

## 54. Manzanita Creek (Trelorita) (Taylor and Teare 1979b, Cheng 1996a)



**Figure 110—  
Manzanita Creek  
RNA**

### **Location**

Manzanita Creek RNA is on the Shasta-Trinity National Forest. The S. end of the RNA lies about 1 mile (1.6 km) E. of Big Bar along State Route 299. The area includes all or portions of 14 sects. of T34N, R12W MDBM (40°48'N., 123°14'W.), USGS Helena, DeLoma, and Big Bar quads (*fig. 110*). Ecological subsections – Trinity Mountain-Hayfork (M261Ar) and North Trinity Mountain (M261Aq).

### **Target Element**

Ponderosa Pine-Douglas-Fir (*Pinus ponderosa-Pseudotsuga menziesii*)

### **Distinctive Features**

**Large Pristine Watershed:** This area contains the entire watershed of Manzanita Creek. There is a gauging station at the mouth of the creek, which would be useful for watershed and ecosystem studies. The entire area is relatively undisturbed by human activity. Old trails provide access to much of the area. Because of the area's size and topographic relief, at least nine SAF forest types are included. After extensive sampling of the area, 17 plant associations were recognized. These include riparian types as well as a series of forest types from foothill pine (*Pinus sabiniana*) to montane white fir (*Abies concolor*).

**Rare Plants:** *Lewisia cotyledon* var. *heckneri*, a diagnostic member of the high ridgetop flora, is a member of CNPS List 1B.

**Fire History:** Fire has been the primary disturbance factor in the area. It has contributed to the diversity of plant communities, seral stages, and forest age classes. Records show there was one major fire in 1878, one between 1917 and 1927, 11 from 1927 to 1936, one around 1953, one small controlled burning in 1978-79, and one major fire in 1985, when 54 percent of the RNA (3950 acres [1599 ha]) burned.

### **Physical Characteristics**

The area of established RNA is 7250 acres (2935 ha). Elevations range from 1200 ft (365 m) at Big Bar to 5916 ft (1803 m) atop Twin Sisters Mountain. Manzanita Creek flows to the S. with the prominent Treloar and Manzanita ridges bounding the W. and E. sides of the drainage, respectively. Slopes are generally steep (20-40°) with small terraces at lower elevations and relatively broad ridgetops. Manzanita Creek is a perennial stream with several minor ephemeral tributaries. The average gradient of Manzanita Creek is 296 ft/mile (56 m/km). Several springs occur in the drainage.

The area is underlain by Pre-Cretaceous metamorphic rocks (primarily noncalcareous). A fault cuts across the upper part of the drainage separating the metasediments from metavolcanics of the same approximate age in the upper basin. There are slivers of serpentinized rock along this fault line. Soils are

assumed to be Sheetiron-Josephine, Dubakella-Neuns, and Henneke-Stonyford complexes. Annual precipitation at Big Bar is 40 inches (1018 mm); mean annual temperature is 56 °F (13.4 °C). Temperatures are substantially lower and precipitation is substantially higher at the highest elevations.

### **Association Types**

Vegetation was sampled extensively. In addition to 70 releves where density, cover, and other characteristics were estimated, twenty-six 314-m<sup>2</sup> plots were sampled to obtain density and cover data. Association tables were constructed from the releve data, resulting in the following classification. Acreages are based on the establishment record (Cheng 1996a). Six major alliances are defined and broken into associations.

#### **White Alder-*Peltiphyllum peltatum* Alliance: 376 acres (152 ha)**

White Alder-Miner's Dogwood (*Alnus rhombifolia*-*Cornus sessilis*) Association (61510): This riparian association occurs along Manzanita Creek and on the lower reaches of its tributaries with year-round flow. Other trees include Oregon ash (*Fraxinus latifolia*) and bigleaf maple (*Acer macrophyllum*). Pacific yew (*Taxus brevifolia*) is occasional along with Douglas-fir and canyon live oak (*Quercus chrysolepis*). Shrubs are diverse and include *Acer circinatum*, *Corylus cornuta* ssp. *californica*, *Symphoricarpos mollis*, *Crataegus douglasii*, *Rhamnus purshiana*, *Philadelphus lewisii* ssp. *gordanianus*, and *Ribes roezlii*. *Lonicera hispidula*, *Rubus leucodermis*, *R. procerus*, and *Vitis californica* festoon the trees and shrubs in sunnier areas. Herbs are few and large including *Aralia californica*.

White Alder-Creek Dogwood (*Alnus rhombifolia*-*Cornus stolonifera*) Association (61510): This is the upper elevation equivalent of the previous association. It occurs generally above 4000 ft (1200 m). Creek dogwood, *Rhododendron occidentale*, and the willow *Salix commutata* dominate under a scattered canopy of white alder. Shrubs are rare and herb cover is high, often dominated by *Carex amplifolia* and *Torreyochloa* (*Puccinellia*) *pauciflora*.

