



# Crater Lake National Park Habitats

## Overview

Students will identify essential components of a habitat and presence of habitat & bird species at various Klamath Basin Birding Trail Sites.

## California Science Standards

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

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

Grade 7: 7.c.-I&E

## Oregon Science Standards

Grade 4: 2L.1

Grade 5: 1L.1

## National Standards

Content Standard A:

Science as Inquiry

Content Standard C:

Life Sciences

## Materials Included

- \* Student Journal
- \* Binoculars-optional
- \* Clipboards
- \* Crater Lake maps
- \* Bird focus cards
- \* *Common Birds of Crater Lake NP* PowerPoint

## Materials Needed

- \* Colored pencils

## Activity Time

Preparation: 20 min.

Activity Time: 40 min.

## Best Season

All Seasons

## Vocabulary

- \* Habitat
- \* Riparian
- \* Mixed Conifer Forests
- \* Open Subalpine

**Grade Level:** 3rd-8th (O.S.S 4th-5th) (C.S.S: 3rd, 4th, & 7th)

## Learner Objectives

Student will:

- Define “habitat” in a biological context
- List the four essential components of a habitat
- Identify habitat components at Crater Lake National Park

## Background Information

Birds, like all animals, rely on components of their habitat to survive. A habitat is described as an animal’s natural environment that provides food, water, shelter, and space. Some birds find the four components they need in wetlands and marshes. While others find the components in conifer forests or meadows. A bird’s adaptations enable it to thrive in specific habitats taking advantage of the aspects that characterize the habitat. An example of a species that is adapted to its habitat at Crater Lake National Park is the Brown Creeper. The plumage of the Brown Creeper is well camouflaged and looks like the bark of large conifer trees and snags where it builds a nest behind loose pieces of bark. Biologists and birders often use their knowledge of bird-habitat relationships to know where to find specific bird species or to consider what species to expect in an area based on habitat characteristics.

Common habitats at Crater Lake National Park include: riparian areas, open subalpine meadows, pumice flats and talus slopes, and mixed conifer forests (for detailed descriptions of these four habitat zones see page 20). Birds are found in all of them. Since the Klamath Basin Birding Trail extends throughout all four habitat types at Crater Lake National Park it provides an opportunity to identify and observe the array of birds that associate with these zones.

Taking students on a hike at Crater Lake National Park is a good way to teach about the local habitats and birds found in them. To prepare students see *Using Field Guides* for learning how to identify birds. Also, the in class portion of the student journal focuses on the habitat requirements of the *Common Birds of Crater Lake National Park*. The student journal to be completed at Crater Lake National Park has students identifying habitat components and identify birds species seen each habitat.

# Lesson Plan

## Vocabulary

*Continued...*

Meadows

\*Pumice Flats & Talus

Slopes

## Getting Ready!

1. Read background information.
2. Determine a Klamath Basin Birding Trail site at Crater Lake National Park for the field activity preferably where two habitat types are present. For example you could take your class to Watchman Overlook (pumice flats and talus slopes) and Castle Crest Wildflower Garden (riparian and mixed conifer forest).
3. Copy enough *Student Journal: Crater Lake National Park Habitats* sheets.

## Discuss!

1. Let students know that in this investigation, they will go on a field trip to Crater Lake National Park. But first they need to “warm up” their habitat skills.
2. Ask students what people need in order to survive. Then ask, “What birds need to survive?” (You may receive answers like seeds, mice in fields, nests, etc.)
3. Explain to students that each bird finds all of the things it needs to survive in its habitat.
4. Ask students if they can define habitat and list the four components of a habitat. Write them on the board. *Birds need in their habitat: Food, water, shelter, and space. Do you think you could survive through a blizzard or rain storm without any shelter?*
5. Explain that these components may be limiting and at times are not available to birds as a result of competition, human interference, and/or extreme weather.
6. Explain to students that there are four primary habitat zones found at Crater Lake National Park: riparian, open subalpine meadows, pumice flats and talus slopes, and mixed conifer forests. Discuss with students that some birds are generalists and can live in all habitat types. Other birds are habitat specialists and live in only one habitat. Whether a generalist or habitat specialist, each bird needs to find all four habitat components that suit them to survive.
7. Explain to students that you will now review the common birds of Crater Lake National Park and the habitats where these birds live.
8. Give each student a focus bird ID card and the in class Student

