



Bird Olympics

Overview

Students will discover unique and amazing characteristics of birds.

California Science Standards

Grade 1: 2.a.b.c.-L.S.

Grade 2: 2.c.-L.S.

Grade 3: 3.b.-L.S.

Grade 4: 3.b.-L.S.

Grade 7: 3.a.-L.S.

Oregon Science Standards

Grade 1: 1L.1

Grade 4: 2L.1

Grade 5: 2L.1

Grade 8: 2L.1

National Standards

Content Standard

C:Life Sciences

Materials Included

- * Student Journal
- * 5 Station sheets
- * 2-3 Stopwatches
- * 3 Measuring tapes
- * Laminated bird pictures

Materials Needed

- * Pencils
- * Flipchart

Space Needed

- * 1 flat area 25-30 yards long

Activity Time

Preparation: 20 min.

Activity Time: 45 min.

Best Season

All Seasons

Vocabulary

- * Adaptation

Grade Level: 1st-8th (O.S.S. 1st, 4th,5th, & 8th) (C.S.S 1st– 4th & 7th)

Learner Objectives

Student will:

- Define “adaptation” in a biological context
- Relate bird adaptations to function
- Identify and describe different adaptations used by birds
- Compare oneself to birds & their adaptations

Background Information

Birds have developed a host of incredible adaptations that allow them to fly, find food, protect themselves, migrate, and reproduce. Some of these characteristics are physical and include coloration, waterproof feathers, streamlined body shape, and specialized feet. Others are behavioral and include communication to others, building nests, migration, and ways of finding food. Together, these characteristics are called adaptations.

Adaptations are modifications, or changes, by which a species improves its condition in relationship to its environment over generations. Adaptations help birds survive in their habitats. For instance, hummingbirds depend on flower nectar for food. The long tubular bill and hovering ability are specialized adaptations for life around flowers and aid the hummingbird in feeding. Without these adaptations, the hummingbird would not be able to eat, and, therefore, it would not be able to survive.

Specialized adaptations also help to reduce competition of resources among birds living in the same area. For example, the size and shape of bills allow birds to feed on a large variety of resources. Differences in bill shape and feeding behaviors allow for a greater diversity of bird species to occupy an environment without competing for the same food sources.

For 150 million years, birds have gradually developed several adaptations allowing them to live in a variety of different habitats. Today, there are 9,000 to 10,000 bird species in the world. Three hundred and fifty seven species of birds regularly occur in the Klamath Basin, and over one hundred and fifty bird species are seen at Crater Lake National Park.

Weather and elevation also play a large role in the bird species able to survive at the park. Winter is the longest and hardest season at Crater Lake, with average temperatures around 30° F and 553 inches of snow annually. Snow plays a very important role at Crater Lake National Park. It is the

Lesson Plan

source for the lake and the streams found in the Park.

In order to survive the snow and long winters at Crater Lake birds must be adapted to these conditions. One example of this is seed caching, and a remarkable spatial memory to find hidden seeds. Both Clark's Nutcracker and the Mountain Chickadee have evolved this behavior and associated memory. By caching pine seeds throughout the summer and fall, these birds store enough fatty seeds to last the long winters.

Summer and fall are much milder, although relatively short compared to winter months. There is very little precipitation and temperatures range from 40° to 80° Fahrenheit. As a result the species diversity of birds at Crater Lake National Park increases. Milder weather brings birds with different adaptations to fill niches that were buried under snow until June. Waterfowl such as Common Merganser and Mallard arrive to the park for the summer. Adaptations like webbed feet, flat filter-like bills, and oil glands to waterproof feathers make these birds well suited for life on the water. Birds of prey also arrive to Crater Lake during the summer months. Red-Tailed Hawks, Bald Eagles, and Golden Eagles are seen soaring over open areas and meadows. These birds have developed long, extended wings for soaring and hovering as well as sharp-bills and talons for attacking and killing prey.

Getting Ready!

