Science Essential Standards:
- 4.L.1.1, 4.L.1.2, 4.L.1.4 (animal adaptations)
- 5.L.2.1, 5.L.2.2, 5.L.2.3 (ecosystems)

Time:
15 minutes

Audience:
4th or 5th grade

Learning Objective:
Summarize characteristics of raptors and adaptations of specific species.

Materials (optional):
- ☐ pictures of each type of bird
- ☐ feathers, mounts, or other raptor biofacts

Vocabulary:
raptor, wingspan

Preparation:

- ✓ Determine where your group will have enough space for each student to be more than outstretched arms apart. Check for poison ivy, jagged rocks, & other safety concerns.
- ✓ Gather any raptor related materials for the lesson.
- ✓ Know how many students are in your group.

Background:

Raptors are birds that prey on other animals for food. Raptors are carnivorous, meaning they only eat other animals. Common characteristics of raptors include their curved beaks, sharp talons, and broad **wingspan**. A bird's wingspan is the measurement from the tip of one outstretched wing to the tip of the other wing. Most raptors, or birds of prey, hunt alone to avoid competition for food. North Carolina is home to about 30 different raptors.

Turkey Vultures have a wingspan of six feet and are mostly dark brown with red skin on their face. When flying, their wings are held in a slight "v" shape, or dihedral. Although commonly seen soaring and along roadsides, they prefer to nest in remote settings such as hollow stumps, under old barns, or in secluded swamps. Unlike many other birds, they do not lay their eggs in a nest. They are scavengers that prefer to eat freshly dead carcasses of mammals.

Ospreys also have a wingspan of up to six feet and are mostly dark brown with a white stomach and legs. They use their sharp talons to catch fish out of the water. Their feet have spiny projections to help them hold onto their slippery prey. They nest in dead trees near the ocean, lakes, and rivers.

Bald Eagles are one of the largest raptors in North America, with wingspans up to seven or eight feet. They have a bright, white head and tail with a dark brown body. They prefer habitats near lakes, rivers, or shorelines. They typically nest in trees. Bald eagles will steal food from other birds, scavenge for carrion, or catch live prey.

Peregrine Falcons are smaller than most raptors, about the size of a crow. They nest in high mountain cliffs and ledges of tall buildings to be able to see the surrounding area. Peregrine falcons are known for their fast flying and diving speeds, which they use to catch other birds to eat.

Instructions:

1. Explain to the students that they will be doing raptor yoga today, and they will have the opportunity to act as a few different types of raptors.

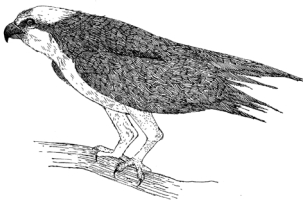
2. Ask students to tell you what a **raptor** is. **Raptors** are birds that prey on other animals for food.
3. As you share the stories for each raptor, **model** the movements for the students. Encourage everyone, including teachers and chaperones, to participate.
4. Use the below script to prompt you and your students with what to do. If you have a picture of each species, show it as you tell them what type of raptor they are pretending to be.

TURKEY VULTURE

- Start out at your nest site, on the edge of a cliff with a view of a hundred miles. Some of your friends nest in tree cavities, or even under old barns, but you picked this lofty location.
- It's around 9am, you slept in. Not because you are lazy but because you are SMART. You are waiting for the wind. Stretch out your wings and get ready to jump out over the edge.
- Soar with wings held in a dihedral, fingers spread out. Flap a few times and then soar, for minutes, hours, so smartly using the wind to give you a free lift.
- Soar higher and then breath in through your mouth sniffing the air. Breathe in again…do you smell anything rotten? Sniff again…yes there is a dead possum about two miles away. Keep circling and get closer and closer. Land and tuck your wings.
- With wings tucked, hop over to your lovely meal of dead rotten flesh. Reach out with your unfeathered head and tear off strips of meat and swallow it whole.

OSPREY

- Start at your nest tree along a lake. Balance on a dead tree with a pile of branches. You have some hungry babies in your nest, you need to go get them some food.
- Spread your wings…jump off your nest and flap slow, purposeful flaps. Soar with wings held in a M shape.
- Soar high over the lake…look downward scanning the surface of the water. Over there…a half mile away you see a school of fish feeding on the surface. Flap and fly that way.
- Once you get close, hover in one place with long slow purposeful flaps. Look down…see that fish just break the surface…that's a Shad!!!!

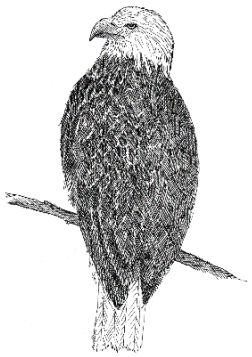


- Look down, focus, and tuck in your wings. Use your hands as talons and PLUNGE into the water. Pull up out of the water and in your hands, you should be holding your catch!!!
- Turn it so the fish is facing head first, so it is more aerodynamic. Carry it back toward your nest…look left…look right…make sure there are no other birds around. As you get close to your nest, give a series of whistles to let your babies know you are coming. Whistle again and land in your nest. Leaning down and then forward, tear off pieces of fish and give them to your hungry babies.

