages.com/owls.php?location=North+America
  http://www.allaboutbirds.org/guide/Barn_Owl/id
  http://www.allaboutbirds.org/guide/Barred_Owl/id
  http://www.allaboutbirds.org/guide/Eastern_Screech-Owl/id
  http://www.owlinstitute.org/

- Virtual Owl Pellet Dissection:
  http://www.kidwings.com/owlpellets/flash/v4/index.htm

- Owl Pellets for Sale:
  http://www.obdk.com/

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