Vegetation Descriptions

CENTRAL COAST AND MONTANE ECOLOGICAL PROVINCE

CALVEG ZONE 6

March 19, 2009

Note: Central California Coast Section (261A) is referred to as the "Coast" Section and Central California Coast Ranges Section (M262A) is referred to as the "Ranges" Section

CONIFER FOREST / WOODLAND

AB
SANTA LUCIA FIR ALLIANCE

Santa Lucia Fir (Abies bracteata) is found only in the Santa Lucia Range (Los Padres NF) as a narrow endemic species, usually within 15 miles (24 km) of the coast (Coast Section). This Fir is the dominant conifer in this Alliance but it also occurs as scattered inviduals or clumps of trees within Mixed Conifer – Pine sites. It is most common near the crest of the mountains and towards the north, where it often associates with Coast Live Oak (Quercus agrifolia) and low-elevation shrubs in droughty summit sites, on rocky slopes or in protected ravines. Slopes are usually steep and less fire-prone than other mixed hardwood areas of the forest; elevation ranges are in the order 2000 – 4600 ft (610 - 1402 m).

DF
PACIFIC DOUGLAS-FIR ALLIANCE

Pacific Douglas-fir (Pseudotsuga menziesii) is generally limited to northern, central, and eastern California but occurs in scattered stands south to the Santa Ynez Mountains (Los Padres NF) close to the coast (within the South Coast and Montane Ecological zone). Within this zone, the Alliance has been mapped in four subsections of the Coast Section below about 3300 ft (1010 m). Conifer associates in this area are Redwood (Sequoia sempervirens) and Ponderosa Pine (Pinus ponderosa) with Coast Live Oak (Quercus agrifolia) and Tanoak (Lithocarpus densiflorus) the main hardwood associates. Madrone (Arbutus menziesii) and California Bay (Umbellularia californica) often are secondary hardwood associates. Mixed Douglas-fir/Coast Live Oak stands occur on slopes of various aspects in the Coast Section such as in the Santa Cruz Mountains and Leeward Hills Subsections.

DM
BIGCONE DOUGLAS-FIR ALLIANCE

Bigcone Douglas-fir (Pseudotsuga macrocarpa) stands are found in the South Coast, Transverse, and Peninsular Ranges from the Mt. Pinos region south and westward into the Central Coast area. This Alliance occurs very sparsely in the Central Coast area and only in southern regions of the Interior Santa Lucia Range Subsection of the Ranges Section at elevations between about 2400 – 5000 ft (732 – 1524 m). Both pure and mixed conifer/hardwood stands are more often to be found on north facing, steep slopes with Canyon Live Oak (Quercus chrysolepis) and Coast Live Oak (Q. agrifolia) as associated hardwoods in mixed stands. Lower elevation shrubs such as Chamise (Adenostoma fasciculatum), California Buckwheat (Eriogonum fasciculatum) and scrub Oaks (Quercus spp) may often be found in the understory of these stands and Singleleaf Pinyon Pine (Pinus monophylla) in the vicinity of these sites in dry areas.

JT
CALIFORNIA JUNIPER ALLIANCE

The tree form of California Juniper (Juniperus californica) in this zone has been mapped only very sparsely in the Diablo Range Subsection of the Ranges Section at elevations below about 2400 ft (732 m). It is found in close proximity to Gray Pine (Pinus sabiniana) and may form mixed conifer-hardwood stands with Blue Oak (Quercus douglasii) in this area.

KP
KNOBCONE PINE ALLIANCE

The Knobcone Pine (Pinus attenuata) Alliance has been mapped within six subsections of the Coast and Ranges Sections. This closed cone species normally maintains small, dense stands on xeric, shallow or serpentine soils, which are sometimes identified within larger Alliances of this area. This Alliance is a result of past disturbances (usually fire), mixing with hardwoods such as Coast Live Oak (Quercus agrifolia) and Tanoak (Lithocarpus densiflorus) in mixed hardwood-conifer stands. It also is associated with Redwoods (Sequoia sempervirens) in the Coast Section. Associated shrubs include Chamise (Adenostoma fasciculatum), Coyote Brush (Baccharis pilularis) and California Sagebrush (Artemisia californica). Dominant Knobcone Pine stands have been mapped at elevations up to about 3400 ft (1036 m), mainly on steep and often north facing slopes in both Sections.

MD
INCENSE CEDAR ALLIANCE

Incense Cedar (Calocedrus decurrens), a wide-ranging species that competes well on a variety of sites, has been mapped very sparsely as a dominant conifer in the North Coastal Santa Lucia Range Subsection of the Coast Section at elevations from about 2200 – 2800 ft (671 – 854 m). Mixed stands in this area have an understory of Coast Live Oak (Quercus agrifolia) or Tanoak (Lithocarpus densiflorus) and low elevation chaparral shrubs.

MG
GOWEN CYPRESS ALLIANCE

This Alliance is dominated by Gowen Cypress (Cupressus or Callitropsis goveniana). It grows in disjunct groves on mesic soils just south of Monterey Bay at elevations below 1000 ft (305 m). Major groves of Gowen Cypress occur inland on the western slopes of Huckleberry Hill and in San Jose Creek (Monterey County). This Alliance has not yet been mapped.

MM
MONTEREY CYPRESS ALLIANCE

Monterey Cypress (Cupressus or Callitropsis macrocarpa) occurs naturally in the Coast Section in three coastal and near-coastal sites from southern San Mateo to northern San Luis Obispo Counties. The northernmost site has been mapped and identified where the cypress achieves dominance. Associates in this are are Pacific Redwood (Sequoia sempervirens), annual grasses and forbs, Knobcone Pine (Pinus attenuata) and California Sagebrush (Artemisia californica). It has been extensively planted outside of its natural range.

MP
MIXED CONIFER – PINE ALLIANCE

This Alliance is widely spread throughout the state and is defined by a mixture of several non-dominant conifers. It has been mapped sparsely in the North Coastal Santa Lucia Range Subsection of the Coast Section in this zone at elevations from about 2200 – 5600 ft (671 – 1708 m). The conifer mixture usually includes combinations of Ponderosa Pine (Pinus ponderosa), Knobcone Pine (P. attenuata), Coulter Pine (P. coulteri), Bigcone Douglas-fir (Pseudotsuga macrocarpa) and possibly White Fir (Abies concolor). Tanoak (Lithocarpus densiflorus) and Coast Live Oak (Quercus agrifolia) are associated understory hardwoods in this area.

MS
SARGENT CYPRESS ALLIANCE

Sargent Cypress (Cupressus or Callitropsis sargentii) has a more extensive distribution than many Cypress species in California. In this zone, groves of this conifer are restricted to serpentine, rocky or shallow ultrabasic soils, especially in the Santa Lucia Range. They are commonly found along creeks below about 3000 ft (914 m) adjacent to other conifer and chaparral Alliances. In burned areas, this Cypress may form dense thickets but has been mapped only in scattered patches in the South Coastal Santa Lucia Range Subsection of the Coast Section. Associated trees are Gray Pine (Pinus sabiniana) and Coast Live Oak (Quercus agrifolia). Understory shrubs may include Wedgeleaf Ceanothus (Ceanothus cuneatus), Leather Oak (Quercus durata), California Sagebrush (Artemisia californica) and Scrub Oak (Quercus berberidifolia).

MZ
SANTA CRUZ CYPRESS ALLIANCE

Santa Cruz Cypress (Cupressus or Callitropsis abramsiana) grows primarily in the Santa Cruz Mountains. It associates with chaparral species on non-serpentine soils but Ponderosa Pine (Pinus ponderosa) and Knobcone Pine (Pinus attenuata) may also be present on these sites. Its elevational range is from 1000 to 2200 ft (300 - 670 m), above coastal summer fog. This species has not been yet mapped in this region.

PC
COULTER PINE ALLIANCE

Coulter Pine (Pinus coulteri), a low-elevation, drought tolerant conifer, has a variable degree of cone serotiny and is considered to be fire tolerant and shade intolerant. Scattered stands can be found throughout the Santa Lucia Mountains, and in interior areas from Santa Barbara County to Contra Costa County in this region, but has not been identified or mapped as a dominant conifer in the Santa Cruz Mountains. Open, woodland-like stands with a shrub understory develop in this Alliance at elevations as low as 400 ft (122 m) in both Coast and Ranges Sections. The majority of pure and mixed conifer/hardwood stands are below 5000 ft (1524 m) and, especially in the Ranges Section, have a preference for steep slopes. On xeric slopes, Coulter Pine mixes with Canyon Live Oak (Quercus chrysolepis), and on serpentine soils with Jeffrey Pine (Pinus. jeffreyi). Its principal hardwood associate is Blue Oak (Quercus douglasii) in the mapped areas, but it also occurs with Black Oak (Quercus kelloggii) in the Coast Section in the south and with Chamise (Adenostoma fasciculatum), California Sagebrush (Artemisia californica), Tanoak (Lithocarpus densiflorus) and other species throughout its range.

PD
GRAY PINE ALLIANCE

Gray Pine (Pinus sabiniana) reaches its southernmost extent in the Santa Ynez Mountains (Los Padres National Forest) and northwestern areas of the Angeles NF close to the San Joaquin Valley. It is often the only conifer present in this alliance, which is usually an open woodlands type with a diverse mixture of hardwoods, especially Coast Live Oak (Quercus agrifolia) and Blue Oak (Quercus douglasii), and less frequently with California Bay (Umbellularia californica). Low elevation hard and soft chaparral shrubs such as Chamise (Adenostoma fasciculatum) and California Sagebrush (Artemisia californica) and an understory of herbaceous species often occur in these sites. This alliance has been mapped in scattered areas of the Diablo Range, Western Diablo Range and six other subsections of both sections at elevations below about 4200 ft (1402 m).

PJ
SINGLELEAF PINYON PINE ALLIANCE

Singleleaf Pinyon Pine (Pinus monophylla) dominates some mid-montane xeric sites in the Central Coast. This semi-arid open woodland Alliance has been mapped in the rain shadow of the San Rafael Mountains and Sierra Madre in the Caliente Range-Cuyama Valley and Interior Santa Lucia Range Subsections of the Ranges Section at elevations generally under 5000 ft (1524 m). The shrub California Juniper (Juniperus californica) occupies sites in this Alliance at lower elevations and often on gentle slopes or alluvium. Other understory species in the Alliance include California Buckwheat (Eriogonum fasciculatum) and Tucker or Palmer Oak (Quercus john-tuckeri, Quercus palmeri).

PM
BISHOP PINE ALLIANCE

Bishop Pine (Pinus muricata) can be found along the coast of San Luis Obispo and Santa Barbara Counties, as well as in the Channel Islands (Santa Rosa and Santa Cruz Islands) and coastal sites further north. It also occurs in the Santa Ynez Mountains of Santa Barabara County, being closely related to Monterey Pine (P. radiata) and Santa Cruz Island Pine (P. remorata). Bishop Pine grows well in moist, ocean influenced climates below about 1600 ft (488 m) but generally grows best on shallow, poorly drained, acidic soils. Fog drip is an important source of moisture during the summer months. This alliance, it which it is the dominant conifer, has been mapped in one moist site in this zone in the Santa Maria Valley Subsection of the Coast Section in association with urban areas and tree Willows (Salix spp.).

