

**RESOURCE INVENTORY**

**TOPOGRAPHY**

**BIG BASIN REDWOODS STATE PARK  
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## **INTRODUCTION**

Topographic descriptions for Big Basin Redwoods State Park are derived from 1995-1996 field surveys, the US Geological Survey (USGS) Big Basin, Ano Nuevo, Davenport and Franklin 7.5 minute quadrangles, color aerial photographs (1:12000), and various publications as noted. A GIS topographic base map has been prepared for the park. Additional layers will be added as information is collected and processed.

## **REGIONAL SETTING**

Big Basin Redwoods State Park is within the boundaries of the Coast Ranges natural or geomorphic province (Oakeshott 1971). This province extends along the coast from the Oregon border south to the Santa Ynez Mountains of Santa Barbara County. It trends in a north-northwesterly direction roughly parallel to the Sierra Nevada Mountains, and is bounded on the west by the Pacific Ocean and on the east by the Great Valley.

The Coast Ranges are a complex series of more or less independent ranges and valleys. Ridge crests average between 2,000 and 4,000 feet in elevation, with the highest peaks seldom more than 6,000 feet. Most of the crests are rounded by erosion and have not been affected by glaciation, as have many other California mountain ranges (e.g., Sierra Nevada Range).

The Santa Cruz Mountains are located between the Pacific Ocean to the west and the Santa Clara Valley to the east. Monterey Bay is the most distinctive topographic feature south of the Santa Cruz Mountains.

The park is located in the Redwood Landscape Province within the Santa Cruz Mountains. The Santa Cruz Mountains are part of the Coast Ranges and extend about 74 miles in a northwest to southeast direction from the Golden Gate to the Pajaro River (Hunter 1961, Taber 1994). San Francisco Bay and the Santa Clara Valley form the eastern boundary, while the Pacific Ocean borders these mountains to the west. The width of the Santa Cruz Mountains ranges from 5.5 miles in the vicinity of Daly City to 29 miles at its maximum. Loma Prieta, at 3806 feet in elevation, is the highest mountain in the range. It is located about 15 miles south of the city of San Jose and about 3 miles north of The Forest of Nisene Marks State Park.

## **SITE DESCRIPTIONS**

Three watersheds, including the Waddell, Ano Nuevo, and Scott Creek, form the dominant landscape features of Big Basin Redwoods State Park. Most of the creeks and streams in the park drain into the Waddell Creek watershed.

Waddell Creek has two main forks, the East and West Waddell. The West Waddell begins in the northern portion of the park across the San Mateo County line at an elevation of 1,800 feet. Berry and Henry Creeks drain into the West Waddell at the base of the Chalks Mountain which is immediately to the west. Chalks Mountain is one of the highest points in the park, rising to 1,609 feet. The West Waddell continues south through a narrow valley that drops from 400 feet to 160 feet in elevation before joining Waddell Creek.

The East Waddell headwaters are found in the "Big Basin" section of the park at 950-1,000 feet. Opal and Bloom creeks meander through a flat valley that supports the park's oldest and largest redwood groves. Both creeks join to form the East Waddell at an elevation of 950 feet. Pine Mountain is a dominant landscape feature rising to 2,208 feet. The East Waddell continues to flow through a very steep and narrow canyon at its lower reaches.

East and West Waddell meet and form Waddell Creek approximately 3 miles from the ocean. Surrounding ridges rise to 950 feet on either side of the V-shaped valley formed by the creek. Before reaching the ocean, Waddell Creek flows through a brackish marsh that is dissected by tidal channels.

Ben Lomond Fault is a major force in the development of park landforms, uplifting such peaks as Eagle Rock and creating basins on the downthrow side.

### **Aspect**

The aspect or direction a ridge faces is an important topographic feature that affects the natural communities found at a site. Soil temperature for example, is usually higher on south and west facing slopes because the soil is exposed to more direct sunlight for longer time periods than north and east slopes. These soils also tend to be drier and as a result the plant life will consist of more drought tolerant species such as chamise, manzanita, ceanothus, etc. See Map T-1:Aspect, on file at the Northern Service Center, Department of Parks and Recreation. The aspect map for Big Basin was not up-dated as part of this inventory effort.

Results from an aspect analysis of 16,500 points or 14,115 acres in Big Basin Redwoods State Park (California Department of Parks and Recreation 1984) are as follows:

Aspect

No. Hectares

|              |              |                |
|--------------|--------------|----------------|
| Flat terrain | 219 hectares | (541 acres)    |
| North        | 831          | “ (2053 acres) |
| South        | 1600         | “ (3953 acres) |
| East         | 1382         | “ (3414 acres) |
| West         | 1681         | “ (4154 acres) |

### **Elevation**

Elevation is the height of a geographic point from sea level (0 feet). Climatic conditions vary with changes in elevation and this in turn affects the vegetation, wildlife, recreational use, etc.

Data for elevations in the park (Greenlee 1982) are as follows:

| <u>Elevation belt</u> | <u>No. Hectares (ha)</u> |
|-----------------------|--------------------------|
| 1-121 meter belt      | 483 ha (1193 acres)      |
| 121-242               | 1096 ha (2708 acres)     |
| 242-363               | 1998 ha (4937 acres)     |
| 363-484               | 1709 ha (4223 acres)     |
| 484-605               | 385 ha (951 acres)       |
| 605- greater          | 68 ha (168 acres)        |

### **Slope**

The degree in rise of the ground surface is defined as the slope. This topographic feature affects important resource management activities such as soil erosion control. The steeper the slope, the greater the probability of soil erosion; especially on unstabilized surfaces. Slope analysis in Big Basin Redwood State Park (California Department of Parks and Recreation 1984) determined :

| <u>Percent Slope</u> | <u>No. Hectares (ha)</u> |
|----------------------|--------------------------|
| 0-25                 | 3132 ha (7739 acres)     |
| 26-40                | 1577 ha (3897 acres)     |
| 41-55                | 710 ha (1754 acres)      |
| 56-75                | 296 ha (731 acres)       |
| 76                   | 33 ha (82 acres)         |

Refer to Slope Map T-2, on file at the Northern Service Center, Department of Parks and Recreation. The slope map was not revised during the current inventory.

### **REFERENCES**

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