



Raptor Artistry

Summary:

Students will be able to identify characteristics of raptors through group discussions, completing the Raptor Adaptations student sheet, and creating a raptor.

Grade Levels:

4th-8th

Setting:

Virtual or Classroom

Duration:

45 minutes

Standards:

N/A

Vocabulary

Raptor, adaptation, diurnal, nocturnal, accipiter, buteo



Objectives:

- Identify several physical characteristics shared by raptors
- Identify several groups of raptors and give examples of each
- Describe several adaptations that help raptors survive in their environment

Background:

Raptors are a group of birds also known as birds of prey. There are many different types of raptors, such as ospreys, owls, hawks, falcons, eagles, and vultures; all share key characteristics that help define them as raptors. In addition to being carnivores, they have keen eyesight for finding prey or carrion; strong, hooked beaks for tearing; and strong feet with long, curved talons for grasping.

Although raptors share several similar characteristics, each group and species of raptor also have specific adaptations that help them live in their habitats and obtain the particular food, water, shelter, and space they need to survive. This activity focuses on owls, eagles, vultures, falcons, hawk-accipiters, and hawks-buteos.

The term hawks can be used in several ways. Hawk is an actual taxonomic family of birds that includes kites, eagles, and birds that people commonly call hawks, such as the red-tailed hawk and sharp-shinned hawk. Those birds commonly referred to as hawks are further categorized into the genus accipiter and genus buteo.

Accipiters are woodland hawks and have short, rounded wings and long tails that help them maneuver among the trees. These hawks, such as the sharp-shinned hawk, primarily prey on birds. Buteos, such as the red-tailed hawk are larger hawks with stocky bodies. They have long, broad

wings and fan-like tails that are great for soaring and primarily eat small mammals.

Eagles are in the hawk family, which includes the accipiters and buteos. In fact, eagles are buteo-like hawks but are so much larger that they are placed in their own group. There are 50 different species of eagles in the world, all having a wingspan of 6 to 8 feet. Two species can be found in Pennsylvania. The golden eagle migrates through Pennsylvania while the bald eagle lives and nests within the state.

Falcons are built for speed and maneuverability. They have long, pointed, angled wings that help them fly quickly and change direction abruptly as they catch their prey in flight. Peregrine falcons and kestrels are two falcons that live in Pennsylvania.

Vultures are large birds of prey with long, broad wings that are great for soaring. Their heads have no feathers, which helps keep them clean as they eat carrion. The turkey vulture is the most common vulture in Pennsylvania; the black vulture can be found in some southcentral and southeastern counties. Unlike other birds of prey, vultures have a keen sense of smell, which helps them locate their food.

Owls are stocky birds with oval-shaped bodies and large heads. They have broad wings and are covered with exceptionally soft feathers. They have keen night vision and excellent hearing, which helps them find their prey at night. Great-horned owls and screech owls are common owls found in Pennsylvania.

Materials:

Raptor adaptation student sheet, raptor cards, large paper, markers, assortment

Procedure:

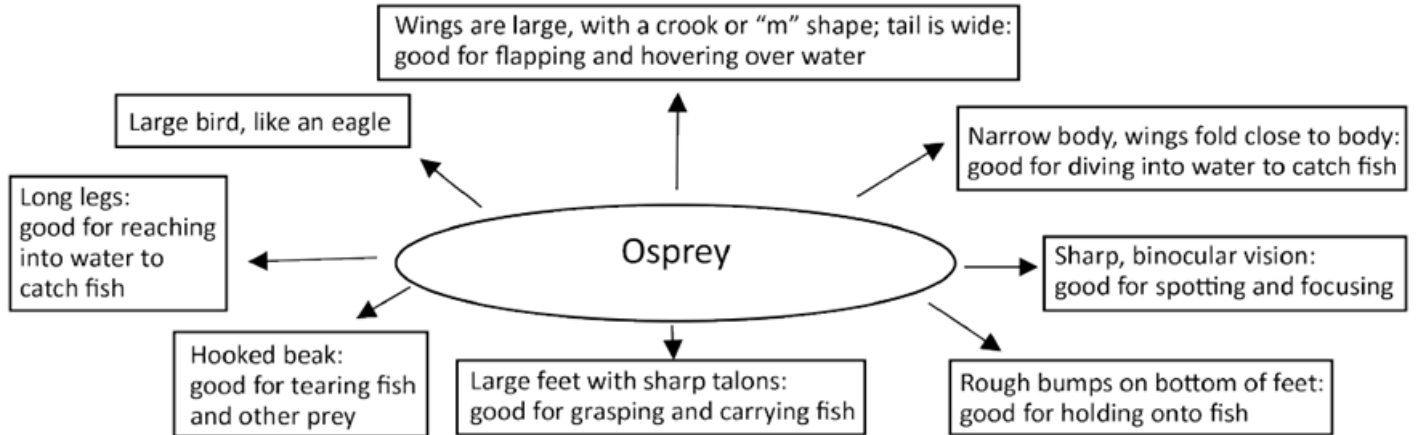
1. Ask students what they think when they hear the words ***birds of prey*** and ***raptor***. Are they the same thing? Can they give any examples? Explain to students that raptors are birds of prey and that there are many different species of raptors including red-tailed hawks, peregrine falcons, bald eagles, and great-horned owls.