PP
PONDEROSA PINE ALLIANCE

Ponderosa Pine (Pinus ponderosa), a conifer of wide distribution from British Columbia south to northern Mexico and east to Montana and Nebraska, has at least three recognized varieties. P. p. var. ponderosa occurs in this area. As a dominant conifer, it has been mapped in this alliance occasionally in this zone, mainly in mixed conifer/hardwood stands in the Western Diablo

Range (Ranges Section) and Santa Cruz Mountains and both the North and South Coastal Santa Lucia Range Subsections (Coast Section). Other conifers may be present but Ponderosa Pine is clearly dominant. It is confined to mesic slopes above chaparral species, but may occur within one-half mile of the coast. Ponderosa Pine mixes with Coulter Pine (Pinus coulteri) on these slopes. Other associates in the Coast Section include Coast Live Oak (Quercus agrifolia), Tanoak (Lithocarpus densiflorus), and shrubs of lower elevations, such as Chamise (Adenostoma fasciculatum). Occasionally Sugar Pine (Pinus lambertiana) will occur as a minor component in the Ponderosa Pine Alliance within the Santa Lucia Mountains and Blue Oak (Q. douglasii) and/or Coast Live Oak as hardwood associates in the Ranges Section. This Alliance has been mapped at elevations up to about 4400 ft (1342 m), and especially with Tanoak, much of it on high-gradient slopes.

PR
MONTEREY PINE ALLIANCE

The Alliance dominated by Monterey Pine (Pinus radiata), occurs naturally in three locations along the coast: Ano Nuevo Point, Monterey, and Cambria, although it has been planted throughout the world. As mapped within the East Bay Hills – Mt. Diablo, Santa Cruz Mountains, Watsonville Plain – Salinas Valley, and North Coastal Santa Lucia Range Subsections, its tree associates include Coast Live Oak (Quercus agrifolia) and Redwood (Sequoia sempervirens). Understory species include coastal sage scrub species such as California Sagebrush (Artemisia californica) and dry grasses and forbs such as Bedstraw (Galium spp.). Monterey Pine occurs in almost pure stands of even age due to regeneration and site dominance after fire. It has been mapped in the Coast Section at elevations up to 1300 ft (396 m) in pure stands often close to urban areas.

RD
REDWOOD - DOUGLAS-FIR ALLIANCE

This mixture of Redwood (Sequoia sempervirens) and Pacific Douglas-fir (Pseudotsuga menziesii) occurs mainly in the Santa Cruz Mountains (Coast Section) in this zone, where it has been extensively mapped and also sparsely in the East Bay Hills – Mt. Diablo Subsection. Douglas-fir is usually dominant in these stands, which are preserved in several large state and county parks and open space areas. Tanoak (Lithocarpus densiflorus) is the typical hardwood associate of mixed stands. Elevations are usually below about 2600 ft (792 m).

RW
REDWOOD ALLIANCE

Redwood (Sequoia sempervirens) is distributed in moist coastal areas generally below 2000 ft (610 m) from southern Oregon to the Santa Lucia Mountains (Los Padres NF) The Redwood Alliance, in which it dominates the conifer mixture, has been mapped in the Coast Section, being identified frequently in the Santa Cruz Mountains and more sparsely in the East Bay Hills – Mount Diablo, Watsonville Plain – Salinas Valley and North and South Coastal Santa Lucia Range Subsections. Isolated stands may occur near springs, seeps, and sheltered moist locations up to about 3200 ft (976 m) but Redwood often occurs in mixed conifer/hardwood forest stands at those elevations. Those hardwood associates include Tanoak (Lithocarpus densiflorus), its main associate in this area, Madrone (Arbutus menziesii), Coast Live Oak (Quercus agrifolia), and California Bay (Umbellularia californica). At lower elevations, shrub associates such as Blue Blossom (Ceanothus thyrsiflorus), Chamise (Adenostoma fasciculatum) commonly occur. Redwood/Tanoak mixed stands have been mapped abundantly in the Coast Section, principally on steep, often north to west facing slopes. Redwood occurs with non-dominant Pacific Douglas-fir (Pseudotsuga menziesii) in areas such as the East Bay Hills - Mt. Diablo Subsection (Redwood Regional Park), Santa Cruz Mountains Subsection, and the North and South Coastal Santa Lucia Range Subsections.

HARDWOOD FOREST / WOODLAND

AS
SHREVE OAK ALLIANCE

Shreve Oak (Quercus parvula var. shrevei) is a small, coastal tree that hybridizes with both Black (Q. kelloggii) and the associated Coast Live (Q. agrifolia) Oaks. It occasionally becomes a dominant understory tree in Redwood (Sequoia sempervirens) forests and has been mapped sparsely in such mixed conifer and hardwoods stands at elevations below about 2600 ft (792 m) within the Coast Section. Associates also include Douglas-fir (Pseudostuga menziesii), Knobcone Pine (Pinus attenuata), and California Bay (Umbellularia californica).

EX
COASTAL MIXED HARDWOOD ALLIANCE

Sites often have a mixture of hardwoods with no clearly dominant single species. The indicator species of this westernmost mixed hardwood alliance is Coast Live Oak (Quercus agrifolia) in this zone. It occurs in mixture with others of lower abundance, such as Blue Oak (Quercus douglasii), Valley Oak (Quercus lobata), California Bay (Umbellularia californica), and Black Oak (Quercus kelloggii). Redwood (Sequoia sempervirens) and Gray Pine (Pinus sabiniana) may also be associated with some of these sites. The Coastal Mixed Hardwood Alliance has been identified and extensively mapped in the East Bay Hills - Mt. Diablo, Santa Cruz Mountains and North Coastal Santa Lucia Range Subsections (Coast Section) as well as the Western Diablo Range Subsection (Ranges Section) and occasionally in five other subsections of the zone. Elevations are mainly below about 3800 ft (1158 m).

NR
RIPARIAN MIXED HARDWOOD ALLIANCE

This mixed riparian hardwood Alliance describes the mixture of Willows (Salix spp.), Cottonwoods (Populus spp.), Alders (Alnus spp.), and other tree species where none are dominant. In most cases, at least three genera are present in the mixture. These species occur in moist areas and adjacent to stream courses in coastal areas scattered throughout twelve subsections of the Ranges and Coast Sections. This Alliance is also found in foothill canyon bottoms adjacent to inland valleys. Red Alder may be a prominent component along the coast north of San Luis Obispo County. Boxelder (Acer negundo), Dogwood (Cornus spp.), Bigleaf Maple (Acer macrophylla), and Sycamore (Platanus racemosa) also may be present in the Alliance. It is generally found at elevations below about 4800 ft (1646 m) in the Ranges Section and less than about 3000 ft (915 m) in the Coast Section. The Alliance includes smaller landscape units in which White Alder or Willows occur in pure stands and shrubby Baccharis species are often found.

NX
INTERIOR MIXED HARDWOOD ALLIANCE

Sites that have a mixture of non-dominant hardwood species have generally been mapped as the Interior Mixed Hardwood Alliance in interior locations in this zone. Blue Oak (Quercus douglasii) is the main indicator species but species in the Coastal Mixed Hardwood Alliance may be present as minor components such as California Bay (Umbellularia californica) and Coast Live Oak (Quercus agrifolia). Hardwoods such as Valley Oak (Quercus lobata), Black Oak (Quercus kelloggii), Pacific Madrone (Arbutus menziesii), and California Buckeye (Aesculus californica) may be important components of the mixture occasionally. The Alliance has been mapped broadly in both Coast and Ranges Sections of this area. It is a locally common type in the Fremont - Livermore Hills and Valleys, Western Diablo Range and Diablo Range Subsections (Ranges Section), and the Suisun Hills and Valleys Subsection (Coast Section). Mapped elevations are below about 4200 ft (1280 m) in the Ranges Section and less than about 1200 ft (366 m) in the Coast Section. Annual grasses and forbs commonly occur as understory components of this type.

QA
COAST LIVE OAK ALLIANCE

This Alliance, dominated by Coast Live Oak (Quercus agrifolia), occurs throughout the Southern Coast Ranges and has been mapped extensively in thirteen subsections in both the Coast and Ranges Sections of this zone. Coast Live Oak is readily found in pure stands in valleys and slopes generally below about 4600 ft (1402 m) elevation. It generally occurs on deep, mesic soils on near- coastal slopes where it forms denser forests and on alluvial terraces in more interior slopes, where it may form open savanna-like grasslands. It intergrades with the more interior Blue Oak Alliance in the Santa Lucia Mountains of the Central Coast region. Mapped sites tend to have steep gradients. Towards the northern end of this zone, such as in the East Bay Hills - Mt. Diablo Subsection (Coast Section), it is found adjacent to the Annual Grasses and Forbs Alliance, and occasionally with the Redwood and more rarely with the Knobcone Pine and Coastal Mixed Hardwood Alliances. Its associates in the Western Diablo Range Subsection (Ranges Section) include Gray Pine (Pinus sabiniana) and Chamise (Adenostoma fasciculatum). California Sagebrush (Artemisia californica) may be found in the understory on many coastal sites as well.

QB
CALIFORNIA BAY ALLIANCE

California Bay (Umbellularia californica) occurs in canyons, shaded slopes, and moist sites in chaparral and woodland communities throughout much of California. It occasionally forms scattered small stands as a tree in more protected environments and in a more shrub-like form in exposed places and in the chaparral. It has been mapped in the South Coastal

Santa Lucia Ranges (Coast Section), commonly at elevations up to about 3800 ft (1158 m). It forms mixed stands with Redwood (Sequoia sempervirens) in the East Bay Hills - Mt. Diablo Subsection (Coast Section) and with Douglas-fir (Pseudotsuga menziesii) in the Santa Cruz Mountains and Leeward Hills Subsections (Coast Section). It also occurs in the Interior Santa Lucia Range (Ranges), occurring mainly on north and east facing slopes on similar gradients below 2000 ft (610 m). It is found abundantly in the northern Leeward Hills Subsection (Coast Section) and widely scattered in other subsections. Coast Live Oak (Quercus agrifolia) is the most frequent hardwood associate, with Chamise (Adenostoma fasciculatum) and Coyote Brush (Baccharis pilularis) the more common shrub associates in this Alliance. Annual grasses and forbs frequently occur in open stands of this type.

QC
CANYON LIVE OAK ALLIANCE

Canyon Live Oak (Quercus chrysolepis), a small to medium sized hardwood considered to be drought and shade tolerant, occurs from southern Oregon south to Baja California and eastward to Arizona. It may assume a shrubby form when frequent fires occur. In this zone, it occurs in tree form in six subsections of Coast and Ranges Sections as the dominant hardwood of this Alliance. It is locally common within the Interior Santa Lucia Range Subsection (Ranges Section), where It is frequently found on north facing, steep, rocky canyon slopes up to an elevation of about 5600 ft (1706 m). It may assume a shrub form (Quercus chrysolepis var. nana) on rocky summits and more exposed sites. In sheltered slopes and in mesic ravines closer to the coast, the main associates of this Alliance include Coast Live Oak (Q. agrifolia) and shrubs of lower elevations such as Scrub Oak (Q. berberidifolia). Sites further inland are associated with shrubs of drier environments such as Big Sagebrush (Artemisia tridentata), Tucker Oak (Q. john-tuckeri) and California Buckwheat (Eriogonum fasciculatum).

QD
BLUE OAK ALLIANCE

Blue Oak (Quercus douglasii), a California endemic that is drought tolerant and shade-intolerant, forms open savanna-like woodlands on well-drained soils in low elevation sites throughout interior California. In both the Santa Lucia Range and interior savannas, it has been mapped prominently in pure and mixed conifer/hardwood stands in both the Coast and Range Sections at elevations below about 4800 ft (1464 m). It is often adjacent to or intermixed with Coast Live Oak (Quercus agrifolia), Gray Pine (Pinus sabiniana), Chamise (Adenostoma fasciculatum), California Sagebrush (Artemisia californica) and other lower elevation chaparral shrubs. Blue Oak also occurs and hybridizes with Interior Live Oak (Quercus wislizenii) and other oaks, including Valley Oak (Quercus lobata) in the Central Coast region. The Alliance is represented on most slope aspects and gradients in this area, having been mapped with prominence in seven subsections and more sparsely in eight others of this zone.

