

ECOLOGY FIELD EXERCISE	
	Name:
	Group:
	Day & Time of Start:
<b>NATURE TRAIL AT VILLA MONTALVO</b>	

## **Objectives:**

At the end of this activity, you should be able to:

1. List the communities seen along the nature trail at Villa Montalvo, Saratoga, and some of the abiotic and biotic factors involved with these ecosystems.
2. Discuss adaptations to desiccation and to fire.
3. Describe the trophic levels of an ecosystem.
4. Describe and illustrate the terms “ecotone” and “succession”.
5. Describe four ways trees of the mixed oak woodland or redwood grove help purify the air.

## **Background:**

Villa Montalvo, the former home of the late U.S. Senator James D. Phelan, is situated in the foothills of the Santa Cruz mountains above Saratoga at an elevation of about 800 feet. The entrance gates are about half a mile from the center of Saratoga on the Los Gatos-Saratoga Road. The Villa, set in the middle of a 175 acre estate is a nineteen room structure. A large part of the grounds is landscaped with formal gardens, fountains, statues and benches, and trails on the hillside. The grounds are open to the public from 8 A.M. to 5 P.M. without charge seven days a week and are administered by the Santa Clara County Department of Parks. In accordance with Senator Phelan's wishes, as expressed in his will, Montalvo has been converted into a center for many types of creative activities in the arts, conducted on a non-profit basis under the trusteeship of the Montalvo Association. These include concerts, lectures, and exhibitions by painters, sculptors and other artists, and various types of classes.

The Villa takes its name from a novel written in the early sixteenth century by the Spanish author, Garci Ordóñez de Montalvo. His book, *Las Sergas del Muy Reformando Caballero Explanrias* told of a tribe of black Amazons living on an island fabulously rich with gold and jewels. He even gave instructions as to its location: "Know ye that on the right hand of the Indies there is an island called California, very near the Terrestrial Paradise." The state of California was named from Montalvo's imaginary paradise. The Amazon queen was described as riding a gryphon (also spelled griffin or griffon), that was a mythical creature with the beak and wings of an eagle, and the body, legs and tail of a lion. Excess males, either born or captured, were fed to the gryphons. Senator Phelan put carved gryphons on the tops of his several

sets of entrance gates and employed them elsewhere in the Villa's decor. Their use is doubly appropriate because, in mythology, gryphons are the guardians of all types of treasures, and Montalvo was Senator Phelan's favorite possession.

The grounds of Montalvo have been planted with many rare trees and shrubs from around the world. The area has also been designated as an Audubon Society Sanctuary for some 65-70 different species of birds.

## Ecosystems around Villa Montalvo:

Ecosystems consist of organisms, both plant and animal as well as myriad microorganisms, and the relatively self-contained environment in which they live and interact. Whether the ecosystem is small or large, it has two parts that you should recognize:

- a. The biotic portion, which consists of all the living things in their web of interactions (the ecological community)
- b. The abiotic portion, which is composed of non-living physical factors. The most important chemicals are carbon, oxygen, hydrogen, nitrogen, phosphorus, sulfur, carbonates, and water. Critical physical aspects are light, temperature, moisture, soil type, and wind or water currents.

Within an ecosystem there are many different habitats, and within each habitat each organism must find the shelter, food, and other conditions just right for it. In ecological terms, niche refers to the place and means whereby an organism obtains its essential food, shelter, rest, and reproduction.

The walk through the grounds of Villa Montalvo and the hillsides immediately behind it should afford ample opportunities to examine at first hand the many facets of an ecosystem and provide abundant examples of the organisms that live there, as well as the many ways in which these organisms and their environment interrelate. Compare the complex natural ecosystems of these hillsides with the suburban and urban ecosystems within your view as you hike along the trails.

*Without the gift of flowers and the infinite diversity of their fruits, man and bird, if they had continued to live at all, would be today unrecognizable. The weight of a petal has changed the face of the world and made it ours.*

*Loren Eiseley*

## Activity 1: Nature Hike

For a preview and trail map, go to:

<http://www.bahiker.com/southbayhikes/montalvo.html>

Take the nature trail starting behind the villa. As you walk, observe how the plants vary in size according to the area. There are transition zones (ecotones) from dry chaparral to larger woodland, with the flora becoming larger the nearer they are to the shady, moist redwood areas.

