HAWK MOUNTAIN SANCTUARY ASSOCIATION

Learning About Raptors

Pre-Trip Slide Show
Elementary Level

The *Learning About Raptors* PowerPoint slide show is designed for you to use both before and after your field trip to Hawk Mountain Sanctuary. It is divided into parts with different topics in each so you can view each part separately. Ideally it would be best to view at least through Part One before your field trip. Intended for an elementary school audience, you could add more advanced content for older grade levels by using materials available on the online resources section of our web site. Words in yellow in the presentation are from the vocabulary list at the end of this document. The slide show advances on mouse click so you can control how fast you want to proceed or if you want to pause for discussion at any time.

The following notes provide additional background information for each slide, followed by a list of internet links to further resources on our web site and others, including some videos of raptors in action from National Geographic. We hope these materials help you to get the most out of your learning experience with Hawk Mountain Sanctuary.

The development of these materials was supported in part by the Jesse Ball DuPont Fund, the Pennsylvania Department of Education, The Wyomissing Foundation, The Marshall-Reynolds Foundation, The Jerlyn Foundation, The Air Products Foundation, The Century Fund, First Federal Charitable Foundation, Mary Ann Mekosh and many anonymous members and donors.

Special thanks to Congressman Charles Dent, State Representative David Argall, Senator James Rhodes, Meghan Becker and Jamie Larsen.

Discussion Notes

Slide 1:

- Hawk Mountain Sanctuary was founded in 1934 by conservationist Rosalie Edge. She had heard about the shooting of hawks from the lookouts on Hawk Mountain and tried to convince others to take action. Since no other conservation organizations were interested she took action herself. After raising enough money to lease and later purchase the mountaintop, she created the world's first refuge for birds of prey.

Slide 2:

- Hawk Mountain Sanctuary, located in east central Pennsylvania, straddles the Kittatinny Ridge, the southernmost ridge in the Appalachian Mountain ridge and valley province. Hawk Mountain is a private sanctuary, supported by members and donations, not a state or federal park.

Slide 3:

- Hawk Mountain is one of the best places in the world to watch migrating raptors. Raptors concentrate along the ridge in spring and fall during migration and an average of 18,000 raptors are counted each year.

Part One: Raptors

Slide 4:

- Part One defines the group of birds called Raptors. Raptors are carnivorous birds that feed on other animals and they include both hawks and owls. The word raptor is derived from the Latin word *rapere*, which means "to seize or to snatch", an apt description for the way raptors catch the prey they feed on. The photo is the Bald Eagle, the national symbol for the United States of America.

Slide 5:

- Feathers are the one unique feature of birds among modern-day animals. There are other animals with beaks (squid) and wings (bats) and that lay eggs (reptiles, insects). The feathers shown are tail feathers from a Red-tailed Hawk.

Slide 6:

- Raptors are predators because they hunt and kill smaller animals for food. Herons that eat fish and robins that eat worms are predators, but Raptors are unique because they use their feet to catch and kill their prey.

Slide 7:

- There are 2 North American eagles, the Bald Eagle and the Golden Eagle. The Bald Eagle's population is on the rise since the pesticide DDT was banned. Approximately 200 Bald Eagles and 110 Golden Eagles are seen each autumn at Hawk Mountain.
- There are two groups of hawks: Buteos and Accipiters. The Red-tailed Hawk pictured is one of the most common Buteos. Buteos have broad wings and tails that aid them in soaring flight. Red-tails adapt well to living near humans and often perch along highways or in cities if there is a good supply of small prey for them to eat. An average of 3,700 Red-tailed Hawks are seen each autumn at Hawk Mountain.

Slide 8:

- Owls are primarily nocturnal (active at night) or crepuscular (active at dawn or dusk) predators, but some species do hunt in the daytime. The Eastern Screech Owl is a common eastern owl that nests in holes or cavities in trees.
- Falcons have long pointed wings and powerful, flapping flight. The American Kestrel is found in open habitats and can be seen perched on telephone lines or hovering over fields hunting for prey. They eat insects, small mammals, small birds, reptiles and amphibians.

Slide 9:

- The Osprey is a large fish eating raptor found worldwide on every continent but Antarctica. There is only one species of Osprey. It builds a large stick nest in a tree near a lake, river or coastline. It catches its fish by plunging feet first into water.
- There are many different types of vultures in the world. Turkey Vultures and Black Vultures are found in North, Central and South America. All are scavengers that feed on carrion. The Turkey Vulture can locate prey more than a mile away with its' very good sense of smell.

Slide 10:

- The Northern Harrier is the only species of harrier found in North America. Harriers hunt in open areas like fields and marshes by flying slowly low to the ground. They have an owl- shaped face and use their sense of hearing to locate prey.

- Kites are slim, light- bodied raptors that feed primarily on insects, reptiles, amphibians and small mammals. Most have a southern distribution and are rarely seen at Hawk Mountain.

Slide 11 and Slide 12:

- Review what you have learned.