QF
FREMONT COTTONWOOD ALLIANCE

This riparian Alliance is dominated by Fremont Cottonwood (Populus fremontii). It may be found in pure stands along most streams and seeps below about 6500 ft (1982 m) or may mix with abundant California Sycamore (Platanus racemosa) in this area. White Alder (Alnus rhombifolia), Boxelder (Acer negundo), shrubby Willows (Salix spp.), Mule Fat (Baccharis salicifolia), Marsh Baccharis (Baccharis douglasii), and other riparian species may occur less frequently as associates. Black Cottonwood (Populus balsamifera ssp. trichocarpa) replaces Fremont Cottonwood on the Carmel River. Bigleaf Maple (Acer macrophyllum) and Coast Live Oak (Quercus agrifolia) may occur within this Alliance further upslope from the riparian floodplains. Red Alder (Alnus rubra) may also be associated in coastal locations of Monterey, Santa Cruz, and San Mateo Counties. The Alliance grades into the Riparian Mixed Hardwood and Willow Alliances where riparian gradients or seed sources are variable along the same streambed. It has been mapped sparsely below the elevation of about 1400 ft (426 m) in the Diablo Range and Interior Santa Lucia Range Subsections of the Ranges Section.

QH
MADRONE ALLIANCE

Pacific Madrone (Arbutus menziesii) is an evergreen, long-lived hardwood occurring in a wide area from British Columbia to Baja California. It is rarely found in dense or pure stands except on relatively dry or steep sites at some distance from the immediate coast of central California. The Madrone Alliance has been mapped in this area only in one location within the Santa Cruz Mountains Subsection of the Coast Section. At this site it occurs in openings within the Redwood Alliance in the vicinity of 2086 - 2396 ft (642 - 737 m). A prolific sprouter from underground burls, Pacific Madrone re-occupies stand-replacing fire sites rapidly, especially under conditions of bare mineral or shallow soils with limited canopy cover. Conditions become less favorable for its maintenance in dense stands as the canopy closes.

QI
CALIFORNIA BUCKEYE ALLIANCE

The distribution of this Alliance, dominated by the hardwood California Buckeye (Aesculus californica), is centered in Monterey, San Benito, Santa Clara, Contra Costa, and Merced Counties in this zone. California Buckeye may occur in shrub as well as tree form and is often found on steep, north facing mesic, dry or coastal sites. Forming dense stands on hillsides, it often associates with Coast Live Oak (Quercus agrifolia) and shrubs of lower elevations such as Chamise (Adenostoma fasciculatum) and annual grasses and forbs. It has been mapped as a dominant shrub very sparsely in two subsections of the Coast Section and one in the Ranges Section on steep slopes below about 1600 ft (488 m).

QJ
COTTONWOOD - ALDER ALLIANCE

Some riparian sites within the Ranges Section are dominated by a mixture of Fremont or Black Cottonwood (Populus fremontii, Populus balsamifera ssp. trichocarpa) and White or Red Alder (Alnus rhombifolia, Alnus rubra). Willows (Salix spp.) and other hardwoods and shrubs such as Boxelder (Acer negundo), Bigleaf Maple (Acer macrophylla), and Mulefat (Baccharis salicifolia) may be present in minor amounts. The Cottonwood - Alder Alliance has been mapped sparsely in scattered areas of the Eastern Hills Subsections. Elevations are generally in the range of 696 - 2925 ft (214 - 900 m). Other wetland associates include species of Tamarisk (Tamarix spp.) and shrub Willows (Salix spp.). The most common upland types found adjacent to the Cottonwood - Alder Alliance in this region are the Annual Grasses and Forbs, Coastal Sage Scrub, and Blue Oak Alliances.

QK
BLACK OAK ALLIANCE

Black Oak (Quercus kelloggii) is scattered throughout the Central Coast region west of the Salinas River and north to San Francisco Bay. It generally occurs with Coulter, Gray or Ponderosa Pine (Pinus coulteri, P. sabiniana, P. ponderosa) in mixed stands. It also occurs sparsely in pure stands in this Alliance on mesic slopes at low to mid-montane elevations up to about 3400 ft (1036 m). These stands, often developing as a result of intensive fires or other disturbance such as logging of conifers or the opening of stands due to diseases and vary greatly in canopy closure from very dense to savanna-like. Soils are usually well-drained and have loamy textures. Other common associates in this Alliance are Blue Oak (Q. douglasii), low elevation shrubs such as Scrub Oak (Q. berberidifolia), California Sagebrush (Artemisia californica) and Chamise (Adenostoma fasciculatum) and annual herbaceous species. Black Oak may hybridize with Interior Live Oak (Quercus wislizenii) and Coast Live Oak (Quercus agrifolia) where the species associate. It may be a minor inclusion in the Coastal Mixed Hardwood community, but is usually an indicator of the Montane Mixed Hardwood Alliance, which has not been mapped in this zone.

QL
VALLEY OAK ALLIANCE

Valley Oak (Quercus lobata), a medium-sized deciduous California endemic oak possessing a deeply rooting habit, forms a population that is declining due to anthropogenic factors. As a dominant hardwood, it occurs in pure stands on low elevation areas of this zone in open woodlands with an understory of dry grasslands. It is rarely found in mixed conifer-hardwood stands but may be identified on alluvial terraces or other sites that may retain more summer moisture than Blue Oak woodlands. This type has been mapped in widely scattered stands in fourteen subsections in the Coast and Ranges Sections. These elevations are usually below 3400 ft (1036 m). Valley Oak typically associates with Coast Live Oak (Q. agrifolia) and further inland, also with Blue Oak (Q. douglasii). It may be present in the Interior Mixed Hardwood Alliances, and in the Coastal Mixed Hardwood Alliance to a lesser extent. Shrubs such as Chamise (Adenostoma fasciculatum), California Sagebrush (Artemisia californica) and Scrub Oak (Q. berberidifolia) are often found within or adjacent to these sites.

QM
BIGLEAF MAPLE ALLIANCE

Bigleaf Maple (Acer macrophyllum), a deciduous, moist-site hardwood that ranges north to Alaska, has been mapped only sparsely in this zone. It has only been identified as the dominant hardwood of mixed conifer-hardwood stands as understory to Douglas-fir (Pseudotsuga menziesii) in near coastal, shaded areas of the Santa Cruz Mountains Subsection (Coast Section). Coast Live Oak (Quercus agrifolia) is associated with it in this area. Mapped elevations are in the range 2060 – 3116 ft (628 – 950 m).

QO
WILLOW ALLIANCE

The Willow Alliance is dominated by tree Willows of any species (Salix spp.). In the central coast the most common species are the tree-like Arroyo (S. lasiolepis), Red (S. laevigata), and Shining (S. lucida) Willows. This Alliance may also include some shrub Willows such as Narrowleaf (S. exigua), Scouler's (S. scouleriana), and Sitka Willows (S. sitchensis). It usually occurs on low-gradient stream reaches near the coast and mesic interior locations from Monterey southward, having been mapped in seven subsections at elevations below about 1200 ft (366 m). Associates in the broader area of this stringer-like Alliance include Red Osier Dogwood (Cornus occidentalis), California Sycamore (Platanus racemosa), Wild Rose (Rosa californica), Alders (Alnus spp.), and Fremont Cottonwood (Populus fremontii).

QP
CALIFORNIA SYCAMORE ALLIANCE

California Sycamore (Platanus racemosa) is a tall, fast-growing riparian tree that occurs from California to Baja California. Pure stands of it have been mapped sparsely in eight subsections of both the Coast and Ranges Sections in this zone and is found at low elevations, usually less than 1800 ft (548 m). Common hardwood and shrub associates along these streams include Fremont Cottonwood (Populus fremontii), Willows (Salix spp.), White Alder (Alnus rhombifolia), and Coast Live Oak (Quercus agrifolia).

QR
RED ALDER ALLIANCE

Red Alder (Alnus rubra), a short-lived, shade intolerant riparian hardwood, is distributed from San Luis Obispo County north to Alaska. Seasonally flooded or permanently saturated soils may occasionally be dominated by this species near the coast in this zone. The Red Alder Alliance has been mapped in alluvial positions in the Santa Cruz Mountains Subsection (Coast Section) at elevations between 16 - 315 ft (5 - 97 m). These locations are within the vicinity of moist Pacific Redwood (Sequoia sempervirens) forested sites. Other upland associates include Douglas-fir (Pseudotsuga menziesii), species of the Annual Grasses and Forbs and Coastal Sage Scrub Alliances, and Coyote Brush (Baccharis pilularis).

QT
TANOAK (MADRONE) ALLIANCE

Tanoak (Lithocarpus densiflorus), widely distributed in coastal regions of northern and central California, reaches its southernmost extent in the Santa Ynez Mountains (Los Padres NF). Its range overlaps with that of Madrone (Arbutus menziesii) in this area and further north in the Santa Lucia Range of the Los Padres NF, one of the locations where the Alliance has been mapped. Tanoak may occur alone or in combination with Madrone as dominant hardwoods of this Alliance. Stands have been mapped abundantly in cismontane locations of the North Coastal Santa Lucia Range Subsection and adjoining locations in the South Coastal Santa Lucia Range Subsection in the Coast Section on generally steep sites with elevations typically below about 4200 ft (1280 m). Associates in this area include Coastal Sage Scrub species such as Sages (Salvia spp.) and California Sagebrush (Artemisia californica), low elevation chaparral species such as Wedgeleaf Ceanothus (Ceanothus cuneatus) and Chamise (Adenostoma fasciculatum), conifers such as Ponderosa Pine (Pinus ponderosa), Redwood (Sequoia sempervirens), and Pacific Douglas-Fir (Pseudotsuga menziesii), and other hardwoods such as Coast Live Oak (Quercus agrifolia).

QW
INTERIOR LIVE OAK ALLIANCE

Interior Live Oak (Quercus wislizenii), an evergreen, shade-tolerant upland hardwood, occurs from northern California to Baja California in two recognized varieties as a shrub (Q. w. var. frutescens and a tree (Q. w. var. wislizenii). As a dominant hardwood in this alliance, it occurs both in interior valleys and seaward sides of the Coast Ranges, but generally is found in pure stands inland from the Coast Live Oak Alliance. Interior Live Oak typically associates with Chamise (Adenostoma fasciculatum), Blue Oak (Quercus douglasii), and Gray Pine (Pinus sabiniana) in savanna-like stands on these sites. It has been mapped only sparsely in the Suisan Hills and Valleys and East Bay Hills – Mt. Diablo Subsections of the Coast Section at elevations below about 3600 ft (1098 m).

QY
WILLOW - ALDER ALLIANCE

Red Alder (Alnus rubra) occurs in wet pockets near the coast in the northern Santa Cruz Mountains Subsection (Coast) and elsewhere in this zone. It sometimes associates with Willows (Salix spp.) and no other riparian trees to identify this combination as the Willow - Alder Alliance of the central coast. A combination of three or more riparian trees, where none is dominant, is identified in the Riparian Mixed Hardwood Alliance, which is more commonly seen in this area (see description). The Willow - Alder Alliance has been mapped in the Santa Cruz Mountains Subsection below about 800 ft (244 m). These riparian zones meander through urbanized and agricultural areas near the coast and dry grassland and coastal sage scrub sites further inland.