## Habitat Components

- \* **Food:** to obtain energy
- \* **Water:** to stay healthy and hydrated
- \* **Shelter:** to protect from weather or predators
- \* **Space:** to gather the other three resources, reproduce, raise their young, and defend their territory



Photo by NPS

## What is a habitat?

A habitat is an environment normally occupied by an animal. Just like we have a home to go to, animals such as birds have one too. In an animal's habitat there are four essential components they need in order to survive— food, water, shelter, space. At Crater Lake National Park, there are four main habitats zones, each with different birds communities. Along the trails in the park you can find these 4 habitats: riparian areas, mixed conifer forests, open subalpine meadows, and pumice flats and talus slopes.

# Lesson Plan

Journal.

9. Show *Common Birds of Crater Lake NP PowerPoint* and have students write down information about their focus bird. Older students can use field guides for additional information about their bird. (see *Using Bird Field Guides* lesson plan).

## Investigate!

1. Let students know they will be going on a field trip to Crater Lake National Park to identify birds and search for habitat components.
2. Define an area to search.
3. Have students identify types of food, water, shelter and space and if they would find their focus bird in that area.
4. At the site, ask students to identify other birds seen or heard.
6. After searching the area(s) have students share information about the habitat quality for their species (compare with birds detected).
7. Direct students to the second habitat type. Use data sheet two and repeat steps 2-6.
8. Discuss the differences between the two habitats and whether their focus bird could live in either one of them.

## Follow-up!

Ask students 2-3 questions to re-cap lesson (see right panel).

## Suggested Questions

*What is a habitat?*

*What are the four components of a habitat?*

*What habitats zones are found at Crater Lake National Park?*

*In what habitat zone would we find your focus bird species?*

## Fledglings!



Have older (6th-8th) students map an area and identify each habitat component, on the map, that their species is associated with.

## Crater Lake Map!

Give students a map of Crater Lake National Park and have them color code habitat types at each site. For example, color open subalpine areas green, blue for riparian areas, yellow for conifer forests, and so on. Use information on the following page to color the maps.

# Crater Lake National Park Sites

## Crater Lake Trail Sites

### 1. Rim Village

*Habitat:* Mixed Conifer Forest and Open Subalpine Meadows

*Birds:* Red Crossbill, Clark's Nutcracker, Gray Jay, Red-breasted Nuthatch

*Trailhead:* Community Building.

### 2. Watchman Overlook

*Habitat:* Pumice flats and talus slopes, whitebark pine.

*Birds:* Clark's Nutcracker, Nighthawk

*Trailhead:* Watchman trailhead on Rim Drive

### 3. Annie Creek Canyon

*Habitat:* Mixed conifer forest with riparian areas

*Birds:* Dipper, Great Blue Heron, Dark-eyed Junco

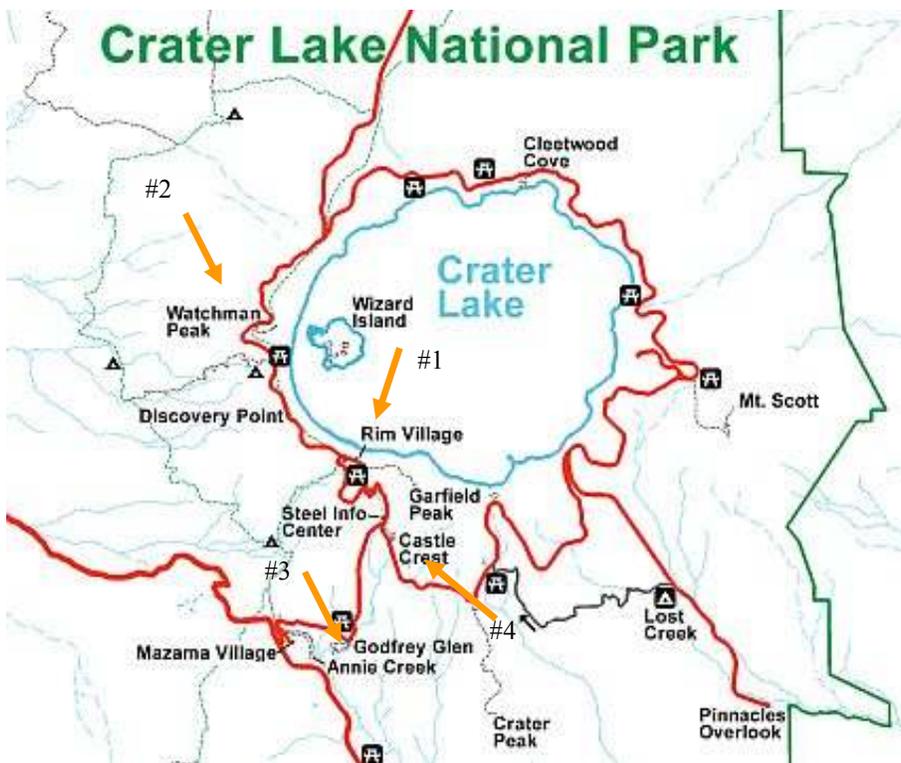
*Trailhead:* Amphitheater at Mazama Campground

