



Into the Redwood Forest

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 *Into the Redwood Forest (IRF)* 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 science and history 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.
- Experience National Parks as places for learning and recreation, and develop a personal connection to their local national park.
- Learn about the historical, cultural, and environmental forces that shape and influence Muir Woods.

Program Objectives

- Students will be able to describe the life cycle of a Coast Redwood Tree.
- 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 3rd and 4th grades.

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.



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. The park can provide raincoats for the entire class, if needed.
- The class should be split in half. Students from each group should have a work partner in their group to confer with during the exploration.
- Arrangements can be made to accommodate students with special needs. Please discuss specific circumstances with National Park Service staff during the NPS classroom visit.
- Please distribute the parental approval forms and photo/video release forms to students at least a week before the woods visit.

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.
- No food or drinks (other than water) is allowed inside the monument.

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 – Into the Redwood Forest

The program has three elements: pre-visit classroom lessons provided by the teacher and NPS staff; a field session at Muir Woods facilitated by NPS and assisted by adult chaperones; and suggested post-visit lessons guided by the teacher.

Perspectives – Teacher Facilitated Lessons

Students are introduced to the program by exploring 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 discover their own cultural traditions by completing a homework assignment. Students use an array of materials to learn about Coast Miwok people and how they were connected to Muir Woods. The lessons are completed by showing a brief fun DVD that introduces students to the sights, sounds, and mysteries of Muir Woods.

Time

Determined by class

Materials

Image of a healthy habitat and image of an unhealthy habitat

Vocabulary Cards

Student Journals

Pencil

Image of a Redwood Forest Habitat

Culture Worksheet

Introduction to Native Cultures

Coast Miwok Discovery Packet

“Into the Redwood Forest” DVD



Teacher Facilitated Lessons

Activity One: Essential Question and Habitats

Teacher introduces the students to the IRF program by posing the Essential Question on the board:

1. How do living things thrive in their habitat?

AND

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: Vocabulary

Students are introduced to IRF vocabulary. Using the "Vocabulary Cards"* found in teacher CD, students form pairs and receive a vocabulary card.

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 that they think they fit into. After the students choose their habitat, they will each read their vocabulary definition and why they think they belong in the habitat they are in. Discuss answers as a class.

*Note: The printer-version included on the Teacher CD 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: Ideas about the Redwood Forest

On Page 1 of the journal, students answer the following question:

Going to the Redwood Forest makes me feel _____.

After answering the question, students are shown an image of a Redwood Forest Habitat.

Students are asked to answer the following question on Page 2 of the student journals:
What can I do in the Redwood Forest: I think I can _____.
Because _____.

Discuss answers with classroom. Please make sure students only answer questions in top boxes (bottom boxes are for post-site).

Activity Four: Culture and Land

On Page 3 of the journal, students explore:

What is Culture? (Write on board). As a class, create your own definition of culture.

Share examples of your 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 Five: Introduction to the Coast Miwok

Students are asked to share with a partner, a group, or the 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 on Coast Miwok with students: who they are, where they live(d), why we are studying them. 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. Give students 5 -10 minutes to freely explore the clues contained in the packets and come up with explanations or questions. Pass out 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 the land to thrive.

Activity Six: DVD

Show students the "Into the Redwood Forest" DVD. On Page 4 of the student journal, have students write questions about the video.

***Printed and laminated versions of ALL activities will be delivered to teachers a month before the education program (Please request an earlier time if needed).**



Muir Woods and You - NPS Facilitated Classroom Lesson

NPS staff conducts classroom lesson, introducing the inquiry process (or reinforces if the class has been using inquiry methods) through small group work and an interactive investigation of objects found at Muir Woods. This process mirrors what students will do in the field session at Muir Woods.

Time: 1.5 hours

Materials:

Student Journals

Activity One:

The NPS representatives share a traditional Coast Miwok story with the class. The meaning and importance of stories and traditions are discussed, as well as how they connect with the land. As a class, students share stories of their culture.

Activity Two:

The class investigates objects that come from Muir Woods National Monument. For example: Plants, bird feathers, redwood bark/slice, cone and seeds, Fungus, Tannic Acid, etc. (objects may vary).

As a group, students investigate each object. They answer the following questions about their objects on page 5 of the student journal:

Three things I observe:

I think my object is...

My evidence is...

I wonder...

Students present their objects to the class and share the observations they have recorded in their journals. Students also share how their objects thrive in Muir Woods.

Activity Three:

The NPS representative facilitates a brief discussion about the basic logistics and rules for the field session. The staff closes by answering questions students wrote down after watching "Into the Redwood Forest" video. NPS Staff distributes Muir Woods History handout to take home and share with family.



Muir Woods Field Session

Students are invited to use their senses while investigating the Essential Question in the woods through applied inquiry methods. Students record what they experience through their senses, observations, questions, and identify plants used by native cultures. NPS staff facilitates discussions at each stop and encourages students to write their reflections on their woods experience at the end of the visit.

Time: 3 hours on-site (10am-1pm)

Materials: Student Journals

Investigation in Muir Woods

NPS staff welcomes the students and reviews the safety rules. Staff then leads the small groups of students along the main Muir Woods trail. Chosen stops provide opportunities for the students to gather evidence about the use of native plants in the forest, the role and impact of fire, the relationship between decomposition and habitat, and the larger context of the redwood forest being a healthy habitat in an element of a watershed. They also experience a "silent partner walk," in which they can reflect on thoughts and feelings about their observations of the redwood forest.

Students use their journals to record what they experience through their senses, and describe the use of native plants found in Muir Woods. They also will recognize and apply methods of identification that they practiced and discussed in the classroom lessons. Students share their questions and explanations with each other and the ranger. Using an inquiry approach, NPS staff guide students to reflect on their observations at Muir Woods National Monument.



Post-Visit Classroom Lessons

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

Activity 1:

Have students answer questions on Page 3 of student journals (bottom boxes).

What can I do in the Redwood Forest: I think I can _____ in the Redwood Forest because _____.

Discuss answers with classroom. Compare and Contrast how their answers have changed after visiting Muir Woods National Park.

Activity 2:

Have students create their own story of how living things have adapted to the changing environment of Muir Woods. Have students reference their journals and their visit to the forest for ideas.

Activity 3:

Students review the life cycle of a redwood tree. Have students write and illustrate a poem that shows the life cycle of a redwood tree. Be certain to have students use descriptive and vocabulary words from their journals.

Additional:

Muir Woods Nature Detectives – Online Game

<http://www.nps.gov/goga/forteachers/nature-detectives.htm>