#### **Foothill Pine Alliance: 118 acres (48 ha)**

Foothill Pine-*Cercis occidentalis* Association (71322): This association occupies the lower S. and E.-facing steep, rocky slopes. It includes a canopy of scattered (119 stems/ha) foothill pine (basal area 21.5 m<sup>2</sup>/ha), canyon live oak, and Oregon white oak (*Quercus garryana*) with chaparral shrubs such as *Ceanothus cuneatus*, *Cercis occidentalis*, and *Toxicodendron diversilobum*. Annual herbs are important, but not identified.

*Ceanothus cuneatus* Association (37810): This chaparral association occurs on rocky, xeric slopes at low elevations. It is patchy in distribution. The dominant is the only important shrub. Annual herbs are dense, but not discussed in the ecological survey.

#### **Douglas-Fir Alliance: 6035 acres (2443 ha)**

Oregon White Oak Association (71110): 1037 acres (420 ha). Many understory taxa are shared among these next three associations. Douglas-fir is the principal invader of seral forms of this association. The nonseral form occupies steep, rocky but mesic slopes. This type has a dense canopy of Oregon white oak with a very sparse shrub layer. Herbaceous cover is principally the native grass *Bromus marginatus*.

Douglas-Fir-Canyon Live Oak Association (81100): 1871 acres (757 ha). This is the most widespread association type in the study area. It occurs at lower elevations on N. slopes but ranges to S. slopes at mid- to upper elevations. Douglas-fir forms an open canopy over a subcanopy of dense canyon live oak. Bigleaf maple and Pacific madrone (*Arbutus menziesii*) are important codominants. Douglas-fir averages 20.4 m<sup>2</sup>/ha basal area and 254 stems/ha. Canyon live oak averages 9.2 m<sup>2</sup>/ha basal area and 593 stems/ha.

Ponderosa Pine-California Black Oak (*Pinus ponderosa*-*Quercus kelloggii*) Association (84110, 84131): 3127 acres (1266 ha). This distinct association is less mesic than the previous one. Open park-like stands of ponderosa pine and sugar pine (*Pinus lambertiana*) form a high canopy over large, scattered California black oak. Ponderosa pine averages 62.5 m<sup>2</sup>/ha basal area, Douglas-fir averages 34.8 m<sup>2</sup>/ha, and sugar pine 18.7 m<sup>2</sup>/ha. Densities of these species are 190, 55, and 310/ha, respectively. Dense reproduction of Douglas-fir occurs in areas that have been spared recent fire. Following crown fire, *Ceanothus integerrimus* is the pioneer shrub. Stands with various successional states occur, indicating a clear trend toward Douglas-fir-canyon live oak forest with infrequent fire.

**White Fir Alliance:** 350 acres (142 ha)

Douglas-Fir-Pacific Dogwood (*Cornus nuttallii*) Association (82420): 85 acres (34 ha). This association occurs on the most mesic, lower-elevation sites. White fir dominated forest replaces it at upper (cooler) elevations. Douglas-fir forms a dense closed canopy averaging 67 m<sup>2</sup>/ha basal area and 106 stems/ha. White fir is codominant, averaging 19.6 m<sup>2</sup>/ha basal area and 403 stems/ha. Pacific dogwood and bigleaf maple form a subcanopy. The shrub and herb layers are well developed and include *Symphoricarpos mollis*, *Toxicodendron diversilobum*, *Polystichum munitum* var. *imbricans*, and *Rosa pisocarpa*.

White Fir-Douglas-Fir Association (84240): This is a minor transitional association between Douglas-fir and white fir dominance. Two plots indicate an average basal area of 50 m<sup>2</sup>/ha and 33 m<sup>2</sup>/ha for white fir and Douglas-fir, respectively.

White Fir-*Acer glabrum* Association (84240): This is the dominant climax vegetation on upper mesic slopes. White fir dominates, with an average basal area of 90 m<sup>2</sup>/ha. *Acer glabrum* forms a low subcanopy along with *Sorbus scopulina*. A diverse shrub layer includes *Sambucus melanocarpa* and *Ribes nevadense*. The herb layer is also well developed and diverse with such species as *Castilleja miniata*, *Actaea rubra* ssp. *arguta*, *Agastache urticifolia*, *Chamaenerion (Epilobium) angustifolium*, and so forth. Following fire, *Quercus vaccinifolia* or knobcone pine, or both, establish. Succession leads to stands in the white fir-Douglas-fir association or white fir association, followed by the establishment of the white fir-mountain maple association.

White Fir Association (84240): This association is seral after crown fire in the former association type. A typical stand has dense, even-aged white fir over dead or senescent *Quercus vaccinifolia*. The understory is sparse or absent.

