

8. Big Pine Mountain (Keeler-Wolf 1991a)

Location

This candidate RNA is on the Santa Lucia Ranger District, Los Padres National Forest. The cRNA lies within the San Rafael and Dick Smith Wilderness, except for the narrow right-of-way surrounding Forest Service Road 9N11. It lies within portions of sections 5, 6, 7, 8, and 9 of T7N, R26W and sections 1 and 12 of T7N, R27W SBM (34°42'N., 119°40'W.), USGS Big Pine Mountain quad (fig. 16). Ecological subsection – San Rafael-Topatopa Mountains (M262Ba).

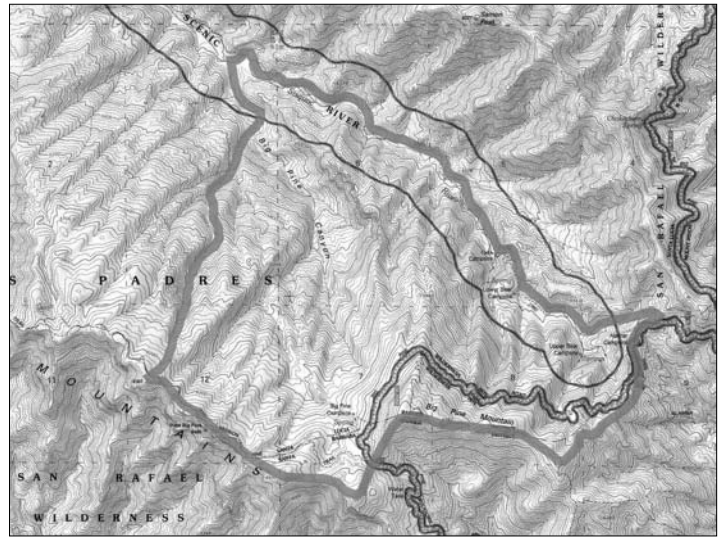


Figure 16—Big Pine Mountain cRNA

Target Element

Sierra Nevada Mixed Conifer Forest for the Central California Coast Ranges ecological section

Distinctive Features

The stands of mixed conifer forest are limited to elevations above 5100 ft (1554 m) and are diverse and variable topographically and compositionally. Floristic variation in the area results from the well-balanced diversity of plant associations covering a range from low-elevation chaparral and riparian to montane chaparral and mixed conifer forest. In addition to the target vegetation, the cRNA also contains a number of other well-developed plant communities, including bigcone Douglas-fir/canyon live oak (*Pseudotsuga macrocarpa*/*Quercus chrysolepis*) forest, Coulter pine (*Pinus coulteri*)/chaparral vegetation, and such locally unique communities as shale barrens. The riparian vegetation found in the cRNA is some of the best remaining vegetation of this type in the Central California Coast Ranges ecological section.

Rare Plants: The cRNA contains one CNPS listed species. *Sidalcea hickmanii* ssp. *parishii* (CNPS List 1B) is found on dry, disturbed, sandy areas around fuel breaks and on fire roads along mountain summits.

Rare Fauna: The cRNA is only 2.5 miles (4 km) E. of the Sisquoc Condor Sanctuary. California Condors (*Gymnogyps californianus*, Federally and State-listed endangered species) were regularly seen in the cRNA until 1986. Peregrine falcon (*Falco peregrinus anatum*) is an endangered species on both Federal and State lists. Species listed as California state species of special concern include the spotted owl (*Strix occidentalis*), Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Accipiter striatus*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), purple martin (*Pogone subis*), yellow warbler (*Dendroica petechia*). Other wide-ranging montane species atypical of the S. Coast Ranges are also found in the cRNA.

Species such as the mountain chickadee (*Parus gambeli*) and the white-headed woodpecker (*Picoides albolarvatus*) are typical sedentary nonmigrant residents of the mixed conifer zone. Their presence indicates relatively stable conditions here.

Biogeographic Significance: 41 montane plant species within the cRNA are at or near their westernmost distribution in S. California.