**Please leave the trail in a natural condition for everyone to enjoy.  
Do not pick or break plants or be a litterbug.**

**Poison oak and ticks are abundant and rattlesnakes have been seen at Montalvo! Please stay on the trail and exercise caution.**



Questions:

1. Name one example of each of the following seen on the field trip.

a. Producer



b. Herbivore

c. Carnivore



e. Omnivore

f. Detritivore

2. How do the leaves of poison oak differ from those of blackberry?

a. Draw and label a leaf from each plant.

3. Describe an example of each of the following relationships seen on the field trip:

a. Mutualism

b. Parasitism

c. Predation

4. Describe an example of the following here at Montalvo.

a. Population

b. Community

c. Ecosystem

5. The tree called the “big leaf maple” is aptly named.

a. Give a reason why this tree has such large leaves.



6. Plants and air pollution

a. Explain the relationship between lichens and air pollution.

7. Plants in chaparral and mixed woodland communities differ.

Explain three ways the plants in these two communities differ.

a.

b.

c.

8. Significance of ecotones

a. What is an ecotone?

b. Describe its biological significance.

## 9. Chaparral plants

- a. Why do plants that live in the chaparral have small leaves with thick cuticles?

## 10. Population dynamics

- a. What are two abiotic factors that affect the number of deer found around Montalvo?

- b. What are two biotic factors affecting the number of deer that are found at Montalvo?

## 11. Soil

- a. Is soil alive or dead? Explain why you think so.

## 12. Plant uses

- a. Name any plants you saw during the trip that can be used to season food, for example a stew.

- b. The fruit of the California Buckeye is poisonous. The Indians used this fruit for food as well as a poison. Explain how they could use it for both activities?

### 13. Food chain

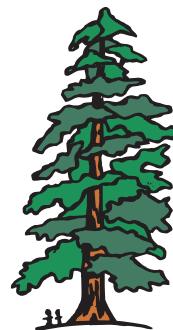
- a. Draw a food chain of at least FOUR trophic levels based on the organisms that observed on the walk or that you believe are present at Montalvo.

### 14. Ecosystems

- a. We passed through at least four distinct ecosystems on this field trip. What are their names?
- 1.
  - 2.
  - 3.
  - 4.

### 15. Redwood Ecosystem

- a. Do the coastal redwood trees reproduce asexually or sexually? How do you know you are correct? What did you see on the trip to support your conclusion?

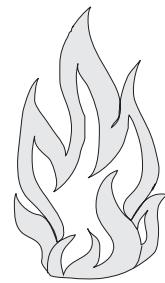


- b. Redwood trees are only located in certain areas. What abiotic factors limit the abundance and distribution of these trees?

- c. Redwood trees live a very long time. Describe two adaptations they have to attain this longevity.

## 16. Role of fire in natural ecosystems

- a. How is fire beneficial to any of the ecosystems you observed during this field trip? Explain which ones it helps and why.



## 17. Importance of ecosystem components

- a. Today you saw many components of a viable ecosystem. Considering the role of plants and the process of decomposition, which do you feel is the more important? Explain why.



## COMMENTS AND SUGGESTIONS

Please share any ideas you have that would either clarify or improve this lab.  
Thanks.

## How to get to Villa Montalvo:

Villa Montalvo is ~5 miles by car south of De Anza College. From campus or points north, take I-85-south to the Saratoga Avenue exit. Turn southwest on Saratoga Ave. toward Saratoga and West Valley College. Drive 1.7 miles to the main intersection of Saratoga Village, turn left on Saratoga-Los Gatos Road (Highway 9). Look for the entrance to "Montalvo" on the right ~0.4 mile toward Los Gatos.

Look for two sandstone pillars on the mountain side of Saratoga-Los Gatos Road (Highway 9). "Montalvo" is inscribed on the pillars. There are green Montalvo road signs just before the turnoff on both sides of the road. Drive up the winding street about 0.6 miles, going through two more sets of small "Montalvo" pillars. Enter the Arboretum gate and drive around past the mansion and a little way down the hill to **Parking Lot 4**. Park there.

Our trail will start at **Parking Lot 4**, and loop ~ 2 miles with a 400-ft climb in elevation. Be sure to wear sturdy, close-toed shoes and bring drinking water.

## Villa Montalvo Field Trip Map