Part Two: Adaptations

Slide 13:

- All species of animals have developed body parts or behaviors that help them survive. These are called adaptations. The following slides provide examples of adaptations and reviews the specific adaptations that distinguish raptors from other birds.

Slide 14:

- Two examples are shown, perhaps you can think of more. A behavioral adaptation called *migration* is when animals make a seasonal journey from one location to another and back again because of changes in resource availability such as food or water. In the African savannah wildlife migrate because of drought cycles and in North America birds fly south in winter because of low abundance of food in colder months.

Slide 15:

- Raptors catch and kill prey with their feet and have very powerful feet with long sharp talons on the end of their toes. This helps them to grab and hold onto the animals they eat.

Slide 16:

- A raptors beak is hooked and very sharp. They use it to rip and tear meat into bite- sized pieces.

Slide 17:

- Raptors can see much better than humans. They can detect prey as far as a mile away. They are also very sensitive to fine details and movement, this is known as visual acuity. Great eyesight is helpful to an animal that hunts live animals.

Slide 18:

- All raptors use hearing to some degree for locating prey. Owls have particularly good hearing for locating prey at night and have special adaptations that help them to do this, such as asymmetrical ear placement that allows them to localize sounds accurately.

Slide 19:

- Review what you have learned

Slide 20:

- Review what you have learned

Part Three: Food Chains

Slide 21: Title Slide

Slide 22:

- Raptors eat small to medium- sized prey from all the major groups of animals. Some raptors are very specific in their diets Osprey eat mainly fish and Snail Kites eat primarily apple snails. Other raptors are generalists such as the Red-tailed Hawk which takes a wide variety of prey including snakes, squirrels, mice, and birds.

Slide 23:

- All living things need energy to survive. A food chain is a simple representation of the energy flow and predator–prey relationships in an ecosystem. Energy from the sun is used by plants, algae or bacteria to produce food. Energy is passed along the food chain as herbivores eat plants and carnivores eat other animals.

Slide 24

- Raptors are at the top of the food chain or food web. A disruption in any link in the chain affects the ability of the other organisms in the chain to survive, particularly those at the top. You can discuss what might happen if you removed each link in the chain. If raptors were gone what might happen to their prey populations? If the numbers of prey were reduced what might happen to raptors? What would happen if we paved over a field?

Slide 25

- Raptors play an important role in maintaining a balanced ecosystem. Research has shown that removing the top predator can disrupt the balance and change the relationships of other organisms in a community. This slide shows all the interlinking food chains, called a food web, in one habitat. It also shows how pesticides or other chemicals might affect unintended organisms in a community.

Slide 26: and

- Review what you have learned

Slide 27:

- Review what you have learned

Part Four: Migration

Slide 28 Title Slide

Slide 29:

- As winter arrives the prey availability to raptors is greatly reduced. The increased competition for food is the driving force that sends them on their journey south.

Slide 30:

- In North America raptors fly south for the winter and return again in spring. Migration is the annual, seasonal round trip journey from one location to another in search of food.

Slide 31:

- Raptors use two types of rising air currents to save energy while flying. Updrafts are created when winds hit the sides of mountains and rise upwards. Rising columns of hot air called thermals are formed over open areas like parking lots, boulder fields or farmer's fields. As the sun heats the surface the air above it heats up and rises.

Slide 32:

- The Broad-winged Hawk travels all the way to South America for the winter. The map shows their migration route. Because they rely predominantly on thermals or rising heated air currents to help them save energy during migration, they do not cross over bodies of water as there are few thermals there.

Slide 33:

- Review what you have learned.

Slide 34

- Review what you have learned.

Slide 35

- Suggested discussion points.

Internet Links

Hawk Mountain On-Line Resources

http://hawkmountain.org/Online_Resources.php

Raptor Coloring Book with downloadable pages:

http://hawkmountain.org/index.php?pr=Coloring_Book

American Kestrel Information

http://hawkmountain.org/media/kestrelnestbox.pdf

National Geographic Birds of Prey Videos

These are short 2 to 3 minute video clips of various types of raptors in action.

http://video.nationalgeographic.com/video/player/animals/birds-animals/birds-of-prey/

Vocabulary

Adaptation – a body part or behavior that helps an animal survive in its environment. For example: fish have gills and fins that help them live underwater.

Carnivore – an animal that eats other animals.

Herbivore – an animal that only eats plants.

Food Chain – energy passes from one living thing to another when it is consumed. All food chains get their energy from the sun.

Migrate – the annual journey animals make from one location to another and back again in search of food. Many animals migrate; including birds, dolphins, caribou, butterflies and sea turtles.

Nocturnal – active at night.

Predator – an animal that hunts and kills smaller animals for food.

Prey – an animal that is hunted by a larger animal for food.

Raptor – a bird that hunts live animals and uses its feet to catch and kill its prey. They all have talons, a sharp, curved beak and good eyesight.

Scavenger – a carnivore that feeds on animals that are already dead.

Sanctuary – a place where plants and animals are protected, similar to a wildlife preserve.

Talons – sharp, curved claws at the ends of raptor's feet, used for grabbing and killing prey.