

TEACHER'S GUIDE  
TO THE  
NORTH GROVE



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## General Park Information

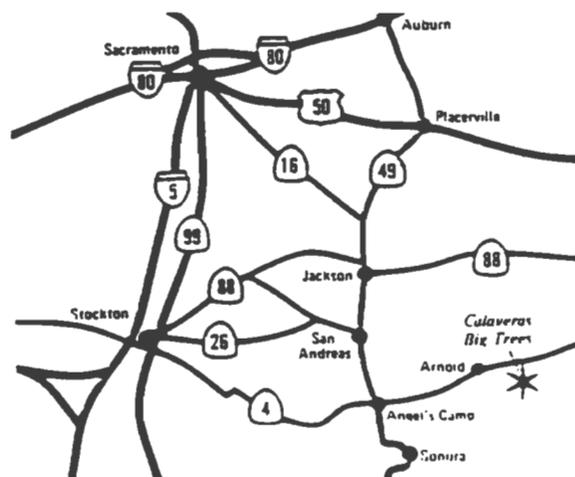
### About Calaveras Big Trees State Park

Yosemite became California's first State Park in 1864 (it is now a National Park). The California Department of Parks and Recreation has grown since then to contain over 300 parks that encompass a wide diversity of California's special qualities, including desert areas, rugged coastline, alpine meadows, gold rush towns, and redwood forests.

Calaveras Big Trees became a State Park in 1931 after many years of public fund raising and campaigning to protect the North Grove of Sierra redwoods, which are some of the world's largest living objects. Since then the park has grown to encompass 6,000 acres of coniferous forest, including the South Grove, the North Fork of the Stanislaus River, and Beaver Creek. The park's extensive trail system includes interpretive trails through both the North and South Groves, the Lava Bluffs Trail, the River Trail, the Bradley Grove Trail, and the Three Senses Trail.

### GETTING TO THE PARK

Calaveras Big Trees State Park is located between 4,000 and 5,000 feet on the western slope of the Sierra Nevada, about 75 miles (120 km) east of Stockton on Highway 4. From Stockton allow 1 1/2 to 2 hours for the drive to the park. From Sacramento allow 2 to 2 1/2 hours, and from Angels Camp allow at least 30 minutes.



## The North Grove Area

Most classes visiting the park for a day will want to spend their time in the easily accessible and fascinating North Grove area. Here you will find the North Grove Trail, the Visitor Center, and the Three Senses Trail; as well as easy parking, picnic spots, restrooms, and water fountains. The following describes these areas in more detail.

### North Grove Trail

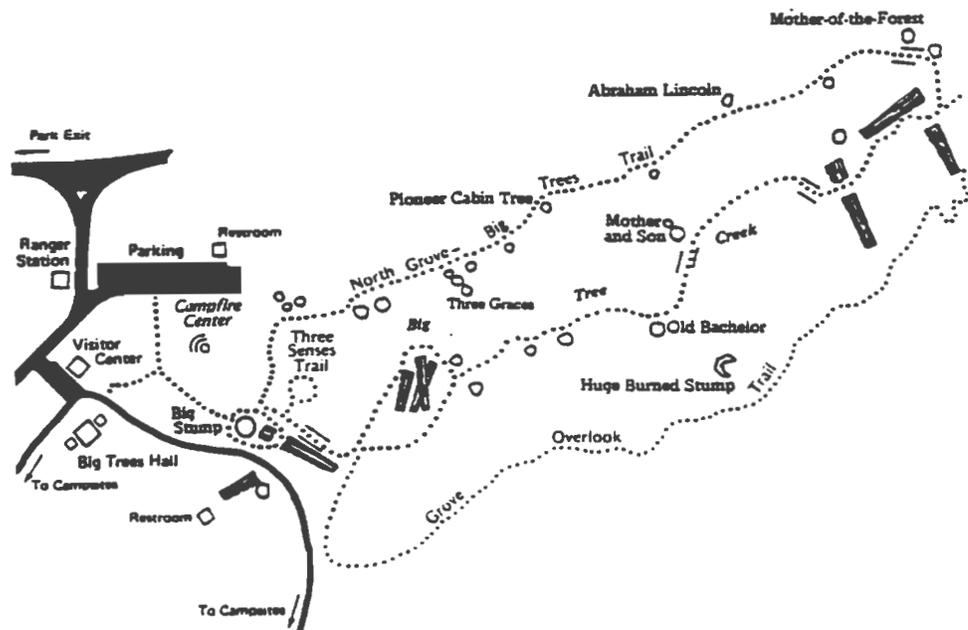
This 1-mile (1.6 km) interpretive loop passes through the entire North Grove of Sierra redwoods. Spectacular views of the Sierra redwoods can be seen on the trail through this historically significant grove. Self-guiding trail brochures are available at the trail head and Visitor Center. Allow 1 to 2 hours for this easy hike.