Knobcone Pine-*Quercus vaccinifolia* Association (83210): 81 acres (33 ha). This association develops on steep slopes at mid-elevation after intense fire. It is seral to the white fir-dominated forests. Knobcone pine forms a dense, even-aged canopy averaging 34 m<sup>2</sup>/ha basal area and 594 stems/ha. *Quercus vaccinifolia* forms a dense shrub understory. *Pedicularis densiflora* and *Apocynum pumilum* are among the few herbs.

*Salix jepsonii*-*Paxistima myrsinites* Association (63500): 184 acres (74 ha). This distinctive minor association occurs in ravines and N.-facing hollows at upper elevations. Its successional status is unclear. Typical stands have a scattered overstory of white fir over a tall-shrub canopy of *Salix jepsonii*, *Euonymus occidentalis*, *Rhamnus purshianus*, *Acer glabrum*, *Amelanchier pallida*, and *Ribes nevadense*. *Paxistima myrsinites* is a conspicuous, small shrub. Herbs such as *Elymus glaucus*, *Trientalis latifolia*, *Disporum hookeri* ssp. *trachyandrum*, *Smilacina racemosa* var. *amplexicaulis*, *Ligusticum californicum*, *Eupatorium occidentale*, *Campanula prenanthoides*, and *Adenocaulon bicolor* line the rocky ravine bottoms.

***Quercus vaccinifolia* Alliance:** This alliance is not listed in the establishment record.

*Cercocarpus betuloides* var. *macrourus* Association (37510): This vegetation occurs on the steepest slopes at the head of the drainage. On rocky sites it is

climax, but it is seral after intense fires on deeper soils, succeeding to white fir-dominated forests (fig. 111). The most conspicuous species of the seral type are the shrubs *Quercus vaccinifolia*, *Garrya fremontii*, *Arctostaphylos patula*, *Prunus emarginata*, *Ceanothus integerrimus*, and *C. velutinus*. The nonseral ridgetop phase is dominated by *Cercocarpus betuloides*, *Quercus vaccinifolia*, and *Q. garryana* var. *breweri*.

***Holodiscus microphyllus* Alliance:** 371 acres (150 ha)

*Holodiscus microphyllus*-*Eriogonum compositum* Association (no Holland equivalent): This association occurs on flat and rolling rock outcrops at the head of the drainage. The vegetation is sparse, with scattered large *Holodiscus microphyllus* shrubs and clumps of *Eriogonum compositum*.

*Holodiscus microphyllus*-*Silene grayi* Association (no Holland equivalent): This vegetation occurs on the highest xeric, rocky summit of Twin Sisters Mountain. Along with the two species defining this association are the herbs *Luina hypoleuca* and *Galium grayanum*.

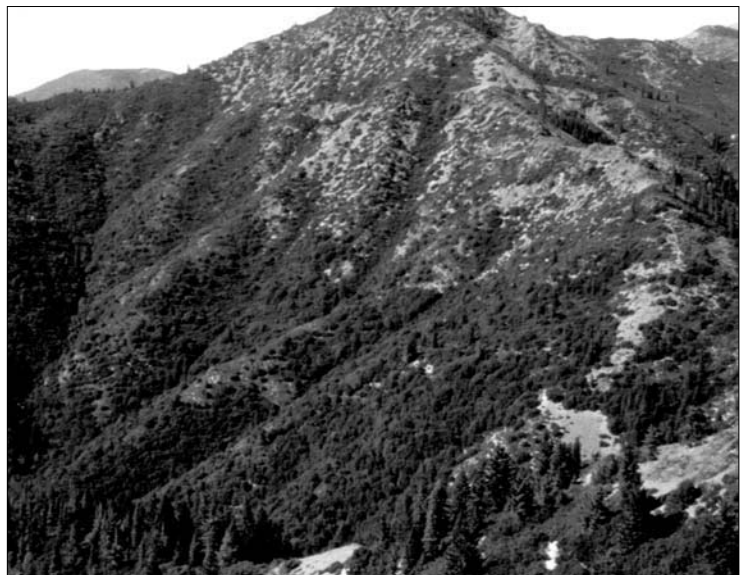
*Holodiscus microphyllus*-*Lewisia cotyledon* var. *heckneri* Association (no Holland equivalent): This association is restricted to near-vertical cliff faces. *Selaginella wallacei*, *Pellaea brachyptera*, and the two previously named species occur in the small crevices and ledges of the rocks.

**Plant Diversity**

Two hundred forty-nine taxa are listed.

**Conflicting Impacts**

Recreational use (hunting and off highway vehicles) and grazing occur in the RNA, but the current usage does not conflict with the objectives of this RNA.



**Figure 111—Manzanita Creek,** view of the southerly face of Twin Sisters Mountain. *Quercus vaccinifolia* dominated vegetation shown in the lower portion is seral to forest, while the open stand above is non-seral and supports dense *Cercocarpus betuloides* var. *macrourus*. (1979)