



## **Rings, Ripples, and Echoes 5<sup>th</sup> grade**

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

### **Overview**

#### ***How are our cultures influenced by where we live?***

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 explain how plants and animals depend on each other to survive.

## **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:**

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

### **California’s Common Core State Standards:**

#### Writing

W.3.5. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

#### Speaking and Listening

1.5. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led).

### **California History-Social Science Content Standards:**

5.1.1. Describe how geography and climate influenced the way various nations lived and adjusted to the natural environment, including locations of villages, the distinct structures that they built, and how they obtained food, clothing, tools, and utensils.

5.1.2. Describe their varied customs and folklore traditions.

## **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 the program by considering the essential question “*How are our cultures influenced by where we live?*” Students learn about native cultures that live/have lived near Muir Woods by viewing the Coast Miwok power point. Students use Coast Miwok discovery packs to uncover how Coast Miwok culture is related to the land. They read the *Muir Woods Story* handout to gain background knowledge about Muir Woods. Complete the lessons with the cards of the plants and animals that live in Muir Woods. Students also can play the online educational game *Nature Detectives*.

### **Time**

Determined by class

### **Materials**

Coast Miwok Background Power Point by Nick Tipon  
Coast Miwok discovery packets and question sheet  
*Muir Woods Story* handout  
Plant and Animal Guides  
Access to online game – *Nature Detectives*

## **Teacher Facilitated Lessons**

### **Activity One:**

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

*How are our cultures influenced by where we live?*

Before responding directly to the question, students define *culture* on the board with help from the teacher. After students define *culture*, they answer the question in pairs, in a group, or with the entire class.

**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 Two:**

Teacher shares background (power point) on Coast Miwok with students: who they are, where they live (d), why we are learning about 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. 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 Three:**

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

### **Activity Four:**

Teacher introduces students to the plants and animals found at Muir Woods by reviewing the Plant and Animal guides. After reviewing the guides, students propose how plants and animals have interdependent relationships.

AND

Students look into the ancient Redwood Forest of Muir Woods by playing the online educational game *Nature Detectives* – linked to 5th grade science:  
<http://pwrCMS.nps.doi.net/goga/forteachers/nature-detectives.htm>

*See Appendix for vocabulary associated with the curriculum*

## **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 native culture plant cards.

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 observe and identify the plants used by native cultures. They determine how an ecosystem has interdependent relationships.

### **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 how does location and land influence cultures.

Teacher and adult chaperones then accompany students on 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:**

Develop a model (drawing or diorama) to illustrate the interdependent relationships in a redwood forest.

### **Activity Two:**

Imagine you woke up and it was 300 years ago and you are living with Coast Miwok. Write a story of what your day might look like and how you would use natural resources from Muir Woods.

## **Appendix: Vocabulary**

### ***Ecology***

National Park - A beautiful or historically important place owned by everyone. National Parks protect natural and historic resources.

Habitat – The home for a living thing. A habitat needs to include food, water, shelter, and space.

Living – All living things need to breathe, eat, drink, grow, adapt, excrete, and reproduce. Living things include plants, animals, fungi, and bacteria.

Non-living – Things in an ecosystem that are not alive. Non-living things include water, air, soil, and sunlight.

Nutrients – Chemicals that all living things need in order to survive.

Ecosystem – All the living and non-living things in an area.

Natural Resources – Plants, animals, water, soil, nutrients, and other things found in nature.

Community – A natural group living together. Can include plants, animals, humans, and other living things.

Edge Community – The community at the outer parts of the forest. It is drier and warmer than the core.

Core community – The community at the center of the forest. There are many tall trees and not much light. It is wetter and cooler than the edge.

Riparian – A community near a river or a creek.

Canopy – The 'roof' of the forest. The canopy at Muir Woods is made up of coast redwood trees.

Understory – The area below the canopy that is made up of small trees and shrubs. The understory at Muir Woods includes bay laurels, thimbleberry, and oaks.

Forest Floor – The ground in a forest. The forest floor at Muir Woods includes dead needles, bark, redwood sorrel, and ferns. It is home to many decomposers.

Producer – A living thing that can make food from sunlight. Includes most plants.

Consumer – A living thing that eats other living things to survive.

Decomposer – A living thing that recycles dead plants and animals by eating them.

Competition – The fight between living things for the same resources. Living things may compete for food, sunlight, water, or space.

Mutualism – Relationships where living things help each other to survive and thrive.

Adaptation - Part of a living thing's body or a way that a living thing acts that helps it survive and thrive.

Endangered – Something that is in danger of going extinct or disappearing completely.

### **Culture**

Traditions – Customs and beliefs that are passed down from generation to generation.

Culture – Culture is what defines a group of people. It can include beliefs, traditions, art, language, and food.

Anthropologist – Someone who studies people and their cultures.

## **Apéndice: Vocabulario**

### ***Ecología***

Parque Nacional - Un lugar hermoso o de importancia histórica donde todos protegen los recursos naturales e históricos.

Hábitat – La casa de un ser vivo. Las partes de un hábitat son la comida, el agua, el refugio, y el espacio.

Vivos – Todos los seres vivos necesitan respirar, comer, beber, crecer, adaptarse, excretar y reproducirse. Los seres vivos incluyen plantas, animales, hongos y bacterias.

No Vivos – Las cosas en un ecosistema que no están vivas. Cosas no vivas incluyen agua, el aire y las rocas.

Nutrientes – Las sustancias químicas que todos los seres vivos necesitan para sobrevivir.

Ecosistema – Todos los seres vivos y no vivos en un área.

Recursos Naturales – Las plantas, los animales, el agua, el suelo, los nutrientes, y otras cosas que se encuentran en la naturaleza.

Comunidad – Un grupo natural de convivencia. Puede incluir plantas, animales, seres humanos y otros seres vivos.

Borde de la Comunidad – La comunidad en las partes exteriores del bosque. Es más seca y más caliente.

Núcleo de la Comunidad – La comunidad en el centro del bosque. Hay muchos árboles altos y no hay mucha luz. Es más húmedo y más fresco que el borde.

Ribereño – El área cerca de un río o arroyo.

Dosel – El 'techo' del bosque. El dosel en el Bosque Muir se compone de secoyas de la costa.

Sotobosque – El área por debajo del dosel que se compone de pequeños árboles y arbustos. El sotobosque en el Bosque Muir incluye laureles, thimbleberry y robles.

Suelo del Bosque – El suelo de un bosque. El suelo del Bosque Muir incluye agujas muertas, corteza, alazán de la secoya, y helechos. Es el hogar de muchos descomponedores.

Productor – Un ser vivo que puede hacer comida de los rayos del sol. Incluye la mayoría de las plantas.

Consumidor – Un ser vivo que se alimenta de otros seres vivos para sobrevivir.

Descomponedor – Un ser viviente que recicla plantas y animales muertos consumiéndolos.

Competición – La lucha por los mismos recursos entre los seres vivos.

Mutualismo – Relaciones donde los seres vivos se ayudan mutuamente.

Adaptación - Parte del cuerpo de un ser vivo o la manera de que un ser vivo actúa para ayudarle a prosperar.

Amenazadas – Algo que está en peligro de extinguirse o desaparecer completamente.

## **Cultura**

Tradiciones – Costumbres y creencias pasadas de generación en generación.

Cultura – Cultura define un grupo de personas. Puede incluir creencias, tradiciones, arte, idioma, y comida.

Antropólogo – Alguien que estudia a la gente y su cultura.