### Visitor Center

The Visitor Center houses a museum featuring hands-on style exhibits and a 20-minute introductory slide program that interpret the natural and human history of the park. There is also a small shop where you can purchase books, posters, postcards, and park publications. It is staffed by docents and members of the Calaveras Big Trees Association, and is open every day from mid-May through early September. During the winter it is open only on weekends, but may be opened for your group if requested 15 days before your visit. You may also request that a film be shown to your group. Please bring one class (25 students) at a time into the museum. There is seating for 50 students to watch the slide show. Allow 20 to 45 minutes for your stay at the Visitor Center.

### Three Senses Trail

Use hands, ears, and nose to learn about the forest on this 600-foot (180 m), self-guiding loop. Trail signs are in large print and Braille. The trail begins near the North Grove trailhead. Allow 20 to 30 minutes.



North Grove area.

## **Fee Waiver and Guided Tours**

In order to waive the park entrance fee, you must fill out the School Group Reservation Request Form (page 111) in duplicate and mail both copies to the park at least 15 days in advance of your visit. You may also use this form to request a guided tour of the North Grove and that the Visitor Center be opened for your group. The returned copy will be your confirmation. At least one adult is required for each group of 10 students. For further information call park headquarters at: 209/ 795-2334.

## **Appropriate Dress**

The park lies between 4,000 and 5,000 feet elevation, which means you could experience a snowstorm on your park visit in May, or that it could be quite warm. Your best bet is to make sure your students are prepared for a variety of weather conditions by wearing several layers of clothing so that they can shed or add clothes as needed. Comfortable, sturdy walking shoes are also important.

## **Park Rules**

Please discuss park rules and appropriate behavior with your class before your visit. You will be in a protected natural area that is visited by thousands of people each year. The most important things to keep in mind are:

- ▲ Stay on the trail and behind the fences to help protect the root systems of the redwoods and prevent erosion.
- ▲ Leave only footprints.
- ▲ Take only pictures.

Thank you for helping us in this area.

## **Emergencies**

If you have a medical or other type of emergency and cannot readily locate a ranger, go to the park headquarters (white building near park entrance) or entrance station and ask for assistance.



Sierra redwood cone.





## Organization and Suggested Use of the Teacher's Guide

This guide contains four sections:

- A. Background Information and Suggested Pre-Trip Activities
- B. At the Park: Suggested Activities
- C. After Your Visit: Suggested Activities
- D. Appendices

It is intended to be an information resource rather than a step-by-step plan for a trip to the park. Since most of the activities can be scaled up or down, there are no suggested grade levels given. Feel free to adapt the activities to the needs and interests of your students. Many of the concepts and information presented here should fit in with your science or history curriculum. The staff at Calaveras Big Trees State Park has found that students who have spent time in class beforehand preparing for their trip will gain the most from their outdoor experience. It is for this reason that so much of this guide focuses on pre-trip activities and information.

### **Workshops**

We highly recommend that you attend a Teacher's Guide workshop. During the workshop a park staff member will guide you through selected activities, provide an orientation to the park, and help you design a unit that will meet the needs and interests of your class. Check to see if this workshop qualifies for the professional growth requirement in your district. Workshops will be offered throughout the year, and are contingent upon staff availability. For more information call park headquarters.

## **Project WILD, Project Learning Tree, and Sharing Nature With Children**

You will see these names scattered among the suggested activities sections. Many activities in this guide have been reprinted with permission from these excellent resources. Look in Recommended Resources, pages 95-96, for more information.

The staff at Calaveras Big Trees State Park welcomes you and your class, and wishes you an enjoyable outdoor learning experience!

SECTION A:  
 BACKGROUND INFORMATION  
 AND SUGGESTED PRE-TRIP  
 ACTIVITIES

*Chapter 1* Sierra Redwood Characteristics

*Chapter 2* Distribution and Geologic History

*Chapter 3* Sierra Redwood Growth and  
 Reproduction

*Chapter 4* The Forest Community

*Chapter 5* Human History of the Sierra Redwoods  
 at Calaveras

*The redwoods are  
 thought to be named  
 after Chief Sequoyah,  
 who received worldwide  
 recognition for his  
 invention of an alphabet  
 for the Cherokee  
 Indian Nation.*




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RDWKG90P1  
 2Y36P3M040  
 WB1A0R1A7  
 d:Y4+C70dEIZ  
 0CR hSV HE  
 0T0B0.0JKV7  
 0GG7I6SSC  
 10-6J20PHL  
 0G.1Lh0&0E





# 1 Sierra Redwood Characteristics

Just what is so special about Sierra redwood trees? What makes them different from other types of trees? If you've ever spent time in a Sierra redwood grove, you may have your own answers to these questions. The following outline briefly presents the main reasons that biologists and naturalists consider these trees to be a magnificent and fascinating treasure.