QZ
EUCALYPTUS ALLIANCE

Species of Eucalyptus native to Austrailia (for example, Eucalyptus globulus, Eucalyptus polyanthemos, and Eucalyptus tereticornis) have been planted throughout California. In this area, the Eucalyptus Alliance has been mapped sparsely within managed landscapes at elevations usually below about 1800 ft (548 m). These stands are widely scattered and are seldom extensive in nature, having been initially established through cultivation. Naturalization has occurred in disturbed areas, augmented by the ability of this genus to resprout after disturbance. Some of these Eucalyptus plantations are included within the Non-Native Alliance groups (Non-Native Ornamental Hardwood Alliance, etc.). In this zone, Eucalyptus groves have been mapped abundantly near urban areas such as those close to Halfmoon Bay (Santa Cruz Mountains Subsection), the Oakland/Berkeley/Fremont areas (East Bay Hills - Mt. Diablo Subsection), and the San Bruno Mountains (San Francisco Peninsula).

UT
TAMARISK ALLIANCE

Any of various species of the introduced and invasive hardwood and shrubby Tamarisk (Tamarix spp.) are dominant in this riparian Alliance. T. parviflora is more common in this zone. It has been identified sparsely in scattered areas of the Diablo Range and Temblor Range Subsections of the Ranges Section. Where mapped, the dynamic Tamarisk Alliance occurred within the elevation range of about 800 – 1800 ft (244 – 548 m). Tamarisk generally out-competes native riparian species in growth and vigor through the development of deeper roots and higher rates of transpiration, eliminating favorable habitats for some native wildlife species and native plants. This type is associated with upland types such as the Annual Grasses and Forbs, Blue Oak and Coastal Sage Scrub Alliances.

SHRUBS AND SUBSHRUBS

BC
SALTBUSH ALLIANCE

Species of Saltbush (Atriplex spp.) are dominant in this sparsely mapped xeric Alliance. Some of the Atriplex species are adapted to accumulating salts or metals in hyper-saline or alkaline environments in order to survive on these harsh sites, but such areas may create toxic conditons to browsing wildlife. Sites have been mapped in interior locations at elevations below about 4000 ft (1220 m) in the Ranges Section. Coastal sage scrub species such as California Sagebrush (Artemisia californica) and Winterfat (Krascheninnikovia lanata) may be associated shrubs.

BQ
GREAT BASIN MIXED SCRUB ALLIANCE

This type is defined by a mixture of common shrubs more characteristic of cool, semi-arid Great Basin environments elsewhere in California and adjoining portions of Nevada. In this zone, the mixture includes at least two species, typically Big Basin Sagebrush (Artemisia tridentata var. tridentata), California Juniper (Juniperus californica), Tucker Oak (Quercus john-tuckeri) and other semi-arid affiliates, where none are dominant in this combination. The alliance has been mapped sparsely at the extreme southern edge of the Caliente Range – Cuyama Valley Subsection of the Ranges Section at elevations between about 2800 – 3800 ft (854 – 1158 m). The type is associated with Singleleaf Pinyon Pine (Pinus monophylla) and California Buckwheat (Eriogonum fasciculatum) in this area.

BR
RABBITBRUSH ALLIANCE

Rubber Rabbitbrush and Yellow Rabbitbrush (Chrysothamnus nauseosus, Chrysothamnus viscidiflorus) occur in California south to Riverside County. This Alliance is dominated by either or both species, with the more commonly occurring Rubber Rabbitbrush able to grow on strongly alkaline as well as more neutral soils. The Rabbitbrush Alliance is often found on dry slopes or flats that have been subject to ground disturbance, locally xeric rainshadow effects or abandoned agricultural practices. It has been mapped very sparsely in the southernmost areas of the Interior Santa Lucia Range and more prominently in the Caliente Range - Cuyama Valley Subsections of the Ranges Section. Associated species in this area may include Blue Oak (Quercus douglasii), Big Sagebrush (Artemisia tridentata), California Buckwheat (Eriogonum fasciculatum), and California Juniper (Juniperus californica) and dry grasses and forbs.

BS
BIG SAGEBRUSH ALLIANCE

Big Basin Sagebrush (Artemisia tridentata ssp. tridentata) dominates this Alliance, having been mapped sparsely in dry interior and transmontane locations of the extreme southeastern areas of the Caliente Range - Cuyama Valley Subsection of Ranges Section. It occurs there within an elevation band of 1600 - 5200 ft (488 - 1586 m). Slopes are often of low gradient and soils are typically coarse, often deep, and well drained. Typical sites are dry alluvial fans or washes on which other species such as Tucker Oak (Quercus john-tuckeri), California Buckwheat (Eriogonum fasciculatum) also occur.

BX
GREAT BASIN – MIXED CHAPARRAL TRANSITION ALLIANCE

This mixed chaparral to semi-arid transitional type is indicated by combinations of Big Sagebrush (Artemisia tridentata), California Juniper (Juniperus californica) and other Basin species with more mesic low elevation shrubs and subshrubs in this area such as Chaparral Yucca (Yucca whipplei), California Sagebrush (Artemisia californica) and Chamise (Adenostoma fasciculatum). Annual dry grasses and forbs also commonly occur in this open community, which has been mapped very sparsely in the Caliente Range – Cuyama Valley Subsection of the Ranges Section. Most sites have been mapped within the elevation range 1600 – 2600 ft (488 – 792 m). This type is more abundant in the South Coast and Montane Calveg zone to the south where semi-arid conditions more commonly intercept more mesic shrub environments.

CA
CHAMISE ALLIANCE

Relatively pure areas of Chamise (Adenostoma fasciculatum) often develop on sites that are harsher in terms of having shallow soils, are more xeric or have sunnier environments (eg., south facing slopes) than the adjacent Lower Montane Mixed Chaparral Alliance. Chamise may also dominate a site after disturbances such as intense, warm season fires. Pure chamise stands exist in the Coast Ranges from San Mateo to Ventura County and have been mapped extensively in interior locations of the Ranges Section and abundantly in the Coast Section within fourteen subsections. The elevation of the Alliance is generally below about 5000 ft (1524 m) as mapped, occurring on moderately steep slopes in the Ranges and distinctly steep and frequently south facing slopes in the Coast Sections. Very little other vegetation is found on these sites but Chaparral Yucca (Yucca whipplei) often occurs on more open sites. Minor amounts of common chaparral and coastal sage scrub species such as Manzanita (Arctostaphylos spp.), Ceanothus spp. and California Sagebrush (Artemisia californica) may also be present.

CB
SALAL - CALIFORNIA HUCKLEBERRY ALLIANCE

Salal (Gaultheria shallon) is known to occur in near-coastal areas and more inland, moist areas south to Santa Barbara County. It has been mapped only once in this zone as a co-dominant shrub in the Salal - California Huckleberry Alliance in the Leeward Hills Subsection of the Coast Section in the elevation range of about 200 – 400 ft (61 – 122 m). California Huckleberry (Vaccinium ovatum) is the most common shrub associate. In this area, the alliance includes dry grasses and forbs; the closest tree associated with it is Valley Oak (Quercus lobata).

CC
CEANOTHUS CHAPARRAL ALLIANCE

Chaparral in this region is occasionally dominated in small areas by species of Ceanothus in contrast to the more extensively occurring mixed genera chaparrals. This coastal to mid elevation shrub Alliance is identified by any of the following species alone or in combination: Bigpod (C. megacarpus), Greenbark (C. spinosus), Carmel (C. griseus), Wavyleaf (C. foliosus),

Wartleaf (C. papillosus), Glory Mat (C. gloriosus), Santa Barbara (C. impressus), Chaparral Whitethorn (C. leucodermis), and/or Hairy Ceanothus (C. oliganthus). Blue Blossom (C. thyrsiflorus) or Wedgeleaf (C. cuneatus) Ceanothus may also be in the mixture, but are not dominant species in this Alliance. Tree and shrub associates typically include Coast Live Oak (Quercus agrifolia), Tanoak (Lithocarpus densiflorus), Redwood (Sequoia sempervirens), California Sagebrush (Artemisia california) and other low elevation chaparral shrubs. The Alliance typically occurs on cismontane slopes having mesic soils below about 3200 ft (974 m) in the Coast and Ranges Sections.

CK
COYOTE BRUSH ALLIANCE

Coyote Brush (Baccharis pilularis) is a shrub that colonizes moist sites after disturbances and may compete successfully with other shrubs due to the rapid growth rate of its taproot and other physiological advantages. It dominates this Alliance and occurs in mixture with other species such as California Sagebrush (Artemisia californica), Coast Live Oak (Quercus agrifolia), Chamise (Adenostoma fasciculatum) and annual species of grasses such as Bromus spp. The Coyote Brush Alliance has been mapped abundantly in the Santa Cruz Mountains Subsection of the Coast Section and occasionally in the Watsonville Plain – Salinas Valley, Leeward Hills and East Bay Hills – Mt. Diablo Subsections (Coast Section) in addition to the Fremont – Livermore Hills and Valleys and Western Diablo Range Subsections in the Ranges Section. Mapped elevations are below about 4000 ft (1220 m). This Alliance occurs on steep, south and west facing slopes in the Coast Section in association with California Bay (Umbellularia californica) and Coast Live Oak (Quercus agrifolia). It is also adjacent to the Annual Grasses and Forbs, Coastal Mixed Hardwood, and Mixed Soft Scrub Chaparral Alliances in that region. Large, scattered patches of this Alliance have also been mapped in near- coastal and wet inland areas of the Santa Cruz Mountains and East Bay Hills - Mt. Diablo Subsections (Coast) and the Western Diablo Range Subsection (Ranges) and scattered elsewhere in this zone.

CL
WEDGELEAF CEANOTHUS ALLIANCE

Wedgeleaf Ceanothus (Ceanothus cuneatus), an evergreen shrub that has a wide ecological amplitude adapted to a variety of environments including harsh or serpentine sites, occurs from Oregon to northern Baja California. Occurring as three varieties in California, it may dominate low elevation sandy coastal habitats or more interior locations in the Central Coast area as C. c. var. cuneatus, var. fascicularis, or var. rigidus. The Wedgeleaf Ceanothus Alliance has been mapped very sparsely in the Interior Santa Lucia Range Subsection (Range Section) at elevations between 800 – 1200 ft (244 - 366 m). Its main tree associates in that inland area are Gray Pine (Pinus sabiniana) and Coast Live Oak (Quercus agrifolia).

CQ
LOWER MONTANE MIXED CHAPARRAL ALLIANCE

This mixed shrub Alliance occurs extensively on cismontane low to moderate elevation slopes in the Central Coast area and is the most frequently mapped shrub type there. Species composition varies according to climate, environment, and geographic position but no one species is clearly dominant. Chamise (Adenostoma fasciculatum) is very common in the mixture as are species of Ceanothus, Manzanita (Arctostaphylos spp.), Chaparral Yucca (Yucca whipplei), Silktassel (Garrya spp.), Birchleaf Mountain Mahogany (Cercocarpus betuloides), Oak (especially Scrub Oak, Quercus berberidifolia), Coyote Brush (Baccharis pilularis), Sumacs (such as Sugar Bush, Rhus ovata), Cherry (especially Hollyleaf Cherry, Prunus ilicifolia), and Redberry (Rhamnus ilicifolia or Rhamnus crocea). This Alliance has been mapped typically at elevations below about 5400 ft (1646 m) on steep slopes in both the Coast and Ranges Sections. This type is especially common in the Diablo Range, Interior Santa Lucia Range and both North and South Coastal Santa Lucia Subsections.

CR
REDSHANK ALLIANCE

Redshank (Adenostoma sparsifolium) forms open and often pure stands in several discrete populations in central and southern California. It has been identified and mapped very sparsely in the Interior Santa Lucia Range Subsection of the Ranges Section, where it associates with species in the Mixed Soft Scrub Chaparral Alliance such as California Buckwheat (Eriogonum fasciculatum), Deerweed (Lotus scoparius), and White Sage (Salvia apiana) and with chaparral shrubs such as Chamise (Adenostoma fasciculatum) and Ceanothus species. These sites are mainly north and east facing and fall within the elevation range 800 - 2400 ft (244 - 732 m).

