



Rings, Ripples, and Echoes 3rd-4th Grade

An Inquiry Science and Cultural History Investigation at Muir Woods National Monument

Overview

How do living things thrive in their habitat?

This Essential Question frames *Rings, Ripples, and Echoes* and is meant to allow students to engage in place-based inquiry science and cultural history at Muir Woods National Monument. The Essential Question:

1. Reflects the essence of what they will study without directing them to one correct answer.
2. Provokes “how” or “why” questions rather than “what” questions.
3. Applies to places beyond Muir Woods.
4. Invites discussion from everyone based on both experience and understanding.

Students conduct their own investigation in which they learn about cultural history and forest ecology through inquiry. Students pose questions, search for evidence, write narratives, and suggest explanations. The program provides a tangible model for students to explore a redwood forest through learning activities in the classroom and in a National Park (Muir Woods).

Program Goals

- Enrich their understanding of place through inquiry.
- Learn about the historical, cultural, and environmental forces that shape and influence Muir Woods.
- Experience National Parks as places for learning and recreation, and develop a personal connection to their local national park.

Program Objectives

- Students will be able to identify the Native American uses of plants found in Muir Woods.
- Students will be able to recognize signs of a healthy environment in Muir Woods.
- Students will be able to explain how plants and animals adapt for survival in Muir Woods.

Ties to the Curriculum – Next Generation Science Standards, CA Common Core, and CA History-Social Science Content Standards for K-5.

Next Generation Science Standards:

3-LS4-3: In a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4: Determine whether environmental changes can affect the types of animals and plants in a place.

4-LS1-1: Plants have internal and external structures that function to support survival.

California's Common Core State Standards:

Writing

3.3 & 3.4: Write narratives to develop real or imagined experiences or events.

Speaking and Listening

1.3 & 1.4 : Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led).

California History-Social Science Content Standards:

3.22: Discuss the ways in which physical geography, including climate, influenced how the local Indian nations adapted to their natural environment.

4.2.1. Discuss the major nations of California Indians, including their geographic distribution, legends; and describe how they depended on, adapted to the land.

Program Logistics

Please take careful note of the following:

- The teacher and chaperons are ultimately responsible for the conduct and safety of the students.
- Clothing appropriate to the nature of the activities and weather conditions at the park is required. Advise students to dress in layers to accommodate the variable temperatures of the woods. We conduct the program regardless of weather conditions.
- Arrangements can be made to accommodate students with special needs. Please discuss specific circumstances with National Park Service staff prior to your program.

Rules and Regulations

Please make your students aware of the park rules and regulations before your visit:

- The class will stay on the main trail at all times, unless directed by park representative to do otherwise.
- No plants or other natural features can be removed from the park.
- Feeding or disturbing animals is not allowed.
- Portable radios, musical instruments, and electronic games will not be allowed on the field session.

Cancellation Policy

Please let us know of any changes in rescheduling your program dates. Because of the volume of schools participating, there is little room to reschedule your original date. Please plan accordingly.

Directions

Most classes will be taking buses to Muir Woods. Bus companies are familiar with the route.

For those classes that will be carpooling:

Muir Woods National Monument is located on the South Side of Mount Tamalpais, 12 miles North of San Francisco. Take Highway 101 to Mill Valley in Marin County. Take the Stinson Beach / Highway 1 exit. Follow the signs to Muir Woods.

Note: The narrow, winding road leading to the park is not accessible by vehicles larger than 35 feet, according to the regulation of the California Highway Patrol (CHP). There is no public transportation to the park.

Program Description – Rings, Ripples, and Echoes

The program has three elements: pre-site classroom lessons provided by the teacher; a field session at Muir Woods facilitated by teacher and introduced by Ranger; and suggested post-visit lessons guided by the teacher.

Perspectives – Teacher Facilitated Lessons

Students are introduced to the program by investigating the essential question “How do living things thrive?” Using vocabulary cards, they learn about the different habitats supported by the redwood ecosystem. They then discuss ideas of *culture* and are encouraged to identify their own cultural traditions by completing a homework assignment. Complete the lessons by sharing materials about Coast Miwok people and how they were/are connected to Muir Woods.