Fire History: Based on fire scar analysis, fire frequency of the main stand of mixed conifer forest before European settlement averaged one fire every 12 years. Aside from a large fire approximately 50 years ago in the Coulter pine

forest, there is no evidence of more recent widespread fire. Unlike the surrounding lower-slope vegetation, the open nature of the mixed conifer forest prevents it from carrying damaging crown fires.

Physical Characteristics

The study area covers 2963 acres (1199 ha), although the estimated size of the cRNA in Los Padres National Forest Land and Resource Management plan is 1000 acres (405 ha). Elevations range from 3600 to 6828 ft (1109-2081 m). The cRNA lies along the crest and the N. slopes of the E. San Rafael Mountains, the southernmost and highest of the S. Coast Ranges. Several side branches of Big Pine Canyon dissect the slopes between W. Big Pine Mountain and the base of the Big Pine Canyon cliffs, creating a stepped topography.

The cRNA is dominated by Eocene and Upper Cretaceous sedimentary rocks including massive sandstone (eroded into cliffs along the S. boundary and parts of Big Pine Canyon) and thinner beds of shale. The Riconada Fault (Sur-Nacimiento) and the Big Pine Fault converge in the immediate vicinity of the cRNA.

The majority of the soils in the cRNA lie within the Livermore-Agua Dulce-Hambright families association, 30-80 percent (17°-39°) slopes. The Livermore component is a brown, gravelly, sandy clay loam, 0-3 inches (0-8 cm) deep. The Agua component is a light brownish gray, gravelly loam, 0-38 inches (0-97 cm) deep. The Hambright component is a grayish brown, extremely cobbly loam, 0-11 inches (0-28 cm) deep. The remainder of the soils of the cRNA fall within the Millsholm-Exchequer-Stonyford families association. These are shallow soils on 30-75 percent (17°-37°) slopes.

Due to altitude variations of more than 3000 ft (914 m), there are substantial climatic differences between upper and lower elevations in the cRNA. No weather stations exist in the cRNA, but climatic information is estimated from nearby Bluff Camp Guard Station at 4400 ft (1341 m), approximately 1 air mile (1.6 km) S. of the cRNA. Average temperature at Bluff Camp (during a 4-year period from 1972 to 1975) was 56 °F (13 °C) with an average high of 101 °F (38 °C) and an average low of 16 °F (-9 °C). Temperatures at the upper elevations of the cRNA are likely to average 6-8 °F (3-4 °C) colder than at Bluff Camp, while temperatures at the lower elevations along the Sisquoc River will likely average 3-4 °F (2-2.5 °C) higher. Average annual precipitation along the crest of the San Rafael Mountains is slightly more than 30 inches (762 mm); it is about 25 inches (635 mm) along the upper Sisquoc River. Most precipitation falls between November and March.

Association Types

Sierran Mixed Coniferous Forest (84230): 653 acres (264 ha). The mixed conifer forest in the cRNA is remarkably diverse in density, composition, and successional status. It occurs in fragmented stands ranging from tall, dense-canopied alluvial flat forests with a sparse understory of white-fir (*Abies concolor*) and incense-cedar (*Libocedrus decurrens*) saplings to open ridgetop stands with low canopies and a shrubby understory of chaparral shrubs and canyon live oak. Even within individual stands there is variation due to elevation, juxtaposition to other vegetation types, slope aspect, soils, and so forth.

White fir appears to be the overall dominant in all age classes in most stands, and it is the most active colonizer of the adjacent canyon live oak and chaparral habitats. Jeffrey pine (*Pinus jeffreyi*), sugar pine (*Pinus lambertiana*), and incense-cedar dominate or codominate with white fir at various degrees (fig. 17).

Ponderosa pine (*Pinus ponderosa*) is absent in this forest. Borchert and Hibberd (1984) suggest that the colder, drier high-elevation habitats typical of S. California mountains allow Jeffrey pine to out-compete ponderosa.

Understory species common in most stands include *Erigeron foliosus*, *Amorpha californica*, *Eriogonum nudum*, *Gayophytum diffusum parvifolium*, and *Phacelia curvipes*.