### 4. Castle Crest Wildflower Garden

*Habitat:* Mixed conifer forest and riparian

*Birds:* Numerous songbirds, Pacific-slope Flycatcher

*Trailhead:* East Rim Drive, half a mile from Ranger Station.



<http://www.nps.gov/crla/planyourvisit/maps.htm>

## What if there aren't any birds?

If there are few birds present at the field trip site, have students brainstorm possible reasons for the lack of birds. Reasons might include time of year, weather, new development, or disturbance (including you!). Recording when there are no birds can provide valuable information and help students recognize patterns.

## Four Habitats Zones

### Quick Definitions:

**Riparian Areas:** The area surrounding a stream, creek or river. Most easily defined by microclimate, vegetation, and fauna.

**Open Subalpine Meadows:** Areas below the treeline that are sheltered by either hills or tall trees.

**Pumice Flats and Talus Slopes:** Bald or sparsely vegetated areas whose dominate feature is either rocky outcroppings or steep rocky slopes with a few stands of whitebark pine.

**Mixed Conifer Forests:** A dense growth of conifer trees (cone bearing trees with needles), plants, and underbrush.

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# Crater Lake National Park

## Crater Lake National Park Habitats

**Riparian Areas:** Riparian areas or corridors refer to the habitat that buffers each side of a river or stream and are characterized best by the microclimate, vegetation and fauna associated with the area. Riparian areas are cooler than adjacent upland areas (areas above the riparian corridor). Plants found in this type of habitat thrive in wet conditions. Willow, Oregon ash, black cottonwood, and red alder are common riparian plants. Many animals depend on riparian areas as a source of water and food, such as song sparrows and beavers.

**Open Subalpine Meadows:** Subalpine zones refer to the area between the densely forested montane zone and the high elevation alpine zone. Subalpine meadows are sheltered depressions that have very few tall trees. In the late spring and early summer these open meadows are covered in wildflowers. In the winter large amounts of snow accumulate and drain into the caldera.

**Pumice Flats and Talus Slopes:** When Mt. Mazama erupted over 20,000 years ago massive amounts of molten volcanic rock traveled more than 25 miles and then cooled forming the pumice flats seen today. A few days after the eruption, Mt. Mazama collapsed in on itself creating a 4,000 ft caldera and talus slopes around the rim. Talus slopes refer to the accumulation of rocky debris on a steep mountain slope. Use caution around steep slopes as they can be very unstable.

**Mixed Conifer Forest:** Within the 249 square miles of Crater Lake National Park there are four major mixed conifer zones that correspond to gains in elevation. Ponderosa pine is the dominant conifer in the lower elevations of the park. Around 5,000 ft the ponderosa pine give way to lodgepole pine. Lodgepole pine are a small, short trees typically found on relatively gentle slopes; they are well adapted to the long winters at Crater Lake National Park. Mountain Hemlock are prominent beginning around 6,000 feet and can be seen at the rim of the caldera. The whitebark pine at Crater Lake are seen at the highest elevations from around 7,500 feet to the top of Mt. Scott (8,929 ft). Like the lodgepole pine, these trees can tolerate very harsh growing conditions and often have a gnarled and twisted appearance. While mountain hemlock have curved tips. The conifer forest at Crater Lake supports a rich diversity of seed eating birds.