Time

Determined by class

Materials

Image of healthy and unhealthy habitat

Vocabulary Words

Culture Worksheet

Coast Miwok Background Power Point by Nick Tipon

Coast Miwok discovery packets and question sheet

Teacher Facilitated Lessons

Activity One:

Teacher introduces the students to *Ring, Ripples, and Echoes* by posing the Essential Question on the board:

1. *How do living things thrive in their habitat?*

AND then the follow-up question:

2. *What is the definition of a healthy habitat?*

Before responding directly to the questions, students define *living, thrive, healthy, and habitat* on the board with the help from the teacher. After students define the concepts, they answer the question in pairs, in a group, or with the entire class.

After answering Question 1, show students the image of the healthy and the unhealthy habitat. Have students answer Question 2 and determine which photograph represents the healthy habitat and which photograph represents the unhealthy habitat. Discuss the differences as a class.

Activity Two:

Students are introduced to Muir Woods vocabulary. Using the "Vocabulary Cards"* found online, students form pairs and receive 1-2 vocabulary cards.

Students with cards describing habitats go to the front of the classroom and read the definition. Students holding other vocabulary cards are asked to stand by habitats into which they fit. After the students choose their habitat, they each read their vocabulary definition and why they think they belong in that habitat. Discuss answers as a class.

*Note: The printer-version included in online materials should be printed on both sides of paper. The word should be on one side and the definition on the reverse side. The numbers at the top of the page should match when printed (ex: 1b & 1f).

Activity Three:

Teacher introduces students to *culture*. On the board, and as a class, create your own definition of culture.

Teacher shares examples of his/her culture with students.

Make sure your definition includes people's relationship with the land and how the land shapes culture.

Homework assignment – Culture Worksheet. Students ask their family to share three family traditions with them (the food they eat, the clothes they wear, their home town, etc.).

Activity Four:

Students are asked to share with a partner, a group, or the entire classroom their family traditions. Teacher poses the question on the board:

How are your family traditions connected to the land?

Discuss as a class.

Share background (power point) on Coast Miwok with students: who they are, where they live (d), why we are learning about their culture. Tell the students that they will be investigating how the Coast Miwok culture is related to the land through Coast Miwok Discovery Packs.

Break students into groups and pass packets out to each group. Students take 5 -10 minutes to uncover clues contained in the packets and pose explanations or questions. Distribute question sheets and ask students to think about what the clues have in common. Debrief by asking students to share their hypotheses and discuss how Coast Miwok culture uses/used the land to thrive.

Activity Five:

Teacher distributes the one page *Muir Woods Story* handout to take home and share with their family.

Muir Woods Field Session

Teachers will be provided with a backpack that includes: self-guides with special stops to aid you while hiking in the woods, animal and plant guides, and cards related to Coast Miwok culture.

Groups at the park on an educational visit will receive an admission-fee waiver.

Summary:

Students are invited to use their senses while investigating the Essential Question in the woods through applied inquiry methods. Students record and explore the characteristics of a healthy and unhealthy habitat. They are also encouraged to observe and identify plants used by native cultures.

Time

Ranger Inquiry base lesson: 15 minutes

Redwood Habitat Investigation: 1-2 hours (suggested time)

Investigation in Muir Woods

National Park Service staff will welcome the students upon arrival at Muir Woods. Staff will conduct a 15-minute inquiry-based lesson on the redwood forest ecosystem in a special outdoor classroom. The inquiry-based talk will engage students with *I see, I think, I wonder* questions. During the talk, students will be prompted to consider the characteristics of a healthy and unhealthy habitat.

Teacher and adult chaperones then accompany students in their investigation of the redwood forest.

Post-Visit Classroom Lessons

These follow-up activities are designed to build upon the students' inquiry experience at Muir Woods. Students can demonstrate what and how they have learned during their national park experience. Please conduct at least one of the following activities:

Activity One:

Create your own story of how living things (including people) have adapted to the changing environment of Muir Woods. Use your booklet and your visit to the forest for ideas.

Activity Two:

Write and illustrate a poem that shows the life cycle of a redwood tree. Be certain to use descriptive words and vocabulary words.