Northern Mixed Chaparral (37110): 640 acres (259 ha). This classification is broad and somewhat artificial, encompassing all chaparral types found in the lower and mid-elevation parts of the cRNA. There is little pure chamise (*Adenostoma fasciculatum*), pure manzanita (*Arctostaphylos* spp.) or scrub oak (*Quercus dumosa*) chaparral. Thus the general title of Northern Mixed Chaparral is suitable.

On steep, SW.-facing slopes at low elevations, chamise tends to dominate in a mixed chaparral with *Arctostaphylos glauca*, *Salvia leucophylla*, *Eriogonum fasciculatum*, *Leptodactylon californicum*, *Lotus scoparius*, *Ephedra viridis*, *Mimulus longiflorus*, and *Ceanothus* spp. On W. and E. aspects at this elevation, *Cercocarpus betuloides*, *Prunus ilicifolia*, *Ceanothus leucodermis*, and *Quercus dumosa* also are found. At elevations 1000 ft (305 m) higher, on NW. and NE. aspects, the chaparral is typically dominated by additional species such as *Garrya flavescens* ssp. *pallida*, *Arctostaphylos glandulosa*, *Yucca whipplei*, *Marah fabaceus* var. *agrestis*, and *Lonicera interrupta*. At even higher elevations, the chaparral assumes a more montane character with shrubby canyon live oak dominating.

Canyon Live Oak Forest (81320): 532 acres (215 ha). This forest is widespread on the mid- and upper slopes, and ranges from below 4000 ft to over 6400 ft (1219-1950 m). It is restricted to N.-facing, concave slopes at lower elevations. At upper elevations it may occur on steep W.- and E.-facing exposures with scrubby individuals. The best developed trees are found in ravines and low-lying concavities (dbh up to 3.5 ft [1.1 m], and heights of 90 ft [27 m]). Crown cover is usually high, and the understory is poorly developed, consisting largely of duff. Stem age of the majority of these stands is about 50 years, dating back to the last major fire in the area.

Coulter Pine Forest (84140): 420 acres (170 ha). Two types of this association occur within the cRNA. The most extensive type is the Coulter pine/chaparral. This type occupies open slopes and ridges at 4800-6000 ft (1463-1829 m). It is dominated by even-aged Coulter pine, averaging 50-60 ft (15-18 m) tall and approximately 50 years old. Average density and dbh are, respectively, 324-405 trees/acre (800-1000 trees/ha) and 6-12 inches (15-30 cm). A few large individuals also exist. A Coulter pine found in this forest may be one of the largest Coulter pines in the region, measuring 59 inches (1.5 m) dbh and 125 ft (38 m) tall. The understory is dominated by *Arctostaphylos glandulosa*, *Quercus dumosa*, *Q. wislizenii* var. *frutescens*, *Cercocarpus betuloides*, and *Garrya flavescens* var. *pallida*.

The other type, Coulter pine/canyon live oak, is found on the N. slope of Big Pine Mountain. It occurs in smaller stands, and pine densities are not as high as in the previous phase. The Coulter pine here exhibits serotiny, most likely as an adaptation to fire in this area (Borchert 1985).

Bigcone Douglas-Fir/Canyon Live Oak Forest (84150): 306 acres (124 ha). This forest is restricted to ravines and steep concave slopes between 4200 and 5700 ft (1280-1737 m). Individual stands are usually small and linearly oriented along the topographic gradient. The dominant bigcone Douglas-firs have rough, deeply furrowed bark and may be up to 6 ft (1.8 m) dbh and 130 ft (39 m) tall.