2. Show pictures of many different raptors and ask students if they notice any similarities and differences. Images of several raptors can be found at www.pgc.state.pa.us in the Education section. Continue to explain that there are many groups of raptors but all raptors share some characteristics. Additionally, each group of raptors have their own characteristics that help them survive in their habitats. Explain to students that they will be participating in an activity to explore raptor adaptations.
3. Divide students into groups and provide each group with a raptor card and a large piece of paper.
4. Ask students to read their raptor card and label their paper with the name of their raptor group. For example, the group with the owl card should label their paper ***Owls***. Then ask students to make a concept map or chart of the adaptations and their uses (form and function) for their raptor group. At a minimum they should include beak, wings, tail, eyesight, feet/toes, and how they help their raptor survive. They should include any additional adaptations or characteristic of their raptor group as well. Finally, they should write examples of their raptor group that can be found in Pennsylvania on the bottom of their paper. Help them by drawing a sample concept map or chart on the board for them. **(See example provided.)**
5. Allow students time to complete the concept map or chart and then hang them around the room. Ask students if they note similarities and differences. Make a list of characteristics shared by all groups. The list of similarities should include: carnivores, keen eyesight, hooked beaks, and talons on their feet. Then ask students to note any additional characteristics that are adaptations for specific groups of birds, such as wing-shape. How does wing-shape influence how a bird flies? Which types of wings are great for soaring, for speed, for maneuvering through trees? What adaptation helps owls fly silently at night?
6. Divide students into pairs and provide each student with a **Raptor Adaptation student sheet**. Ask students to work together to complete the blanks.
7. **Wrap-up:** Discuss worksheet responses with students and ensure that student answers are correct.

Extensions:

- Assign students two different raptor species or raptor groups and ask them to compare and contrast adaptations between the species using a Venn Diagram.
- Students research a specific raptor species that lives in Pennsylvania and write a short report on its natural history (habitat, food, adaptations etc.), range, and status in the state.

Example of Concept Map:



Examples of Raptor Adaptations:

Characteristic	Advantage
Strong, hooked beak	Tearing meat/flesh
Powerful talons	Grasping prey
Small, unfeathered head	Keeping clean while eating carrion
Broad, long wings	Soaring, searching for food
Long, narrow, pointed wings	Skillful maneuvering and speed
Short, rounded wings	Maneuvering while flying through trees
Strong flight muscles	Long distance flying
Large eyes	Good vision at night
Facial disks	Increased hearing
Exceptionally soft feathers with serrated edges	Fly quietly
Mottled brown/white coloration	Camouflage
Eyes that face front	Binocular vision to focus on prey
Keen sense of smell (most raptors do not have)	Find carrion

Raptor Card: Buteo

Buteos are rather large, stocky hawks with long, broad wings and wide, fan-like tails. These birds are adapted for soaring high in the sky over fields and other open areas. Trees are important to buteos as sites for nesting and perching.

Buteos are diurnal, meaning they are most active during the day. Keen eyesight enables them to hunt from a favorite perch above a field or soar in circles over a meadow searching for prey. Once spotted, the hawk will swoop down and use its sharp, curved talons and hooked beak to kill and eat a vole, mouse, rabbit, or other small mammal. Red-tailed hawks and broad-winged hawks are two examples of buteos found in Pennsylvania.