CS
SCRUB OAK ALLIANCE

Scrub Oak (Quercus berberidifolia) or other shrubby oaks may become dominant species at low to moderate elevations in the Central Coast area. In addition to Scrub Oak, any combination of shrub Interior Live Oak (Q. wislizenii var. frutescens), Leather Oak (Q. durata), and shrub Canyon Live Oak (Q. chrysolepis var. nana) may be abundant in the Alliance. These oaks may fully re-occupy a site after intense fire due to their vigorous stump-sprouting ability but other common chaparral associates may be present in minor amounts, including the shrubs Chamise (Adenostoma fasciculatum), Birchleaf Mountain Mahogany (Cercocarpus betuloides), Toyon (Heteromeles arbutifolia), Poison Oak (Toxicodendron diversilobum), and vines such as Cucumber Vine (Marah macrocarpus) and Honeysuckle (Lonicera spp.). This Alliance has been mapped, usually on north facing, moderately steep to steep slopes. Elevations typically are below about 4600 ft (1402 m) and the type merges with boundaries of the Lower Montane Mixed Chaparral Alliance and associated shrubs such as Chamise (Adenostoma fasciculatum). Shrub oaks on very dry sites such as the northeastern rain shadow area of the Sierra Madre and San Rafael Mountains are usually Tucker Oak (Quercus john-tuckeri) and are associated with species in the Pinyon-Juniper and Buckwheat Alliances.

CT
TUCKER / MULLER SCRUB OAK ALLIANCE

Tucker Oak (Quercus john-tuckeri), an evergreen, endemic and occasionally tree-like shrub oak, forms the dominant taxon of this type, occupying xeric habitats of this zone and further south. This oak appears to be derived from the Q. berberidifolia / Q. dumosa shrub oak complex and hybridizes with at least three other oaks, making identification difficult in the field. Tucker Scrub Oak has been mapped occasionally in southern areas of the Interior Santa Lucia Range and Caliente Range – Cuyama Valley subsections in the Ranges Section at elevations below about 5000 ft (1524 m).

DE
ARROWWEED ALLIANCE

Arrowweed (Pluchea sericea) dominates this wetlands Alliance. It occurs in arid or xeric areas and has been mapped very sparsely in the Interior Santa Lucia Range and adjoining Caliente Range - Cuyama Valley Subsections of the Ranges Section at elevations from 1200 - 2000 ft (366 - 610 m). Other associated species include Mule Fat (Baccharis salicifolia) and Fremont Cottonwood (Populus fremontii).

JC
CALIFORNIA JUNIPER ALLIANCE

California Juniper (Juniperus californica), a slow-growing, non-sprouting and fire-sensitive conifer, has been mapped in both tree-like and shrub-like forms in this zone. It is dominant as a shrub in this alliance, typically occupying shallow or otherwise infertile soils on dry sites. It has been mapped occasionally as a pure type in the Caliente Range - Cuyama Valley, Temblor Range, and Diablo Range Subsections (Ranges Section) at elevations between about 800 – 4000 ft (244 – 1220 m). California Juniper on these sites associates with California Buckwheat (Eriogonum fasciculatum), Big Sagebrush (Artemisia tridentata), Blue Oak (Quercus douglasii), and dry grasses such as Brome (Bromus spp.). Elevations are in the range of 1400 - 4000 ft (426 - 1220 m) on these low-gradient and mostly north facing sites.

KL
WINTERFAT ALLIANCE

Winterfat (Krascheninnikovia lanata), a long-lived, desirable shrub for winter browse, generally grows in alkaline or arid flats in northeastern and southeastern desert areas of California as well as dry sites west to central and southern California. It is the dominant plant of this Alliance, which has been mapped very frequently on slopes in the Temblor Range Subsection of the Ranges Section. It also has been identified with less abundance in adjoining areas of the Paso Robles Hills and Valleys and Carrizo Plain Subsections of the Ranges Section at elevations below about 4000 ft (1220 m). Alliances that occur in the general vicinity of the lower elevation Winterfat Alliance include Chamise (Adenostoma fasciculatum), Lower Montane Mixed Chaparral, Coastal Sage Scrub, Scrub Oak (Quercus spp.), Saltbush (Atriplex spp.), Annual Grasses and Forbs, and Blue Oak (Quercus douglasii).

LS
SCALEBROOM ALLIANCE

Drainages of intermittent streams and washes in interior locations may be dominated by the deciduous, scaly-leaved Scalebroom (Lepidospartum squamatum) in this zone. It has been mapped sparsely within an elevation band of about 1800 – 3000 ft (548 – 915 m) in the southern end of the Caliente Range – Cuyama Valley Subsection of the Ranges Section. Scalebroom associates with California Buckwheat (Eriogonum fasciculatum), Big Sagebrush (Artemisia tridentata) and Rabbitbrush (Chrysothamnus nauseosus) on these sites.

ML
BACCHARIS (RIPARIAN) ALLIANCE

This riparian or dry wash Alliance is dominated by any species of Baccharis occupying wet habitats, including the most common, Mule Fat (Baccharis salicifolia) in this area. Tree willows (Salix spp.), California Sycamore (Platanus racemosa), Fremont Cottonwood (Populus fremontii), and Coast Live Oak (Quercus agrifolia) are some associated hardwoods in this Alliance. It has been mapped sparsely, below about 1200 ft (366 m) along the Cuyama River in the Interior Santa Lucia Range Subsection of the Ranges Section.

NM
RIPARIAN MIXED SHRUB ALLIANCE

A community of mixed shrubs has been mapped in one riparian area along the Cuyama River in the Santa Maria Valley Subsection of the Coast Section at elevations generally less than 400 ft (122 m). Shrubs inlcude species of shrub Willow (Salix spp.), Elderberry (Sambucus spp.), Wild Rose (Rosa spp.), Coyote Brush (Baccharis pilularis) and occasionally Mule Fat (Baccharis salicifolia). This type has been mapped adjacent to agricultural and urbanized landscapes.

SB
BUCKWHEAT ALLIANCE

California Buckwheat (Eriogonum fasciculatum), an evergreen semi-erect shrub, has a wide-ranging distribution in central and southern California, south to northwestern Mexico and east to Arizona and Utah. It occupies dry and more xeric sites from the coast to the deserts, being utilized extensively by small mammals and pollinating insects. The sites are in non-coastal locations, are often steep and south facing, sparsely vegetated sites with good drainage. The degradation of Chamise (Adenostoma fasciculatum) or mixed chaparral sites from past fires or changes in subsurface moisture conditions appear to initiate and perpetuate many of these communities. This Alliance has been mapped extensively within the southern portions of the Interior Santa Lucia Range and the Caliente Range – Cuyama Valley Subsections of the Ranges Section and very sparsely in the Paso Robles Hills and Valleys (Ranges) and North Coastal Santa Lucia Range (Coast) Subsections. Elevations are usually below about 5000 ft (1524 m). Tree and shrub associates on these sites also include Singleleaf Pinyon Pine (Pinus monophylla), California Juniper (Juniperus californica), Blue Oak (Quercus douglasii) and California Sagebrush (Artemisia californica).

SD
MANZANITA ALLIANCE

The dominance of the shrub layer by single or multiple species of Manzanita (Arctostaphylos spp.) define this Alliance. Commonly occurring Manzanitas in this zone include Bigberry (A. glauca), Hoary (A. canescens), Common (A. manzanita) and Glossyleaf (A. nummularia) towards the northwest; Eastwood (A. glandulosa) and Mexican (A. pungens) at mid-montane elevations; and Woollyleaf (A. tomentosa) at lower elevations. This Alliance has been mapped within both Sections in the East Bay Hills – Mt. Diablo, Santa Cruz Mountains, Western Diablo Range and Interior Santa Lucia Range Subsections sparsely at elevations between 1200 - 4200 ft (366 - 1280 m). The Manzanita Alliance commonly occurs on ridgetops and spur ridges, often on north facing and moderately steep slopes. Associates in this area include low elevation shrubs and trees such as Chamise (Adenostoma fasciculatum), Gray Pine (Pinus sabiniana), Coast Live Oak (Quercus agrifolia), Knobcone Pine (P. attenuata), Redwood (Sequoia sempervirens) and grasses.

SL
COASTAL LUPINE ALLIANCE

Dune Lupine (Lupinus chamissonis), a California native, is an indicator species in coastal dunes in the Central Coast for this Alliance. It may or may not become the dominant shrub on these dunes. The stabilized coastal dune habitat supports other species there, including non-natives such as Fig Marigolds (Carpobrotus chilensis and Carpobrotus edulis), Iceplants

(Mesembryanthemum crystallinum and Mesembryanthemum nodiflorum), and herbaceous annuals such as New Zealand Spinach (Tetragonia tetragonioides). Other associated perennials, shrubs, and subshrubs include Heather Goldenbush (Ericameria ericoides), California Sagebrush (Artemisia californica), Eriastrum densifolium, Dune Buckwheat (Eriogonum parvifolium), California Croton (Croton californicus), Common Deerweed (Lotus scoparius), Sand Verbena (Abronia latifolia), Dune Ragwort (Senecio blochmaniae), California-Aster (Lessingia filaginifolia), and perennial graminoids such as Carex spp. and Bromus spp. These vegetated dunes have been mapped up to about 200 ft (60 m) in the South Coastal Santa Lucia Range, Santa Maria Valley and Santa Cruz Mountains Subsections of the Coast Section.

SQ
MIXED SOFT SCRUB - CHAPARRAL ALLIANCE

Ground disturbances such as fire and urban development often initiate the development of this short-lived shrub Alliance. It has been mapped in areas of disturbance where woody chaparral species comprise less than half of the shrub cover in areas transitional between the California Sagebrush and Lower Montane Mixed Chaparral Alliances. These sites are typically at elevations below 2600 ft (792 m) on moderately steep to steep slopes in the Paso Robles Hills and Valleys, Interior Santa Lucia Range Subsections (Ranges Section) and South Coastal Santa Lucia Range and Santa Maria Valley Subsections of the Coast Section. Indicator species in the general area include California Sagebrush (Artemisia californica), Scrub Oaks (Quercus spp.), Deerweed (Lotus scoparius), Coyote Brush (Baccharis pilularis), Bush Monkeyflower (Mimulus aurantiacus), Bush Poppy (Dendromecon rigida), Yerba Santa (Eriodictyon spp.) and Goldenbush (Ericameria spp.) in mixture with minor amounts of Ceanothus spp., Sumacs (Rhus spp. or Malosma laurina), and Chamise (Adenostoma fasciculatum).

SS
CALIFORNIA SAGEBRUSH ALLIANCE

California or Coastal Sagebrush (Artemisia californica) is generally found as a dominant or indicator shrub in low to moderate elevation coastal foothills and valleys in association with Black Sage (Salvia mellifera) or Purple Sage (Salvia leucophylla) in this region. The California Sagebrush Alliance is diverse in species composition, since it occurs extensively from San Francisco Bay southward. California Sagebrush commonly occurs, for example, on cismontane slopes of the Santa Lucia Range between Monterey and Pt. Conception at elevations usually below about 3400 ft (1036 m). These sites are often exposed, steep, and in the Ranges Section, south facing, and with rocky, shallow soils. Other species that may occur sporadically in this Alliance include Coyote Brush (Baccharis pilularis), Bush Monkey Flower (Mimulus aurantiacus), Heather Goldenbush and Sawtooth Goldenbush (Ericameria ericoides, Hazardia squarrosa), species of Coffeeberry (Rhamnus spp.), Lupines (Lupinus spp.), Poison Oak (Toxicodendron diversilobum), California Encelia (Encelia californica), and at lower elevations, Coast Buckwheat (Eriogonum latifolium). Some of these near - coastal sandy sites may have such rare species as Monterey, Morro or Sandmat Manzanita (Arctostaphylos montereyensis, Arctostaphylos morroensis, Arctostaphylos pumila) within the Coast Section. The California Sagebrush Alliance has been mapped as far inland as the southern boundaries of the Diablo Range and Interior Santa Lucia Range Subsections (Ranges) and as far north as Twin Peaks Park in San Francisco in this region within twenty subsections.