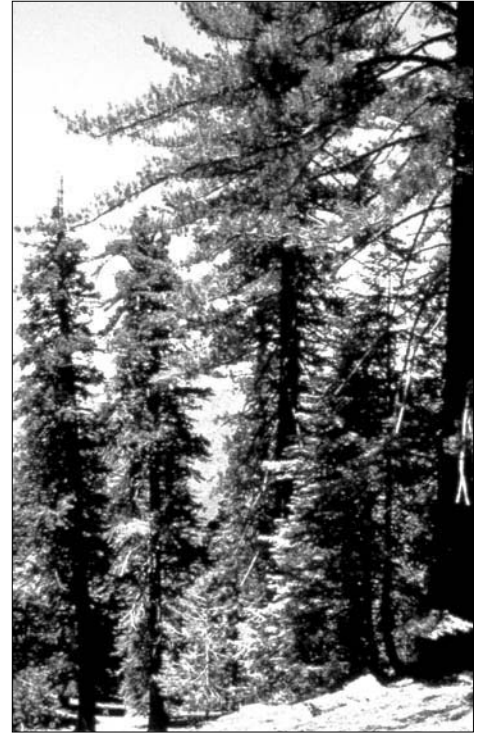


Figure 17—Big Pine Mountain, the sugar pine-white fir phase of the mixed conifer forest on the north slope of Big Pine Mountain. (1989)

The canopy is typically open, with a relatively dense subcanopy of canyon live oak. There is a fairly distinct transition between the upper slope, mixed conifer forest and the bigcone Douglas-fir/canyon live oak type. The restriction of this vegetation type to ravines and steep concave slopes appears to be due to the susceptibility to crown fire. The sheltered sites dominated by bigcone Douglas-fir are among the most highly protected from fire of any in the cRNA.

According to McDonald and Littrell (1976), the bigcone Douglas-fir/canyon live oak forest is a well-defined ecological unit which may have changed little for thousands, if not millions, of years. Evidence of this relict nature lies in its mesic moisture requirements within a relatively xeric climatic zone.

Montane Chaparral (37500): 155 acres (63 ha). As with the northern mixed chaparral (37110), this is an aggregation of types not strictly defined by a single set of dominants. Three main phases occur: the parry manzanita (*Artostaphylos manzanita*), the *Ceanothus integerrimus*, and the bitter cherry-chokecherry (*Prunus emarginata*-*P. virginiana* var. *demissa*).

The parry manzanita phase is dominated by parry manzanita, scrub oak, and low canyon live oak, among other chaparral species. This type of chaparral is scattered on shale and sandstone outcrops at the head of the Big Pine Canyon drainage, and is closely associated with Jeffrey pine and mixed conifer forests.

The *Ceanothus integerrimus* phase occurs in several patches as a transitional position between mixed conifer forest and canyon live oak. Its dynamic position here may be an indication of secondary succession following the most recent fire. There are typically high numbers of white fir saplings associated with these areas. Other species associated include *Prunus virginiana* var. *demissa* and *Amorpha californica*.

The bitter cherry-chokecherry phase is restricted to about 24.7 acres (10 ha) on the upper NW. slope of Big Pine Mountain. There is little else associated with the dense stand, although *Amelanchier pallida* and *Ceanothus integerrimus* may occur. As with the *Ceanothus integerrimus* type, this type appears to be successional, with numerous pole sizes and large sizes white fir and sugar pine.

Rock Outcrop (No Holland equivalent): 112 acres (45 ha). Rock outcrops of massive sandstone occur in many parts of the cRNA. Cover is restricted to scattered plants in cracks and crevices. Typical species include *Dudleya cymosa* ssp. *minor*, *Eriogonum saxatile*, *Zauschneria californica*, *Keckiella brevifolia*, *Cirsium californicum*, *Mimulus longiflorus*, *Eriogonum wrightii*, *E. umbellatum*, and *E. fasciculatum*.

Jeffrey Pine Forest (85100): 78 acres (32 ha). This is an open forest associated with the mixed conifer forest of upper elevations. It typically occupies shallower soil or more exposed positions on ridges and outcrops. Because of the harsh conditions, the trees are usually stunted; the average size is about 3 ft (1 m) dbh and 50 ft (15 m) tall. Most of the dominant Jeffrey pines appear to be 200-300 years old. The most common associate on rocky sites is canyon live oak, along with *Symphoricarpos parishii*, *Parry manzanita*, *Quercus dumosa*, *Holodiscus microphyllus*, and *Ceanothus integerrimus*.