1. Read background information & teacher tips.
2. Decide on a site and set-up the five stations with appropriate materials (stopwatches, measuring tapes, etc).
3. Make copies of *Student Journal: Bird Olympic Sheets*.

Discuss!

1. Ask students a few questions to get them started thinking about adaptations. Some questions include:
How many species of birds do you think are in the world? (9,000-10,000)
How many species of birds are seen at Crater Lake? (150)
How can so many birds live in one place? (Birds have special adaptations that reduce competition of resources [ex: bill size and shape]).
2. Show pictures of a Golden Eagle and Rufous Hummingbird.
3. Have the students identify 3-4 differences between these birds.
4. List the differences: (Size, Shape, Feet, Color, Bill, Legs, Habitat, Behavior)

What is an adaptation?

An adaptation is a modification, or change, by which a species improves its condition in relationship to its environment over generations. Essentially, an adaptation is a physical or behavioral characteristic that helps a bird survive in its habitat.



Photo by: Jim Livaudais

Physical Adaptations

- * Size
- * Coloration
- * Bill Shape
- * Feet Shape

Behavioral Adaptations

- * Communication
- * Nest-type strategy
- * Reproduction
- * Migration
- * Food-finding (foraging)
- * Spatial Memory

Teacher Tips!

5. Ask students if they know what an “adaptation” is. Discuss that many of the differences you see between the birds are specific adaptations that help birds live/survive in their habitats.
6. Discuss behavioral and physical adaptations (see previous page).

Investigate!

1. Tell students they are going to be playing a game called *Bird Olympics* where they will see how they compare themselves to the adaptations of Bird Olympic Champions: Golden Eagle, Great Blue Heron, Great Horned Owl, Rufous Hummingbird, and American Kestrel.
2. Give each student a Student Journal. Guide students through the different stations identified by station cards. Aid them as needed (see tips below).
3. At each station ask students to think critically about why each bird has the particular adaptation and to record their answers in the journal sheet.
4. Give students an ample amount of time to complete the activity at each station.
5. After each station have students discuss how they compared to the Bird Olympic Champions.

Follow-up!

1. Ask students 2-3 questions to re-cap the lesson. See right panel.
2. For older students (fledglings), have them fill out the additional *Bird Olympics* student journal page. Discuss answers as a class.

Olympian Management

- **Pair-up*: Pair younger students up and have the class work together as you guide them through each station.
- **Tape Measure*: Before the Golden Eagle station, explain how to use a tape measure (or measure each person yourself and with a helping teacher or chaperone).
- **You be the timer*. At each station where a timer is needed, you be the timer. When the person acting as the “bird” stands on one leg, or stares, have their partner watch to make sure he/she is doing it properly. Once the “bird” puts its foot down, or blinks its eyes, the “bird’s” partner calls out “time!” You then read off the times for each “bird.”

Great Blue Heron



Suggested Questions

What is an adaptation?

Why does a Great Blue Heron stand on one leg while sleeping?

What bird has an adaptation for hunting at night?

What are some adaptations people have (hair, opposable thumbs, sweat, etc.)?

Clark's Nutcracker



Photo by Tom Grey

Teacher Tips

Bird Olympics Stations

For each station, have each student record their results in their Student Journal. For discussion, record student results on a white board or clipboard.

Golden Eagle: Station 1

Introduction: Golden Eagles have a wingspan of 7 1/2 feet and a length of only 40 inches. Ask students why some birds like the Golden Eagle need a large wingspan.

Answer: The large wingspan aids in soaring while looking for prey. With the long wingspan, Golden Eagles are able to soar for long periods of time without expending any energy. In people, our height is similar to our “wingspan” as we do not need to soar. In comparison, birds with a much smaller wingspan have to flap continuously to stay off the ground. (Ask students if they have ever seen an eagle or a song bird fly).

Activity: How big is your wingspan (arm span)? Measure students’ wingspans by using a measuring tape.

Compare: Who is the Bird Olympic Champion? How do they compare?

Great Blue Heron: Station 2

Introduction: Great Blue Herons (GBH) can stand on one foot for hours while sleeping. Ask students why they think GBHs would do such a bizarre thing.