SY
CHAPARRAL YUCCA ALLIANCE

Chaparral Yucca (Yucca whippliei ssp. percursa), dominant in this Alliance, resprouts rapidly and vigorously after fires and possibly other ground disturbances such as grazing. It typically occupies cismontane slopes in this area as distinct from other subspecies of this taxon found elsewhere. The Alliance has been mapped very sparsely in the Caliente Range – Cuyama Valley Subsection of the Ranges Section at elevations below about 2000 ft (610 m). These dry sites may include annual grasses and Great Basin-affinity shrubs such as Big Basin Sagebrush (Artemisia tridentata ssp. tridentata).

WL
SHRUB WILLOW ALLIANCE

Shrub forms of Willow (Salix spp.) are mapped as this Alliance where they dominate the shrub layer in a riparian, seep or meadow site. Any of the following native species may be included in this Alliance for this zone: Narrow-leaved Willow (S. exigua), Shining Willow (S. lucida), Brewer's (S. breweri), Arroyo (S. lasiolepis), Scouler's (S. scouleriana), and Sitka (S. sitchensis). The Shrub Willow Alliance has been mapped in six subsections within the two sections at elevations below about 3200 ft (976 m). Associated types in that area include riparian hardwoods and shrubs such as California Sycamore (Platanus racemosa), Mulefat (Baccharis salicifolia) inland ,and Coyote Brush (Baccharis pilularis) nearer the coast. In addition, Eucalyptus species and Monterey Pine (Pinus radiata) may be planted in close proximity to the Shrub Willow Alliance near urbanized areas.

HERBACEOUS

HC
PICKLEWEED - CORDGRASS ALLIANCE

This coastal salt marsh Alliance has been mapped prominently along tidal watercourses in the Bay Flats and Watsonville Plain - Salinas Valley Subsections of the Coast Section and elsewhere less abundantly in seven other subsections. Pickleweed (Salicornia spp.) and Cordgrass (Spartina spp.) generally are dominants, associated with other estuarine plants such as Saltgrass (Distichlis spicata) and freshwater wetlands species such as Bulrushes (Scirpus spp.).

HG
ANNUAL GRASSES AND FORBS ALLIANCE

Low to mid-montane areas of central California may develop extensive or restricted areas of dry grasslands. These grasses and forbs generally occur beneath Blue (Quercus douglasii) and Coast Live Oaks (Quercus agrifolia), but may occur as extensive stands without an overstory in otherwise well-vegetated shrub, hardwood or coniferous regions. Conditions that restrict the growth and maintenance of species of the surrounding vegetation include the occurrence of pockets of fine-textured (clayey) soils, a frequent fire regime, and ground-disturbing activities such as grazing and mining. Many exotic grasses are characteristic of this type, including species of wild oats (Avena spp.), various Bromes (Bromus spp.), Foxtail Fescue (Vulpia myuros), and Kentucky Bluegrass (Poa pratensis). This Alliance also includes perennial grasses that develop on coarse, well-drained soils occurring within sunny openings of forested savannas. In addition to species mentioned above, savannas may also include more native Sedges (Carex spp.), Melic Grass (Melica spp.) and limited occurrences of coastal sage scrub species such as California Sagebrush (Artemisia californica). These areas have been mapped at elevations below about 4600 ft (1402 m) on low-gradient slopes in both the Coast and Ranges Sections.

HJ
WET MEADOWS (GRASS - SEDGE - RUSH) ALLIANCE

Sedges and rushes occur within valleys on wet meadows and small, wet alluvial fans of lower montane areas. Although a range of hydric conditions (dry to saturated) usually occur within the same meadow, wet and mountain meadows are characterized by the permanency of the water source at their lowest topographic levels. Many Sedges and most Rushes (Carex spp. and Juncus spp.) require a continuous moisture source during the growing season. When present along the coast, this Alliance occurs in swales but is sufficiently upslope to be away from saline deposits in coastal salt marsh areas. Wet Meadows have been mapped very infrequently in both the Coast (Santa Cruz Mountains and Watsonville Plain – Salinas Valleys Subsections) and Ranges (Diablo Range Subsection) Sections at low elevations.

HM
PERENNIAL GRASSES AND FORBS ALLIANCE

Pockets of perennial grasses, often native species, and herbaceous plants have been mapped sparsely in three subsections near the southern border of this zone in both sections. Elevations are generally below 600 ft (183 m), sites are seasonally moist and typically have low-gradient slopes. This type is a form of dry to moist grassland in which the species composition is a mixture of perennial and some annual grasses and non-woody species that vary according to management practices. Native perennial grasses such as Needlegrass (Achnatherum spp.) may occur in addition to Dropseed (Sporobolus spp.), Squirreltail (Elymus elymoides) and Leymus spp. Introduced perennials such as Foxtail (Alopecurus myosuroides) and Tall Fescue (Festuca arundinacea) may be present with non-native forbs such as Strawberry Clover (Trifolium fragiferum) and non-native annual grasses such as Foxtail Chess (Bromus madritensis) and Ripgut grass (B. diandrus) in this type. Some of the areas are currently being used for livestock pasture where the type intergrades with the Annual Grasses and Forbs Alliance.

HT
TULE - CATTAIL ALLIANCE

In this zone, Cattail or Tule marshes have been mapped sparsely in the Bay Flats and East Bay Terraces and Alluvium Subsections of the Coast Sections in areas surrounding estuaries and inlets of San Francisco, San Pablo and Suisun Bays as well as further inland. Dominant species include Sedges (Carex spp.), Tule (Scirpus spp.), Cattail (Typha spp.), and Spikerush (Eleocharis spp.). A number of other species associate with this Alliance depending on the geographic area, including the invasive forb Purple Loosestrife (Lythrum salicaria) in this area. Past drainage activities have significantly reduced the total area once covered by this wetlands Alliance.

NON-NATIVE VEGETATION

IA
GIANT REED / PAMPAS GRASS ALLIANCE

This non-native alliance is dominated by invasive species of Giant Reed (Arundo donax) in wetlands or Black or White Pampas Grasses (Cortaderia jubata, C. selloana) on moist, disturbed sites. This type has been mapped very rarely in the Ranges Section. The adacency of agricultural and urban land uses may provide a conduit for the invasion of these species onto public and private lands.

IB
URBAN-RELATED BARE SOIL

Urban development in California occurs in phases. When land is cleared prior to being paved, this category represents the occurrence of non-vegetated barren ground that is caused by urbanization. This land-use type also repesents other mechanically-caused barren ground, such as open quarries or mined areas, barren ground along highways, and other areas cleared of vegetation prior to construction. These sites have been mapped extensively in the Santa Maria Valley and adjoining sectiors ot the South Coastal San Lucia Ranges Subsections, usually adjacent to agricultural areas, already established urbanized centers or paved areas of the landscape. California Sagebrush (Artemisia californica) and annual grasses and forbs may be present in the immediate vicinity of these sites.

IC
NON-NATIVE/ORNAMENTAL CONIFER ALLIANCE

Planted conifers comprise this Alliance, including species such as Canary or Norfolk Island Pines (Araucaria spp.), Deodar and Atlas Cedars (Cedrus deodar, Cedrus atlantica), Redwood (Sequoia sempervirens), Scotch Pine (Pinus sylvestris), etc. Other non-native hardwoods, shrubs, and grasses may be associated in minor amounts. Mapped areas of this Alliance are usually in developed areas, including urban and residential landscapes, parks, recreational areas, highways, cemeteries, etc.

IG
NON-NATIVE/ORNAMENTAL GRASS ALLIANCE

Ornamental or non-native grass species define this Alliance. Other non-native conifers, hardwoods, and shrubs may be associated as minor elements. Mapped areas of this Alliance are usually in developed areas, including urban and residential landscapes, parks, recreational areas, highways, cemeteries, etc.

IH
NON-NATIVE/ORNAMENTAL HARDWOOD ALLIANCE

Ornamental or non-native hardwood species dominate this Alliance. Other non-native conifers, shrubs, and grasses may be present in this Alliance. Mapped areas of this Alliance are usually in developed areas, including urban and residential landscapes, parks, recreational areas, highways, cemeteries, etc.

IM
NON-NATIVE/ORNAMENTAL CONIFER/HARDWOOD ALLIANCE

A mixture of ornamental or non-native conifer and hardwood species comprise the dominant species of this Alliance. Small amounts of non-native pure stands of hardwood, conifer, shrubs, and grasses may be also associated with this Alliance. Mapped areas of this Alliance are usually in developed areas, including urban and residential landscapes, parks, recreational areas, highways, cemetaries, etc.

IS
NON-NATIVE/ORNAMENTAL SHRUB ALLIANCE

Ornamental or non-native shrub species dominate this Alliance. Other non-native conifers, hardwoods, and grasses may be present in this Alliance. Mapped areas of this Alliance are usually in developed areas, including urban and residential landscapes, parks, recreational areas, highways, cemeteries, etc.

IW
DEVELOPED WATER FEATURES

Facilities for capture and storage of surface or ground waters are sometimes quite visible in developed landscapes and can be recognized easily on aerial photographs. In this area, these areas have been mapped very sparsely in the Santa Maria Valley Subsection of the Coast Section. Such features as golf course ponds, basins for replenishment of aquifers at the dry edges of the mountains, small lakes in public parks, water and sewage treament facilities and the like are included. This category may also identify some water treatment facilities within agricultural and rural areas, where they are often located.

LAND USE AND NON-VEGETATED CLASSES

AG
AGRICULTURE

Agricultural land is used primarily for the production of food and fiber. High-altitude imagery indicates agricultural activity by distinctive geometric field and road patterns on the landscape and traces produced by mechanized equipment. Agricultural land uses include forest landscapes such as orchards as well as non-forested land uses such as vineyards and field crops. Land used exclusively for livestock pasture may, however, be mapped as Annual Grassland in those cases in which land uses are not recognizable.

A1
CONIFER AGRICULTURE

Agricultural or horticultural land planted to and dominated by single or multiple species of conifers may have year-round or seasonal uses of these lands. Examples include tree nurseries that provide seedlings for forestry plantations, “Christmas tree” plantations for seasonal sales, and the like. Native or exotic conifers may also be planted in narrow rows as wind breaks or for ornamental uses within agricultural cropland, such as the occasional plantations of Pacific Redwood.

A2
VINEYARD – SHRUB AGRICULTURE

Vines or shrubs may dominate the woody component of plantations on agricultural or horticultural lands used in the production of food or fiber such as vineyards devoted to grapes or kiwi fruit and shrubby nut or fruit crops such as blueberries or raspberries.

A3
TILLED EARTH AGRICULTURE

Agricultural lands may be mapped as barren and lacking vegetation on occasion, such as after harvesting and during seasons prior to crop growth. Some areas may be kept fallow during and after the growing season for various reasons such as conservation of moisture and nutrients in a crop rotation schedule.

A4
ORCHARD AGRICULTURE

Orchards are usually evergreen or deciduous small trees producing fruit or nut crops, usually planted in rows with or without irrigation channels. Apples, citrus fruits, avocados, walnuts, peaches, olives and other familiar crops cover many acres in California. Occasionally, shrub forms may become horticulturally trained to resemble small trees, such as filberts.

A5
FLOODED ROW CROP AGRICULTURE

Agricultural lands planted to row crops are periodically flooded using flow-through structures such as levees, ditches and irrigation boxes in certain seasons for the production of rice in California. These areas are often underlain by poorly drained clay soils that are unsuitable for production of other crops and are drained at harvest time. Some rice lands are reflooded after harvest to provide habitat for waterfowl such as ducks and geese that traditionally used regional flyway routes in the San Joaquin Valley.

