

27. Falls Canyon (Phillips 1998b, Sproul 1981)

Location

This established RNA is on the Angeles National Forest. It is only 8 air miles (13 km) NE. of Pasadena and lies in portions of sects. 18, 19, 20, 29, and 30 T2N, R11W and sects. 13 and 24 T2N, R12W SBBM (34°04'N., 118°06'W.), USGS Mt. Wilson quad (fig. 56). Ecological subsection – San Gabriel Mountains (M262Bd).

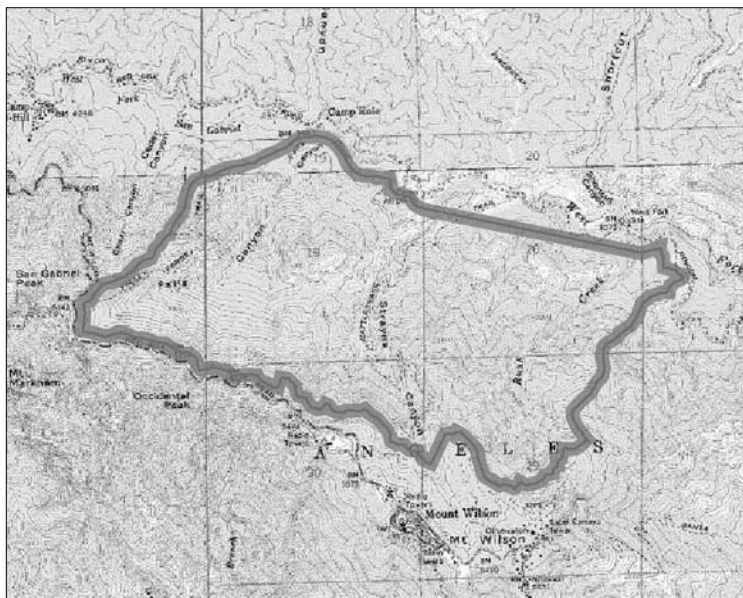


Figure 56—Falls Canyon RNA

Target Elements

Bigcone Douglas-Fir (*Pseudotsuga macrocarpa*) and Canyon Live Oak (*Quercus chrysolepis*)

Distinctive Features

Bigcone Douglas-Fir and Fire: Bigcone Douglas-fir (BDF) is scattered throughout the Transverse and Peninsular Ranges of S. California. Its modern distribution has been altered by the frequency and severity of fires. In many places it appears to be dwindling as a result of very intense modern fires. Although the species is known to resprout and to have thick, fire-resistant bark, it cannot survive extremely hot fires. The relatively extensive, dense stands at Falls Canyon are less likely to suffer from fires than the sparse phases

because of lighter understory fuel loads. Reproduction of BDF occurs in both dense and sparse stands.

Canyon Live Oak: This species is the most widely distributed oak in California (Griffin and Critchfield 1976). In S. California it is the dominant member of the southward extension of the mixed evergreen forest (Sawyer and others 1977, Thorne 1976). Canyon live oak occurs in typical fashion for the region in Falls Canyon, dominating on several slope exposures and codominating with BDF on mesic N. slopes.

Rare Plants: Two species are listed by CNPS (both List 4). They are *Heuchera elegans*, a locally important member of the ridge flora, and *Boykinia rotundifolia*, a fairly widely distributed species of the riparian subcommunity of the S. mixed evergreen forest.

Physical Characteristics

The RNA covers 1165 acres (472 ha). Falls Canyon is a tributary of the West Fork of the San Gabriel River. Strayns Canyon and Rush Creek are also tributaries of the West Fork and partially occur within the area. Slopes are steep (60-100 percent) throughout, and are generally N.-facing. However, because of the greatly dissected N. slope of the Mount Wilson-San Gabriel Peak Ridge, significant areas of W. and E. exposures also occur. Elevations range from 3200 to 5440 ft (975-1658 m).

The rocks of the area are entirely Mesozoic granitics. Soils are of one family, the Stukel, Sur-Winthrop complex. These are recent soils with a very high erosion hazard, although they may be relatively deep with a rich humus layer. The area receives average annual precipitation of 30+ inches (762+ mm).

Association Types

Accurate estimates of acreages for each association type were not given. Point-centered quarter samples were taken in three stands of BDF.

Southern California Mixed Evergreen Forest (61510, 84150, 61330, 81320): 885 acres (359 ha). A mixed forest of canyon live oak (*Quercus chrysolepis*) and BDF covers 80-87 percent of the three boundary proposals discussed. This type is described following Thorne (1976). However, the BDF stands are treated separately in the vegetation analysis. All 21 major species listed by Thorne for the southern California mixed evergreen forest are present locally, except two. The densest stands of BDF are intricately mixed with canyon live oak and, to a lesser extent, incense-cedar (*Libocedrus decurrens*) and sugar pine (*Pinus lambertiana*).