Answer: Feathers keep birds warm and insulated. However, the legs of a GBH are featherless and lose a lot of heat while standing in cold water. By tucking one leg up close to its feathered body, it can keep one leg warm and regulate body temperature.

Activity: Pair up students and have them take turns being the sleeping GBH while the other partner observes. The student acting as the GBH should close his/her eyes and is only allowed to stand on one foot. (They are not allowed to change feet or hop!)

Compare: Who is the Olympic Champion? How do they compare?

Great Horned Owl: Station 3

Introduction: Great Horned Owls (GHO) can stare for hours without blinking. Ask students why GHOs would need to stare for so long.

Answer: GHOs are nocturnal and hunt for prey during the night. Because of the darkness, GHOs need to stay alert in order to locate prey, which is typically a small mammal. They also need to



Photo by Jim Livaudais



Photo by Jim Livaudais



Photo by Jim Livaudais

Teacher Tips

Bird Olympics Stations

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take advantage of minimal light at night.

Activity: Pair up students and have one person be the staring GHO while the other observes and calls time when his/her partner blinks time. (It is also fun to have a staring contest!).

Compare: Who is the Olympic Champion? How do they compare?

Rufous Hummingbird: Station 4

Introduction: In 10 seconds, a Rufous Hummingbird can flap its wings 700 times. Ask students why a hummingbird would need to flap its wings so fast.

Answer: Hummingbirds typically feed on the nectar of flowers. The ability to hover and flap its wings at an astonishing rate allows the hummingbird to enter a flower and feed on its nectar.

Activity: Pair up students and have students take turns being the hummingbird while the other counts the number of wing flaps. Keep track of 10 seconds on the clock.

Compare: Who is the Bird Olympic Champion? How do they compare?

American Kestrel: Station 5

Introduction: American Kestrels can fly up to 65 miles per hour in a dive! That is as fast as a car on the interstate highway. Ask students why this bird would need to fly so fast.

Answer: American Kestrel are small, but powerful birds and use their amazing speed to pursue, attack, and seize quick moving prey such as arthropods (invertebrates with jointed legs) and small vertebrates.

Activity: Mark off a flat area that is 20 yards long with a rope or flag. Allow additional room at the end of the run for students to slow down. Have students form a line at the starting line and have each student sprint to the finish line. Have students use the conversion chart (see following page) to see how well they did.

Compare: Who is the Bird Olympic Champion? How do students match up?

Rufous Hummingbird



Photo by Jim Livaudais

American Kestrel



Photo by Jim Livaudais

20-Yard Dash Conversion Chart

Use this chart to convert human running speeds for 20 yards into miles/hour.

Finish time (secs)	Miles/hour	Finish time (secs)	Miles/hour
3.0	13.6	6.0	6.8
3.1	13.2	6.1	6.7
3.2	12.8	6.2	6.6
3.3	12.4	6.3	6.5
3.4	12.0	6.4	6.4
3.5	11.7	6.5	6.3
3.6	11.4	6.6	6.2
3.7	11.1	6.7	6.1
3.8	10.8	6.8	6.0
3.9	10.5	6.9	5.9
4.0	10.2	7.0	5.8
4.1	10.0	7.1	5.8
4.2	9.7	7.2	5.7
4.3	9.5	7.3	5.6
4.4	9.3	7.4	5.5
4.5	9.1	7.5	5.5
4.6	8.9	7.6	5.4
4.7	8.7	7.7	5.3
4.8	8.5	7.8	5.2
4.9	8.3	7.9	5.2
5.0	8.2	8.0	5.1
5.1	8.0	8.1	5.1
5.2	7.9	8.2	5.0
5.3	7.7	8.3	4.9
5.4	7.6	8.4	4.8
5.5	7.4	8.5	4.8
5.6	7.3	8.6	4.8
5.7	7.2	8.7	4.7
5.8	7.1	8.8	4.6
5.9	6.9	8.9	4.6