

**California Wildlife Habitat Relationships System  
California Department of Fish and Game  
California Interagency Wildlife Task Group**

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## Orchard-Vineyard

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### Vegetation

**Structure**—Orchards in California are typically open single species tree dominated habitats. Depending on the tree type and pruning methods they are usually low, bushy trees with an open understory to facilitate harvest. Trees such as citrus, avocados, and olives are evergreen, others are deciduous. Many tree species range in height at maturity from 5 to 10 m (15 to 30 ft) but may be 3 m (10 ft) or less in pomegranates and some dwarf varieties, or 18 m (60 ft) or more in walnuts and date palms (Sunset 1972). Crowns often do not touch, and are usually in a linear pattern. Spacing between trees is uniform depending on desired spread of mature trees. The understory is usually composed of low-growing grasses and other herbaceous plants, but may be managed to prevent understory growth totally or partially, such as along tree rows.

Similarly, vineyards are composed of single species planted in rows, usually supported on wood and wire trellises. Vines are normally intertwined in the rows but open between rows. Rows under the vines are usually sprayed with herbicides to prevent growth of herbaceous plants. Between rows of vines, grasses and other herbaceous plants may be planted or allowed to grow as a cover crop to control erosion.

**Composition**— The 1982 Crop Report (California Department of Food and Agriculture 1983) indicated production of 20 orchard crops and five vine crops. It was also reported that 1, 177,100 acres of orchards and 615,800 acres of vineyards were in production. Of the producing orchards about 263,000 acres were citrus (oranges, lemons, grapefruit and tangerines), 534,000 acres were nuts (almonds, walnuts and pistachios) and about 380,000 acres were in other fruit trees (apples, apricots, avocados, cherries, dates, figs, nectarines, olives, peaches, pears, plums, pomegranates and prunes). Producing vineyards were primarily grapes (611,300 acres) with kiwi fruit, boysenberries, olalliberries and raspberries making up the remainder. The Bureau of Census (1984) reported there were 2,158,437 acres of bearing and non-bearing orchard and vineyards in California in 1982.

The understory in both orchards and vineyards usually consists of bare soil (controlled by tillage and/or herbicides) or a cover crop of herbaceous plants. The cover crop can be composed of either natural or planted domesticated herbaceous plants. Natural herbaceous plants commonly consist of perennial grasses such as Bermuda; or annual grasses such as soft chess, annual ryegrass, johnsongrass, wild oats, red brome, red fescue, barnyard grass, and others or forbs such as wild mustard, fiddleneck, or filigree, depending on seed sources in the area. Numerous grasses and legumes are planted as

cover crops in orchards and vineyards either as single species or in mixes. Cover crops of domesticated grasses and legumes generally fall into four categories (Finch and Sharp, 1981):

- 1) Annually seeded winter growing grasses and legumes, such as cereal rye, barley, annual ryegrass and purple vetch;
- 2) Reseeding winter annual grasses and legumes, such as Blando brome, zorro annual fescue, Wimmera-62 ryegrass, annual bluegrass, lana woolypod vetch, orse clover, crimson clover, bur clover, subclover, and black medic;
- 3) Summer annuals such as Sudan grass, grain, sorghums, and California blackeye bean; and
- 4) Perennial grasses and legumes such as tall fescue, creeping red fescue, orchardgrass, perennial ryegrass, narrowleaf trefoil, Salina strawberry clover, and ladino clover.

**Other Classifications**— Most vegetation classification systems include orchards and vineyards in more general categories, such as Agriculture (California Department of Fish & Game, 1966), and Urban/Agriculture (Parker and Matyas 1981).

## Habitat Stages

**Vegetation Changes**— Orchards are planted in uniform patterns and intensively managed. They are usually established as sapling trees (2), and most are managed to grow to small tree (4) size. However, trees such as walnuts grow to size class medium/large (5). Canopy closure classes range from sparse (S) to dense (D). As trees become old or in some way damaged or diseased they are usually replaced. In some cases however, entire orchards may be replaced with young trees. A few orchards have been abandoned, especially in the gold rush country of the Sierra Nevada Mountains. They are eventually invaded by native or naturalized herbaceous plants followed by shrubs and trees.

Similarly, vineyards are usually composed of young (2) or mature (3) shrub size classes and have sparse (S) or open (O) canopy closure classes. Both orchards and vineyards usually have some growth of herbaceous plants in the understory.

**Duration of Stages**— Duration of orchards and vineyards vary depending on species, however both are long lived. Generally grapes will persist for over 40 years and will be replaced usually because of disease. Fruit and nut trees are also long lived, however most are replaced at approximately 35-40 years old. Replacement of such orchards is usually a result of product price fluctuations or a decline in productivity.

## Biological Setting

**Habitat**— Orchards and vineyards are typically associated with other agricultural types such as cropland (CRP) and pasture (PAS), and some are near urban types. They are frequently associated with Valley-Foothill Riparian (VRI) areas, shrub habitats (Mixed chaparral (MCH)), herbaceous types such as Annual Grasslands (AGS), a few tree types such as Valley-Foothill Hardwood (VFH), Valley-Foothill Hardwood-Conifer (VHC) and Ponderosa Pine (PPN).

**Wildlife Considerations**— Orchards and vineyards have been planted on deep fertile soils which once supported productive and diverse natural habitats. Larger and more diverse populations of wildlife were also supported by these native habitats. However, some species of birds and mammals have adapted to the orchard and vineyard habitats. Many have become “agricultural pests” which has resulted in intensive efforts to reduce crop losses through fencing, sound guns, or other management techniques.

Wildlife such as deer and rabbits browse on the trees or vines; other wildlife such as squirrels and numerous birds feed on fruit or nuts. Some wildlife (e.g., morning dove, California quail) are more passive in their use of the habitat for cover and nesting sites. Evergreen orchards can be especially beneficial to wildlife during inclement weather in winter or in hot summer periods. Water and shade can also be beneficial in irrigated orchards. Many wildlife species act as biological control agents by feeding on weed seeds or insect pests. The literature is generally lacking on wildlife associated with these habitats except as it relates to pests and pest control. Martin et al. (1951) give an overview of wildlife use of plants for food. Examples of wildlife reported to commonly feed on nuts (almonds and walnuts) include northern flicker, scrub jay, American crow, plain titmouse, Brewer’s blackbird, house finch, and California ground squirrel. Some other orchard crops such as apples, cherries, figs, pears and prunes are also eaten by these same species plus others such as band-tailed pigeon, yellow-billed magpie, western bluebird, American robin, varied thrush, northern mockingbird, cedar waxwing, yellow-rumped warbler, black-headed grosbeak, Bullock’s oriole, desert cottontail, western gray squirrel, coyote, black bear, raccoon, and mule deer.

## Physical Setting

Orchards and vineyards can be found on flat alluvial soils in the valley floors, in rolling foothill areas, or on relatively steep slopes. Though some orchards are non-irrigated, most are irrigated. Some flat soils are flood irrigated, but most orchards and vineyards are sprinkler irrigated. Large numbers of orchards and vineyards are irrigated by drip or trickle irrigation systems. Most orchards and vineyards are in valley or foothill areas, with a few up to 3000 feet elevation. Many are not very tolerant of frost.

## Distribution

In 1985 there were nearly 2,160,000 acres of orchards and vineyards in California. Commercial orchard and vineyard crops are grown in every county except Alpine,

Lassen, Modoc, Mono, Plumas, San Francisco, and Trinity counties.

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