A6
GRAIN AND CROP AGRICULTURE

Irrigated or dry crop agriculture is usually harvested in rows as edible or useful herbaceous products such as cereals (wheat, sorghum, oats, millet, corn, rye, etc.) or vegetables (squash, celeery, beans, peas, etc.), for stock and human uses. Agricultural crop fields are also occasionally planted for both animal forage and to improve nitrogen levels, as with legumes such as alfalfa and sweet clovers. Certain crops are grown for other multiple uses such as flax and cotton for their seed oils and fiber content and others for medicinal uses.

A7
AGRICULTURAL PONDS / WATER FEATURES

Some artifically constructed water features on otherwise agricultural sites such as ranches and farms are large enough to map and doumumnt. These sites include stock ponds, small reservoirs, large ditches and other utilitarian or recreational water features.

A8
AGRICULTURAL NURSERIES (GENERAL)

Horticultural sites within or outside urban areas may be mappable features. Many of these include rows of potted or sometimes roooted woody or herbaceous plants that are sold as retail or wholesale species in farious combinations and growth stages. Nurseries that are planted only to conifers are included in the Conifer Agriculture categoy.

BA
BARREN

Landscapes generally devoid of vegetation as seen from a high-altitude image source such as aerial photography, are labeled as Barren. This category includes mappable landscape units in which surface lithology is dominant, such as exposed bedrock, cliffs, interior sandy or gypsum areas, and the like. It does not include areas considered as modified or developed, as in urban areas but quarries and open pit mine sites are included in the Barren category.

DU
DUNES

Those sandy accumulating areas in which coastal headlands are usually absent, such as at beach areas of Halfmoon Bay identify the occurrence of coastal dunes in the Central Coast area. Dunes have been mapped as a barren type of landscape, including sandy beach areas extending from San Diego to Santa Barbara Counties. Vegetated sandy areas may be mapped in the Coastal Lupine type in this area where vegetation is identifiable for mapping purposes.

UB
URBAN OR DEVELOPED

This category applies to landscapes that are dominated by urban structures, residential units, or other developed land use elements such as highways, city parks, cemeteries, and the like. In those cases in which the managed landscapes may have a considerable vegetation component, other land use categories may be more appopriate, such as Ornamental Conifer and Hardwood mixtures within city parks.

WA
WATER

Water is labeled in mapping projects in those cases in which permanent sources of surface water are identified within a landscape unit of sufficient size to be mapped. The category includes lakes, streams and canals of various size, bays and estuaries and similar water bodies. These areas are considered to have a minimum of vegetation components, except along the edges, which may be mapped as types such as Wet Meadows, Tule-Cattail freshwater marshes, or Pickleweed-Cordgrass saline or mixed marshes. Islands within water bodies of sufficient size are mapped according to their terrestrial dominant vegetation types.

SECONDARY MAPPING SOURCES IN ZONE 5

Other data sources have been used in this zone to augment mapping originated by the Remote Sensing Lab or its contactors. These were used to fill in areas that had not been mapped by RSL, which are considerable in this zone. Limited structural information or accuracy assessment is available for these layers. The sources are indicated as attributes within the tiling geodatabase structure given as downloadable files on the RSL web page. Calveg types have been crosswalked from the metadata and map attritbutes in the crosswalked data sources in this zone. They are indicated as occurring within specific subsections, as indicated by numbers and their corresponding names in the subsequent section. General descriptions follow the types that have not been described above.

A1
CONIFER AGRICULTURE

Subsection(s) 12, 17

See description above

A2
VINEYARD – SHRUB AGRICULTURE

Subsection(s) 5, 7, 11, 12, 14, 17, 20, 21, 22

See description above

A3
TILLED EARTH AGRICULTURE

Subsection(s) 1, 5, 17, 18

See description above

A4
ORCHARD AGRICULTURE

Subsection(s) 1, 5, 6, 7, 11, 12, 14, 17, 18, 20, 21, 22

See description above

A5
FLOODED ROW CROP AGRICULTURE

Subsection(s) 17

See description above

A6
GRAIN AND CROP AGRICULTURE

Subsection(s) 1, 5, 6, 7, 11, 12, 14, 15, 17, 18, 20, 21, 22

See description above

A7
AGRICULTURE PONDS / WATER FEATURES

Subsection(s) 5, 11, 17, 20

See description above

A8
AGRICULTURAL NURSERIES (GENERAL)

Subsection(s) 17, 20

See description above

AK
ALKALINE FLATS

Subsection(s) 21

Small barren areas in dry, inland locations in this zone have been crosswalked to Alkaline Flats. These sites tend to be flooded in winter but dry out completely by late summer, creating saline or alkaline conditions in which vascular vegetation is effectively absent.

BA
BARREN

Subsection(s) 1, 6, 11, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23

See description above

BC
SALTBUSH ALLIANCE

Subsection(s) 1, 22, 23

See description above

BS
BIG SAGEBRUSH ALLIANCE

Subsection(s) 22

See description above

CA
CHAMISE ALLIANCE

Subsection(s) 5, 6, 7, 11, 14, 15, 17, 18, 20, 21, 22

See description above

CC
CEANOTHUS CHAPARRAL ALLIANCE

Subsection(s) 11, 17

See description above

CK
COYOTE BRUSH ALLIANCE

Subsection(s) 1, 6, 7, 11, 12, 20

See description above

CL
WEDGELEAF CEANOTHUS ALLIANCE

Subsection(s) 17, 20

See description above

CQ
LOWER MONTANE MIXED CHAPARRAL ALLIANCE

Subsection(s) 5, 6, 7, 11, 14, 15, 17, 18, 20, 21, 22

See description above

CS
SCRUB OAK ALLIANCE

Subsection(s) 6, 7, 11, 23

See description above

CZ
SEMI-DESERT CHAPARRAL ALLIANCE

Subsection(s) 20

This alliance develops on interior (transmontane) slopes at low to moderate elevations, having been crosswalked within the Paso Robles Hills and Valleys Subsection. It is a transitional type that includes a mixture of common chaparral shrubs such as Chamise (Adenostoma fasciculatum), Birchleaf Mountain Mahogany (Cercocarpus betuloides), Bigberry Manzanita (Arctostaphylos glauca), and California Buckwheat (Eriogonum fasciculatum) with other xeric environment shrub or perennial species such as Flannel Bush (Fremontodendron californicum spp. californicum), Tucker or Miller Scrub Oak (Quercus john-tuckeri, Q. cornelius-mulleri), Mojave or Desert Ceanothus (Ceanothus greggii var. vestitus), Rabbitbrush (Chrysothamnus spp.), Prickly Pear or Cholla (Opuntia spp.), and Big Sagebrush (Artemisia tridentata).

DF
PACIFIC DOUGLAS-FIR ALLIANCE

Subsection(s) 6, 7, 18

See description above

DS
SHADSCALE ALLIANCE

Subsection(s) 21, 23

The Shadscale Alliance, a subtype of the Saltbush Alliance, is usually dominated by Shadscale - or Spiny Saltbush – (Atriplex confertifolia) in pluvial or dry lake basins with salt or alkaline accumulations along very dry areas of this zone. The alliance has been crosswalked within the Carrizo Plain and Temblor Range Subsections. Other drylland shrubs may also be present, such as other Saltbushes (Atriplex spp.) and other halophytes.

DU
DUNES

Subsection(s) 11, 12

See description above

EX
COASTAL MIXED HARDWOOD ALLIANCE

Subsection(s) 5, 6, 7, 11, 12, 14, 15, 17, 18, 20

See description above

HA
ALKALINE MIXED GRASSES AND FORBS ALLIANCE

Subsection(s) 1

Alkaline and hyper-saline soils occasionally occur in this zone in internal drainage basins that accumulate soluble salts and may have moist pockets. Areas occupied by herbaceous species and grasses adapted to these conditions have been crosswalked to this type in the Suisun Hills and Valleys Subsection.

HC
PICKLEWEED - CORDGRASS ALLIANCE

Subsection(s) 1, 11

See description above

HG
ANNUAL GRASSES AND FORBS ALLIANCE

Subsection(s) 1, 5, 6, 7, 11, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23

See description above

HJ
WET MEADOWS ALLIANCE

Subsection(s) 1, 11, 22

See description above

HM
PERENNIAL GRASSES AND FORBS ALLIANCE

Subsection(s) 1, 5, 7, 11, 12, 14, 15, 16, 18, 20, 21

See description above

HT
TULE - CATTAIL ALLIANCE

Subsection(s) 1, 11, 12, 17, 20, 21

See description above

IA
GIANT REED/ PAMPAS GRASS ALLIANCE

Subsection(s) 1, 20

This non-native and herbaceous alliance is dominated by invasive graminoids such as Giant Reed (Arundo donax) in wetlands or Black and White Pampas Grasses (Cortaderia jubata, C. selloana) on moist, disturbed sites. It has been crosswalked within the Suisun Hills and Valleys and Pasos Robles Hills and Valleys Subsections.

IB
URBAN-RELATED BARE SOIL

Subsection(s) 1, 5, 6, 7, 11, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23

See description above

IC
NON-NATIVE / ORNAMENTAL CONIFER ALLIANCE

Subsection(s) 11

See description above

IF
NON-NATIVE / INVASIVE FORB / GRASS ALLIANCE

Subsection(s) 1

Riparian and upland areas are sometimes invaded by aggressive herbaceous species that are not native to this state or area. Some of the problem species include Perennial Peppergrass (Lepidium latifolium), which may cause illness in horses, Medusahead Grass (Taeniatherium – or Elymus – caput-medusae), which may physically injure grazing livestock, Puncturevine (Tribulus terrestris), which is toxic to livestock, Russianthistle (Salsola tragus), which is an alternate host for an insect carrying a virus that infects certain crops, Yellow Starthistle (Centaurea solstitialis), which is also toxic to horses and poses a challenge to eradicate, and many other Knapweeds (Centaurea spp.). This type may also reflect managed meadows or urban plantings of non-invasive species, such as in parks. It has been crosswalked within the Suisun Hills and Valleys Subsection.

IG
NON-NATIVE / ORNAMENTAL GRASS ALLIANCE

Subsection(s) 5, 7, 11, 12, 15, 17, 20

See description above

IH
NON-NATIVE / ORNAMENTAL HARDWOOD ALLIANCE

Subsection(s) 1, 5, 7, 11, 12, 14, 15, 20, 21

See description above

IM
NON-NATIVE / ORNAMENTAL CONIFER / HARDWOOD ALLIANCE

Subsection(s) 1, 11, 12

See description above

IS
NON-NATIVE / ORNAMENTAL SHRUB ALLIANCE

Subsection(s) 1, 11, 12, 15

See description above

IW
DEVELOPED WATER FEATURES

Subsection(s) 1, 11, 12, 20

See description above

JC
CALIFORNIA JUNIPER ALLIANCE

Subsection(s) 21, 22, 23

See description above

JP
JEFFREY PINE ALLIANCE

Subsection(s) 15

Jeffrey Pine (Pinus jeffreyi) may replace Ponderosa Pine (P. ponderosa) at low elevations in this zone on specific substrates, such as peridotite or serpentine areas of the Diablo Range Subsection, where it has been crosswalked. Shrub species such as Wedgeleaf Ceanothus (Ceanothus cuneatus), Coffeeberry (Rhamnus spp.) and Shrub Canyon Live Oak (Quercus chrysolepis var. nana) are commonly present under these conditions in other Calveg zones.