Raptor Card: Accipiter

Accipiters are hawks with short, rounded wings and long, squared-off tails. They live in woodlots and forests, as well as parks and neighborhoods with many trees. The shape of their wings and tails, along with their more slender bodies, helps them maneuver through trees as they hunt for small birds.

Accipiters are diurnal, meaning they hunt during the day. Their keen eyesight helps them spot their prey. Strong talons and a hooked beak help accipiters catch and eat songbirds or other smaller birds. Cooper's hawks and sharp-shinned hawks are accipiters that live in Pennsylvania and are often seen in neighborhoods near winter bird feeders, watching for an opportunity to take an unsuspecting bird.



Raptor Card: Eagles

Eagles belong to the same family as hawks, however, their large size distinguishes them from the other hawks. Eagles have very long, broad wings, with wingspans of 6 to 8 feet. Eagles are diurnal, meaning they are most active during the day. Fan-like tails, along with their large wings help them soar through the sky as they search for small rodents, birds, fish, rabbits, and other small mammals to eat.

Eagles have very keen eyesight, which enables them to spot small animals from a high perch or while flying. Strong talons and a hooked beak help them kill and eat their prey. Bald eagles and golden eagles can be found in the commonwealth, however only the bald eagle nests in Pennsylvania.



Raptor Card: Falcon

Falcons are known for their speed. They have narrow, pointed wings and long, narrow tails which help them fly quickly and maneuver through the air to dive and catch their prey. The falcons found in Pennsylvania are a diverse group, preferring different habitats and foods. However, all are carnivores, with keen eyesight to help locate birds, small mammals, insects, and other prey species. Strong talons and a hooked beak with a special notch are adaptations that help falcons kill and eat their prey. Falcons are diurnal, meaning they are most active during the day.

Peregrine falcons are the fastest bird in the world and can dive up to 200 miles an hour to catch a small bird in flight. The American kestrel, a much smaller falcon, may eat some birds, but preys mostly on insects in summer and mice in the



Raptor Card: Vulture

Vultures are large birds with very long, wide wings and long tails. These scavengers are often seen soaring in the sky during the day searching for carrion. Unlike other raptors, vultures have a keen sense of smell, which helps them find their food.

Vultures also have few or no feathers on their head, a great adaptation for a bird that sticks its head into carcasses of dead animals. They have a strong, hooked beak for tearing and talons for grasping, however, their talons and feet are not as strong as the other birds of prey that have to hunt and catch their prey. The turkey vulture and black vulture



Raptor Card: Owl

Owls have stocky, almost oval bodies and large heads. Most owls are nocturnal— active during the night. Their large eyes gather any available night-time light for night vision. Wide, rounded wings and tails, along with exceptionally soft ragged-edged feathers, allow them to fly almost silently as they search for rabbits, mice, voles, birds, insects, and other small animals to eat. Round, cup-like facial discs around their eyes help focus sound, giving owls finely tuned hearing. This, along with their keen eyesight, helps them find their prey at night. Owls also have strong talons and a hooked beak for catching, killing, and eating prey.

Pennsylvania is home to many different owls, such as great-horned owls, screech owls and barn owls. Each owl species has preferences for food, habitat, and hunting. Although most species hunt at night, short-eared owls tend to actively hunt during the day.



Raptor Adaptation Student Sheet

Your name: _____ Date: _____

1. Complete the chart. Fill in the blanks for each type of raptor.

Raptor (Bird of Prey)	Beak	Feet/Toes	Eyesight	Wings	Flight	Common Prey	Adaptation	Example
Vulture		Talons		Wide, long	Soar in sky			Turkey Vulture
Eagle			Keen, good	Large, wide		Small mammals, fish, birds	Fan-like tails	
Buteo		Talons			Soar in sky		Fan-like tails	Red-tailed Hawk
	Hooked		Keen, good		Fast, maneuver through trees	Birds	Long tails	
Owl		Talons			Silent	Small mammals, birds	Night vision	
Falcon	Hooked		Keen, good	Narrow, pointed			Notch in beak	