- ▲ Sierra redwoods are the largest objects that have ever lived on the earth.
- ▲ Sierra redwoods have unique characteristics enabling individual trees to live over 3,000 years.
- ▲ Sierra redwoods grow naturally only in a 250-mile-long strip in 75 groves on the west slope of the Sierra Nevada.
- ▲ Sierra redwoods are descended from trees that forested most of the northern hemisphere during the age of dinosaurs.
- ▲ Their related human history is fascinating. In this park it includes the Miwok Indians, the discovery of Sierra redwoods by Euro-Americans, the early use (and abuse) of the trees, and today's protection within the State Park System.

Sierra redwoods belong to the family of trees called *Taxodiaceae*, also known as the redwood family. This family consists of 10 genera that are found in North America, Asia, and Tasmania. Two of this family's most famous members live in California: the Sierra redwood, also known as giant sequoia (*Sequoiadendron giganteum*), and the coast redwood (*Sequoia sempervirens*). Both share the honor of being California's State "Tree." The similarities and differences between these two species are summarized in the chart on the following page.

## SIERRA REDWOOD AND COAST REDWOOD COMPARISONS



**SIERRA REDWOOD**  
World's largest living object.

**COAST REDWOOD**  
World's tallest living object.

<b>Geographic Distribution</b>	Western slope of Sierra Nevada between 4,000-8,000 feet (840-2640 m) elevation.	Coast Ranges of California from Santa Lucia Mountains to southern Oregon, 0-3,000 feet (0-900 m) elevation.
<b>Diameter *</b>	Up to 30 feet (9 m).	Up to 22 feet (6.6 m).
<b>Height</b>	Up to 310 feet (94.5 m).	Up to 367.8 feet (110 m).
<b>Oldest Known</b>	3,200 years.	2,200 years.
<b>Cones</b>	1.5-3 inches (3.5-7.5 cm) long. Size and shape of chicken egg. Mature 2nd season. May live on tree for 20 years. Up to 34 scales.	0.5-1.5 inches (1.25-3.5 cm) long. Size and shape of quail egg. Mature and shed at end of 1st season. Up to 24 scales.
<b>Seeds</b>	Up to 300 per cone. Size and shape of flake of oatmeal. 6,000 per ounce (214/gram).	Up to 100 per cone. Size and shape of flake of oatmeal. 7,500 per ounce (270/gram).
<b>Foliage</b>	Small, scale-like leaves arranged in a spiral pattern on a rounded twig.	Flat, needle-like leaves arranged in an alternate pattern; leaves in upper crown are small and scale-like.
<b>Reproduction</b>	Seeds only.	Seeds, and commonly burl, root, stump, and crown sprouts.
<b>Root System</b>	Up to 8 feet deep; roots spread up to 200 feet (60 m) away from tree.	Up to 6 feet deep; roots spread up to 50 feet (15 m) away from tree.
<b>Neighbors</b>	Almost always occurs with other conifers.	Often occurs in pure stands.
<b>Scientific Name and English Meaning</b>	<i>Sequoianendron giganteum</i> Giant Sequoia Tree	<i>Sequoia sempervirens</i> Everliving Sequoia
<b>Largest and Tallest Individuals</b>	General Sherman Tree Sequoia-Kings Canyon National Park 25.1 feet (7.65 m) in diameter 274.9 feet (83.8 m) tall	The Tall Tree Redwood National Park 367.8 feet (110 m) tall 14 feet (4.3 m) in diameter

\* Measurements of diameter are taken at breast height, which is 4.5 feet (1.37 m) above the ground.

Sierra redwoods are unique in that they are the largest objects ever to have lived on earth. The very tallest of them are over 300 feet tall and the most massive have trunks up to 30 feet in diameter. The weight of a mature tree has been estimated at up to 6,000 tons (or 12 million pounds!). They are also some of the world's oldest living objects, outlived only by the 4,600-year-old bristlecone pines in the White Mountains of California.

What are the characteristics that enable these Sierra redwoods to grow so big and live so long?

- ▲ Soft, fibrous, resinless bark that can grow to 2 feet thick provides protection from fire, insects, and disease. The presence of tannin in the wood aids in this protection and slows the process of decay even after a tree has fallen. Even if fire manages to burn through the bark, the tree is often able to live for hundreds of years more.
- ▲ Shallow, spreading roots reach only 4 to 8 feet in depth, but may extend out more than 200 feet, encompassing over one acre of soil. Many small feeder roots are able to take up the water and nutrients required to support the growth of these giants.
- ▲ The form of a mature Sierra redwood is very stable. The wide supporting base gradually tapers off to a rounded top that can withstand heavy snow and wind. If the environment around one of these trees causes it to lean, it will respond by growing more wood on one side—known as *buttressing*—to prevent falling. Falling over is one of the few things that actually kills these trees. They topple most often during heavy winds, especially if their root system has been affected by erosion or fungus, or the trunk weakened by large burn scars.