JT
CALIFORNIA JUNIPER (TREE)

Subsection(s) 15, 20, 21, 22, 23

See description above

KL
WINTERFAT ALLIANCE

Subsection(s) 21, 23

See description above

KP
KNOBCONE PINE ALLIANCE

Subsection(s) 6, 7

See description above

ML
BACCHARIS (RIPARIAN) ALLIANCE

Subsection(s) 5, 7, 11, 12, 15, 18, 20

See description above

MM
MONTEREY CYPRESS ALLIANCE

Subsection(s) 11

See description above

MU
ULTRAMAFIC MIXED CONIFER ALLIANCE

Subsection(s) 15

Although ultramafic and serpentinized areas rarely occur in this zone, a type of conifer mixture has been crosswalked on serpentine sites within the Diablo Range Subsection. Jeffrey Pine (Pinus jeffreyi) is part of the mixture, in addition to others such as Gray and Coulter Pines (P. sabiniana, P. coulteri).

NA
ALKALINE MIXED SCRUB ALLIANCE

Subsection(s) 1, 21, 22, 23

More extensively mapped in the South Interior Calveg zone, this alliance has been crosswalked in this zone in four subsections, mostly within alkaline or saline interior drainage basins. These sites are succulent shrub lands dominated by the halophytes Iodine Bush (Allenrolfea occidentalis) or several Seepweed (Suaeda) species.

NC
NORTH COASTAL SCRUB ALLIANCE

Subsection(s) 11, 12

Shrubby coastal or near-coastal areas of this zone may have sites with no dominant species. This type has been crosswalked from other sources within the South Coastal Santa Lucia Range and Santa Maria Valley Subsections (Coast Section) and is a mixture of some or all of the following shrubsSubsection(s) shrub form of California Bay (Umelllifera californica), Coyote Brush (Baccharis pilularis), Black Sage (Salvia mellifera), Menzies' Goldenbush (Isocoma menziesii), Sawtooth Goldenbush (Hazardia squarrosa), Poison Oak (Toxicodendron diversilobum) and California Sagebrush (Artemisia californica).

NM
RIPARIAN MIXED SHRUB ALLIANCE

Subsection(s) 11, 12, 17, 20

See description above

NR
RIPARIAN MIXED HARDWOOD ALLIANCE

Subsection(s) 1, 5, 6, 7, 11, 12, 14, 15, 17, 18, 20

See description above

NX
INTERIOR MIXED HARDWOOD ALLIANCE

Subsection(s) 1, 5, 6, 7, 14, 15, 17, 18, 20, 21, 22, 23

See description above

PC
COULTER PINE ALLIANCE

Subsection(s) 15, 18

See description above

PD
GRAY PINE ALLIANCE

Subsection(s) 5, 6, 7, 11, 14, 15, 16, 17, 18, 20, 21, 22

See description above

PM
BISHOP PINE ALLIANCE

Subsection(s) 11

See description above

PP
PONDEROSA PINE ALLIANCE

Subsection(s) 11

See description above

PR
MONTEREY PINE ALLIANCE

Subsection(s) 11, 12

See description above

QA
COAST LIVE OAK ALLIANCE

Subsection(s) 1, 5, 6, 7, 11, 12, 14, 15, 17, 18

See description above

QB
CALIFORNIA BAY ALLIANCE

Subsection(s) 6, 7, 11

See description above

QD
BLUE OAK ALLIANCE

Subsection(s) 5, 7, 11, 15, 16, 17, 18, 20, 21, 22, 23

See description above

QF
FREMONT COTTONWOOD ALLIANCE

Subsection(s) 11, 12, 20, 23

See description above

QL
VALLEY OAK ALLIANCE

Subsection(s) 1, 5, 6, 7, 11, 14, 15, 17, 18, 20, 22

See description above

QO
WILLOW ALLIANCE

Subsection(s) 1, 11, 12, 17

See description above

QP
CALIFORNIA SYCAMORE ALLIANCE

Subsection(s) 1, 5, 6, 7, 11, 14

See description above

QX
BLACK COTTONWOOD ALLIANCE

Subsection(s) 11

See description above

QZ
EUCALYPTUS ALLIANCE

Subsection(s) 1, 5, 6, 11, 12, 18

See description above

RD
REDWOOD - DOUGLAS-FIR ALLIANCE

Subsection(s) 6, 7

See description above

RS
RIVERSIDEAN ALLUVIAL SCRUB ALLIANCE

Subsection(s) 12, 21, 22, 23

Alluvial fans and dry washes in xeric, interior areas of this zone may contain a mixture of species, of which Scalebroom (Lepidospartum squamatum), California Buckwheat (Eriogonum fasciculatum), White Sage (Salvia apiana) and other shrubs and semi-woody shrubs may be prominent. Other species may be present, including Pricky-pear (Opuntia spp.), Chaparral Yucca (Y. whipplei), California Juniper (Juniperus californica) and Rhus species. This type has been crosswalked in three interior subsections of the Ranges Section.

RW
REDWOOD ALLIANCE

Subsection(s) 6

See description above

SB
BUCKWHEAT ALLIANCE

Subsection(s) 11, 22

See description above

SD
MANZANITA CHAPARRAL ALLIANCE

Subsection(s) 6, 7, 15

See description above

SH
COASTAL BLUFF SCRUB ALLIANCE

Subsection(s) 11, 12

Remnants of this formerly more widespread coastal Alliance are found in scattered locations of this zone, being currently crosswalked from secondary sources in the South Coastal Santa Lucia Range and Santa Maria Valley Subsections of the Coast Section. Indicator species may include Saltbush (Atriplex spp.), Sea-Dahlia (Coreopsis maritima), California Encelia (Encelia californica), Heather Goldenbush (Ericameria ericoides), Cucumber Vine (Marah macrocarpus), Coast Prickly Pear (Opuntia littoralis), Shaw's Agave (Agave shawii), and Lemonade berry (Rhus integrifolia) and non-natives such as Fig Marigold (Carpobrotus chilensis and Carpobrotus edulis), and Iceplant (Mesembryanthemum crystallinum). Other species may include Morning Glory (Calystegia spp.), Indian Paintbrush (Castilleja spp.), Fleabane Daisy (Erigeron spp.), Wooly Sunflower (Eriophyllum spp.), and Spineflower (Chorizanthe spp.).

SL
COASTAL LUPINE ALLIANCE

Subsection(s) 11, 12

Dune Lupine (Lupinus chamissonis), a California native, is an indicator species in coastal dunes in this Alliance in other zones. It may or may not become the dominant shrub in the vegetated dunes of this zone, but Lupines (Lupinus spp.) are often present in the general area of beach sands. The stabilized coastal dune habitat supports other species, including non-natives such as Fig Marigolds (Carpobrotus chilensis and C. edulis), Iceplants (Mesembryanthemum crystallinum and M. nodiflorum) and herbaceous annuals such as New Zealand Spinach (Tetragonia tetragonioides). Other associated perennials, shrubs and subshrubs that may occur in the coastal dune environment include Heather Goldenbush (Ericameria ericoides), California Sagebrush (Artemisia californica), Giant Woollystar (Eriastrum densifolium), Dune Buckwheat (Eriogonum parvifolium), California Croton (Croton californicus), Common Deerweed (Lotus scoparius), Sand Verbena (Abronia latifolia), Dune Senecio (Senecio blochmaniae), California-Aster (Lessingia filaginifolia), and perennial graminoids such as Carex spp. and Bromus spp. This type has been crosswalked from secondary sources in the South Coastal Santa Lucia Range and Santa Maria Valley Subsections of the Coast Section.

SP
SAGE (SALVIA) ALLIANCE

Subsection(s) 11, 12

Occasionally, species of Sage (Salvia spp.) become dominant shrubs or subshrubs in coastal or near-coastal areas. This type has been crosswalked from other data sources in the South Coastal Santa Lucia Range and Santa Maria Valley Subsections of the Coast Section. Both Purple Sage (S. leucophylla) and Black Sage (S. mellifera), and the matlike Creeping Sage (S. sonomensis) and Pitcher Sage (S. spathacea) are likely to be in the mixture of this coastal alliance in this zone.

SQ
SOFT SCRUB - MIXED CHAPARRAL ALLIANCE

Subsection(s) 11, 15, 16, 17, 18, 20, 21, 22, 23

See description above

SS
CALIFORNIA SAGEBRUSH ALLIANCE

Subsection(s) 5, 6, 7, 11, 12, 14, 15, 17, 18, 20, 21, 22

See description above

TX
MONTANE MIXED HARDWOOD ALLIANCE

Subsection(s) 6

This alliance generally occurs on sites favorable to the growth of conifers of this zone such as Knobcone Pine (Pinus attenuata), Douglas-fir (Pseudostuga menziesii) and Pacific Redwood (Sequoia sempervirens). Tanoak (Lithocarpus densiflorus), Black Oak (Quercus kelloggii) and Bigleaf Maple (Acer macrophyllum) are the indicator species of this hardwood mixture in this zone. Other species such as Blue, Canyon Live Oak or Interior Live Oak (Q. douglasii, Q. chrysolepis, Q. wislizenii) may be included, but are not the main species. The Alliance has been crosswalked within the Santa Cruz Mountains Subsection.

UB
URBAN OR DEVELOPED

Subsection(s) 1, 14, 17, 20, 22

See description above

WA
WATER

Subsection(s) 1

See description above

Surface water bodies have been crosswalked under the following categories:

W1: Rivers and Streams (natural, flowing surface waters)

Subsection(s) 1, 5, 6, 11, 12, 15, 20

W2: Perennial Lakes and Ponds (natural lacustrine bodies)

Subsection(s) 5, 6, 7, 11, 12, 14, 15, 17, 18, 20, 21, 22, 23

W3: Reservoirs (man-made lakes and ponds)

Subsection(s) 5, 6, 7, 11, 12, 14, 15, 17, 18, 20, 21, 22, 23

W4: Bays or Estuaries (near-shore ocean features)

Subsection(s) 1, 11, 12

W5: Playas (desert basin features)

Subsection(s) 15

W6: Intermittent Stream Channel (seasonally flowing channeled waters)

Subsection(s) 21

W7: Ocean

Subsection(s) 11, 12

W8: Intermittent or Seasonal Lake or Pond (occasionally drained surface waters)

Subsection(s) 1, 5, 11, 14, 15, 16, 17, 18, 21, 22

W9: Exposed Non-water Features (gravel, sand bars, cliff faces, etc.)

Subsection(s) 5, 15, 16, 17, 20

WL
WILLOW (SHRUB) ALLIANCE

Subsection(s) 1, 5, 11, 12, 15, 17, 18, 23

See description above

Sections and Subsections

261A - Central California Coast Section

1. Suisun Hills and Valleys (261Aa)
2. Bay Flats (261Ab)
3. East Bay Hills - Mt. Diablo (261Ac)
4. East Bay Terraces and Alluvium (261Ad)
5. Santa Clara Valley (261Ae)
6. Santa Cruz Mountains (261Af)
7. Leeward Hills (261Ag)
8. Watsonville Plain - Salinas Valley (261Ah)
9. San Francisco Peninsula (261Ai)
10. North Coastal Santa Lucia Range (261Aj)

11. South Coastal Santa Lucia Range (261Ak)
12. Santa Maria Valley (261Al)

M262A - Central California Coast Ranges Section

13. Fremont - Livermore Hills and Valleys (M262Aa)
14. Western Diablo Range (M262Ab)
15. Diablo Range (M262Ac)
16. Eastern Hills (M262Ad)
17. Interior Santa Lucia Range (M262Ae)
18. Gabilan Range (M262Af)
19. Kettleman Hills and Valleys (M262Ag)
20. Paso Robles Hills and Valleys (M262Ah)
21. Carrizon Plain (M262Ai)
22. Caliente Range - Cuyama Valley (M262Aj)
23. Temblor Range (M 262Ak)