

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

EVERGREEN ORCHARD

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Vegetation

Structure-- Evergreen 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. Evergreen orchards include trees, such as, avocados, dates, grapefruit, lemons, limes, olives, oranges, tangerines, tangelos and tangors. Trees range in height at maturity for many species from 5 to 10 m (15 to 30 ft), but may be 3m (10 ft) or less in some dwarf varieties, or 18 m (60 ft) or more in 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, legumes, and other herbaceous plants, but may be managed to prevent understory growth totally or partially, such as along tree rows.

Composition-- The California Agriculture- Statistical Review 1990 (California Department of Food and Agriculture, 1991) indicated that of the 10 evergreen orchard crops mentioned above there were about 359,800 acres in production. Acres by type were approximately:

Avocados	75,000	acres
Dates	5,000	"
Olives	30,400	"
Grapefruit	19,200	"
Lemon	47,800	"
Oranges	175,100	"
Other Citrus	7,300	"
TOTAL	359,800	acres

The understory in evergreen orchards usually consists of bare soil (controlled by tillage and/or herbicides) or in a few instances a cover crop of herbaceous plants. The cover crop can be composed of either naturalized or planted domesticated herbaceous plants. Natural herbaceous plants commonly consist of perennial grasses such as bermuda or johnsongrass; or annual grasses such as soft chess, annual ryegrass, wildoats, red brome, red fescue, barnyardgrass, and others; or forbs such as wild mustard, fiddleneck, and filaree, depending on seed sources in the area.

Numerous grasses and legumes are planted as cover crops in evergreen orchards 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, rose 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 evergreen orchards in more general categories, such as, Agriculture (California Department of Fish and Game, 1966), Urban/Agriculture (Parker and Matyas, 1981).

Habitat Stages

Vegetation Changes-- Evergreen 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 trees (4) size. However, trees such as dates grow to size class medium/large trees (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. They are eventually invaded by native or naturalized herbaceous plants followed by shrubs and trees. Orchards usually have some growth of herbaceous plants in the understory.

Duration of Stages-- Duration of evergreen orchards vary depending on species. Some are 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 are typically associated with other agricultural types such as Irrigated Grain and Seed Crops (GRI), Row and Field Crops (RFC), Pasture (PAS), and some are near urban (URB) types. They are frequently associated with Valley-Foothill Riparian (VRI) areas, shrub habitats (Mixed chaparral (MCH), Chamise-Redshank Chaparral (CRC), and Coastal Scrub (CSC*)), herbaceous types, such as, Annual Grasslands (AGS), a few tree types, such as, ValleyFoothill Hardwood (VFH), and Valley-Foothill Hardwood-Conifer (VHC).

Wildlife Considerations-- Evergreen orchards 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 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 rabbit browse on the trees; other wildlife such as squirrel and numerous birds feed on fruit. Cover crops can provide a source of food for wildlife that feed on seeds or herbaceous vegetation. 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 hot summer periods. Water can be beneficial in irrigated orchards. Many wildlife species act as biological control agents by feeding on weed seeds and insect pests. The literature is generally lacking on wildlife associated with these habitats except as it relates to pests and pest control. Evergreen orchards do not provide the food for wildlife that many of the deciduous fruit and nut trees provide.

Physical Setting

Evergreen orchards can be found on flat alluvial soils in the valley floors, in rolling foothill areas, or on relatively steep slopes. All are irrigated. Some flat soils are flood irrigated, such as with dates, but most evergreen orchards are sprinkler irrigated. Large numbers of orchards are irrigated by drip or trickle irrigation systems. Most evergreen orchards are in valley or foothill areas. Except for olive, most evergreen orchard trees are not very frost tolerant.

Distribution

In 1990 there were nearly 359,800 acres of evergreen orchards in California. Commercial evergreen orchards are grown in the warmer parts of California, because they are not very frost tolerant.

Literature Cited

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