The southern California mixed evergreen forest grades into a riparian community along the major streams of the area. Here, such hydrophilic species as bigleaf maple (*Acer macrophyllum*), white alder (*Alnus rhombifolia*), California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), *Aralia californica*, *Boykinia rotundifolia*, and *Salix lasiolepis* occur along with California bay (*Umbellularia californica*), coast live oak (*Quercus agrifolia*), and the other previously mentioned species.

In the Mount Disappointment and Valley Forge campgrounds area (20 sample points), BDF averages 16 m²/ha (all species 21 m²/ha) basal area, with an average density of 52 trees/ha. BDF averages 14-m spacing (average for all trees: 6.4 m), 66 cm dbh (all tree species: 41 cm dbh), and 20 m tall (all tree species: 12 m). Canyon live oak is the most abundant species in this sparse phase, with often twice the density of BDF. Most canyon live oaks are multi-stemmed, reflecting past fire history. This sparse phase is typical of the smaller stands of BDF in the San Gabriel Mountains.

Stands sampled (20 points) in Strayns and Rush Creek canyons comprise a less common, but denser phase of BDF (fig. 57). At these sites, BDF represents 48 percent of all trees. Mean BDF density is 131/ha (total trees: 272/ha), while mean basal area cover is 34.4 m²/ha (total average: 31.0 m²/ha). The average heights and diameters for BDF are somewhat smaller than for the sparse phase (17 m and 58 cm dbh, respectively), and spacing is substantially less (8.8 m).

Twenty increment cores were taken from BDF. In general, there is great variation in growth rates, with some approximately 2-ft (61-cm) dbh individuals as much as twice as old (200 vs. 100 yr) as others the same size. The oldest sampled tree is 384 years old and 40 inches (102 cm) dbh. The largest of any measured trees is 54 inches (137 cm) dbh. There seems to be no major difference in growth rates between sparse and dense phases.

Although diameter does not necessarily reflect age, diameter classes indicate that more small trees are in the sparse than in the dense phases. Whether this indicates an expansion of young trees in the former phase is unclear from the data. Many seedlings of BDF and canyon live oak are present in both sparse and dense phases. BDF seedlings are abundant in shaded forest, openings, stabilized road cuts, and slides. This diversity of regeneration sites suggests perpetuity of BDF.

Regeneration following two major fires around 1890 and 1900 accounts for only a small percentage of all BDF in the area. Many of the older trees either survived the fires by resprouting from the burned trunks and larger branches, or they were passed over completely by the fires.

Transitional or High-Altitude Southern California Mixed Evergreen Forest (84230): 100 acres (40 ha). Above about 5500 ft (1676 m), near the summit of Mount Wilson, the canyon live oak-dominated forest becomes more heavily infused with ponderosa pine (*Pinus ponderosa*), sugar pine, and incense-cedar to a point where these conifers become codominant with canyon live oak.

Mountain Talus (no Holland equivalent): 105 acres (42 ha). This type has also been described as "Ridge Flora" on the vegetation map of Falls Canyon RNA. It corresponds well to Thorne's (1976) mountain talus community. It covers a small area along the uppermost ridges and outcrops. Among the members of this largely shrub- and herb-dominated association are *Arabis sparsiflora* var. *arcuata*, *Brickellia californica*, *Castilleja martinii* var. *ewanii*, *Diplacus* (*Mimulus*) *longiflorus* ssp. *calycinus*, *Dudleya cymosa* ssp. *minor*, *Eriogonum saxatile*, *Haplopappus cuneatus*, *Heuchera elegans*, *Hulsea heterochroma*, *Leptodactylon californicum* ssp. *glandulosum*, *Poa scabrella*, *Turricula parryi*, and *Zauschneria californica* ssp. *latifolia*.

Chaparral (37510): 175 acres (71 ha). The chaparral at Falls Canyon is described as mixed chaparral; however, there are small monospecific stands of *Arctostaphylos glauca*, *Cercocarpus betuloides*, *Quercus wislizenii* var. *fructescens*, and *Adenostoma fasciculatum*. Other plants of this association are much lower in relative dominance, and do not form pure stands. *Arctostaphylos glauca* and *C. betuloides* may occur as small trees up to 20 ft (6 m) tall. The generally large quantity of dead wood in all chaparral indicates its relatively senescent nature. All chaparral types are confined to island-like enclaves surrounded by canyon live oak-dominated associations rather than by BDF. However, some individuals of BDF are scattered in some steep, sparse chaparral.

Plant Diversity

One hundred twenty taxa are listed.

Conflicting Impacts

The area is heavily used by recreationists on the N. and S. peripheries. However, the uniqueness of the BDF stands is not easily duplicated, and it largely overrides the recreational impact. Other impacts include the unnatural slides along the Mount Wilson road and the introduced plantings of both native and non-native species along the roads and campgrounds. In general, steep topography and dense vegetation will limit the study of BDF to the vicinity of trails.

Figure 57—
Falls Canyon,
southern mixed
evergreen forest
dominated by big-
cone Douglas-fir
in Strayns
Canyon.
(around 1980/81)