The Jeffrey pine forest atop Big Pine Mountain is underlain by deeper, sandier soils, and its understory is dominated by herbs. Herbaceous species common for both this site and the rockier site include *Lupinus excubitus* ssp. *austromontanus*, *Bromus tectorum*, *Dichelostemma pulchella*, and *Lupinus elatus*.

Montane Riparian Forest (61500): 29 acres (12 ha). The riparian associations in the cRNA are patchily distributed, ranging from the lowest elevation (3600 ft, 1109 m) at the confluence of Big Pine Canyon and the Sisquoc River to elevations up to 6200 ft (1890 m). Three Holland types of riparian vegetation actually exist within the cRNA, but they are combined under the general heading above.

The best developed of these three Holland types is the White Alder (*Alnus rhombifolia*) Riparian Forest (61510). It is extensive along the Sisquoc River and Big Pine Canyon, as well as at several springs near Upper Bear Camp. White alders here are often associated with California bay (*Umbellularia californica*) and bigleaf maple (*Acer macrophyllum*), and the understory is often lush. The alders are frequently large, up to 32 inches (81 cm) dbh and 100 ft (31 m) tall, and relatively old, which makes this perhaps the best example of white-alders-dominated riparian forest in the S. Coast Ranges.

A representative of Holland Southern Cottonwood-Willow Riparian Forest (61330) occurs at lower elevations along the Sisquoc River. Understory species include *Brickellia californica* and *Datisca glomerata*.

The Central Coast Live Oak Riparian Forest (61220) occurs on natural levees 5-10 ft (1.5-3 m) above the level of the stream. Understory species include *Rhus trilobata*, *Amorpha californica*, *Symphoricarpos mollis*, *Collinsia heterophylla*, and *Galium nuttallii*.

The Montane Riparian Scrub (63500) occurs along the upper reaches of intermittent creeks in Big Pine Canyon and near the head of Sisquoc River. The vegetation is dominated by scrubby willows, typically *Salix scouleriana* and *S. lasiolepis*. The understory is a rich hydrophyllic herbaceous layer.

Other areas on the upper reaches of Big Pine Canyon contain no willows but are instead a unique mixture of low-elevation, relatively xerophytic vernal pool and montane meadow species. The site conditions resemble vernal pools, and the soil is derived from very fine-grained shale with a relatively high clay content.

Shale Barrens (No Holland equivalent): 29 acres (12 ha). This vegetation type is characteristic of the high-elevation shale outcrops in the upper drainages of Big Pine Canyon between 5700 and 6500 ft (1737-1981 m). The parent material is highly fractured, dark gray shale, which has little or no true soil component. Vegetative cover is variable, from less than 1 percent to about 40 percent. The harsh substrate supports a unique assemblage of plants including *Psoralea californica*, *Lomatium dasycarpum*, *Frasera neglecta*, and *Allium monticola* var. *keckii*. More sheltered areas with higher soil moisture support *Madia elegans* and *Eriophyllum confertiflorum*.

Valley and Foothill Grassland (42000): 9 acres (4 ha). This association occurs on a small glade at upper Bear Camp, along alluvial deposits of the Sisquoc River, and at Bear Meadow along upper Big Pine Canyon. The dominant species at Bear Camp is *Muhlenbergia rigens*. Species along the Sisquoc River include *Bromus diandrus*, *B. rubrum*, *Lianathus androsaceus* ssp. *micranthus*, and *Camissonia campestris*. Bear Meadow includes a different type of grassland dominated by annual grasses and herbs such as *Hordeum leporinum*, *Bromus tectorum*, *Vulpia megalura*, *Vulpia reflexa*, and *Elymus caput-medusae*.

Plant Diversity

Two hundred eighty-six species of vascular plants are listed.

Conflicting Impacts

The isolated wilderness location of the cRNA precludes most human impacts and conflicts. Recreational use is relatively light. Mountain bikers are the most common visitors to the summit area, followed by Sierra Club hikers and researchers. The campsites at Big Pine Camp appear not to have been used for several years.