BALD EAGLE

- Start at your nest tree, high in a pine tree. Your nest is a bunch of sticks the size of small car. Look around your nest and hop from large branch to large branch.
- Hungry for a meal, I can hear your growling tummies, everyone growl. Hop to the edge of your nest, 70 or 80 feet off the ground, DON'T look down! Hop off spreading your wings.
- Using very, very slow long wing beats start to fly. To not waste energy, soar on flat wings, stretch them out as far as you can.
- Spread your fingers. Use them to help tilt your wings slightly from side to side, this is how you steer.

- Everyone steer to the right and let's follow that river…you see a squirrel along the shoreline, do you want to eat that? Nah, they bounce around too much and are tough to catch, you're in the mood for something else.
- Keep flying out towards the lake, steer left, and spot a big flock of ducks about a mile away. Do you want to eat that? Nah, the whole flock scares too easily, keep flying.
- Steer back to the right and look at the far side of the lake. Lean forward and focus with your binocular vision. Do you see that Great Blue Heron? It's too big to eat…but look what he has on the shoreline, can you see it? Look closer and flap again…yes, right by its feet there is a large catfish on the shoreline. No reason for you to go fishing. Flap and steer closer. Just before you land flap your wings forward making yourself look big. IT WORKED, the Heron flew away.



- On the ground take long steps, big strides. Using your huge beak, tear off an enormous piece of fish, making sound effects. Hold it in your bill (with a muffled voice) now tilt your head back and swallow your meal.

PEREGRINE FALCON

- Start on a lofty rock ledge perch thousands of feet in the air. Be careful near the edge, but lean left and stare out over a hundred miles of YOUR territory. Lean right and scan the horizon. Lean forward and look closely at a small pond. Did you see that?
- Let's take a closer look. Jump off your cliff edge and tuck your wings in. Lean forward like a ski jumper dropping down 100feet…200 feet…300 feet, the ground is getting closer, are you scared??
- Just above the trees, pull up and flatten out your wings. Tighten your fingers, don't spread them…you are built for SPEED after all, and you don't want anything to slow you down.

- Flap 5 times really fast and then glide. Flap 5 times again and then glide going higher (standing taller). As you gain elevation you get closer to the pond…and your eyes were right, there is a flock of shorebirds on the edge feeding in the mud.
- Flap 5 times even faster this time, getting as tall as you can, and then glide. Now get on your tip toes and flap and glide again.
- When you are high as you can get, it's time to DIVE. Tuck your body, tuck your wings in, flap 5 times as fast as you can and then glide up to 100 miles an hour. Tuck your body tighter and crouch down as you go 150 mph.
- You have a special bone in your nostril so you can still breath while you dive, so breathe in through your nose, flap again…tuck tighter and go 200 mph and steer towards the flock of birds.
- As you get closer, the flock scares up and starts to fly in all different directions. Pick one bird out and aim directly at it, tuck your talons into a fist so you don't break a finger. The bird is moving so lunge right…lunge left…almost there now PUNCH him with both of your talons.
- Recover and flap a few times, slowing down, and circle back. You need to catch your meal before it hits the ground…lunge left, lunge right, and grab it. Land on the ground.
- Catch your breath and breathe a few times. The shorebird is flailing at your feet, you worked so hard, you don't want it to get away. You're going to use a special tooth on your beak called a tomial tooth, which is just like the pointy canines that humans have. And with that tooth lean down and deliver a BITE (with sound effects) to subdue your food!

5. Direct students to fly back up to their perch.
6. Discuss the activity as time allows. For **4th graders**, focus more on animal adaptations. For **5th graders**, focus more on how these birds are interconnected to their ecosystem and in which ecosystems they are found as well as their role in a food web.

7. Ask students to share an adaptation of a **turkey vulture**.
    a. Ask how that adaptation is connected to their habitat or ecosystem.
    b. Ask how that adaptation help them survive.
8. Ask students to share an adaptation of an **osprey**.
    a. Ask how that adaptation is connected to their habitat or ecosystem.
    b. Ask how that adaptation help them survive.
9. Ask students to share an adaptation of a **bald eagle**.
    a. Ask how that adaptation is connected to their habitat or ecosystem.
    b. Ask how that adaptation help them survive.
10. Ask students to share an adaptation of a **peregrine falcon**.
    a. Ask how that adaptation is connected to their habitat or ecosystem.
    b. Ask how that adaptation help them survive.

Behavior & Materials Management Tips:

- **Model the behavior** to the students exactly how you expect them to behave.
    - Students are more likely to meet expectations if have clearly been shown what they are.
    - Having the students then model the behavior for you reinforces the behavior.
- The more **excited** you are, the more excited they will be.
- As you "soar" and "fly", stay in the same general area, as you want the students to do. You want students to easily be able **to focus** on the directions and **to see** what movements you are making.
- Give students **defined boundaries** for how far they can go to spread out. If possible, have students in a staggered, double circle or half circle.

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Credits:

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TURKEY

OSPREY

BALD EAGLE

PEREGRINE FALCON