

## VALLEY ELDERBERRY LONGHORN BEETLE

*Desmocerus californicus dimorphus*

USFWS: Threatened

CDFG: none

### Species Account

**Status and Description.** The valley elderberry longhorn beetle was listed as a federally Threatened Species on August 8, 1980 (45 FR 52803). In October 2006, the USFWS recommended this species delisting. On August 19, 2011, the USFWS found the petition to delist the valley elderberry longhorn beetle was warranted. In the mean time, the species remains listed as threatened. Adult beetles are large and stout-bodied. Male beetles, measured from head to abdomen, are 13-21 millimeters in length with their antenna about as long as their body (USFWS 1999). Females are more robust than males and range from 18-25 millimeters in length with a slightly shorter antenna. Valley elderberry longhorn beetles are black or very dark gray in color with a red-orange border on their elytra (forewings). Males' elytra have four oblong dark spots and prominently show the bright red-orange coloration. Females and some males are colored mostly dark with only a small band of red-orange color along the front margin of the elytra.



**Range, Populations and Activity.** The historical range of this taxon is restricted to the Central Valley of California. Prior to 1984, the valley elderberry longhorn beetle was known only from a few sites along the American River (Sacramento County), Putah Creek (Solano and Yolo Counties), and a single site along the Merced River (Merced County) (Linsley and Chemsak 1972, USFWS 1984). In 1985, observations of this species were made along the Sacramento River near Knights Landing (Yolo County), Grimes (Colusa County), and Red Bluff (Tehama County) (Jones and Stokes 1985). During 1987, additional sightings were made near Colusa (Colusa County), Butte City (Glenn County), and Sidds Landing (Butte County) (Jones and Stokes 1987a, b). The valley elderberry longhorn beetle has also been observed near Sloughouse (Sacramento County) (Kellner 1986, 1992).

Valley elderberry longhorn beetles current distribution is sparsely located throughout the Central Valley in the remaining elderberry habitat from Redding to Bakersfield. Recent surveys have only located the species in scattered localities along the Sacramento, American, San Joaquin, Kings, Kaweah, and Tule rivers and their tributaries (UC Berkeley 2000). In 1991, Barr (1991) found beetle activity at 28% of the 230 elderberry-habitat sites she surveyed. Beetle activity was distributed unevenly among elderberry shrubs with particular trees or clumps showing more activity than others. In surveys conducted in 1997, Collinge *et al.* (2001) found that in the northern half of its geographic range, the beetle occurred in drainages that function as distinct, relatively isolated metapopulations.

The life history of valley elderberry longhorn beetles is not well known. Adult beetles are active from March to June, which is their assumed breeding season (USFWS 1984). Elderberry longhorn beetles are known to lay eggs in the crevices of bark of elderberry trees (Craighead 1923), although female valley longhorn elderberry beetles have been observed ovipositing eggs at a branch approximately two feet long and 1/8–1/4 inch in diameter at its tip (Kellner 1986). The larvae hatch in a few days (ten or more) and bore into the stem of elderberries where they feed on the pith.

Thereafter, the larvae cut an emergence/exit hole through the wood and bark of an elderberry tree. The larvae pupate inside the stem and emerge as adult beetles in the spring. The beetles may require two or more years to complete their life cycle (Kellner 1986, Craighead 1923, Burke 1921). The life span of adults is unknown, but they are presumed to die after reproducing (USFWS 1999).

Adult beetles feed on the leaves of elderberry trees and possibly the flowers (Kellner 1986).

**Habitat Use.** The valley elderberry longhorn beetle is closely associated with blue elderberry (*Sambucus nigra*), which is an obligate host for beetle larvae. Adult valley elderberry longhorn beetles are usually found upon or flying between elderberry plants.

The valley elderberry longhorn beetle appears to be attracted to "stressed" or unhealthy elderberry trees (Kellner 1992). Stressed trees have more yellow in the leaves and have leaves that fall earlier in the summer than "healthy" trees. Elderberry trees containing longhorn beetle emergence holes appeared to be less healthy and have less foliage than trees without emergence holes (Kellner 1992).

Besides exhibiting a preference for "stressed" elderberry trees, the valley elderberry longhorn beetle prefers trees of a certain size class. Exit holes are more frequently found in trunks or branches that are 14.7-66.15 centimeters in circumference (5-20 centimeters in diameter) (Kellner 1986, 1992) or at least 1.0 inch or greater in diameter at ground level (USFWS 1999), and in branches less than 1 meter off the ground (Collinge *et al.* 2001). Smaller elderberry trees may have too great a distance between the pith and bark for beetles to tunnel an emergence hole. Surveys conducted in 1991 and 1997 by Collinge *et al.* (2001) found exit holes to more consistently occur in clumps of elderberry bushes rather than in isolated bushes. Observed beetle infestation frequencies in elderberry trees ranged from 20-50% along the American River (USFWS 1984), to usually less than 20% along the Sacramento River (Jones and Stokes 1985). Because larvae sometimes die prior to cutting an exit hole or have yet to fully develop, larval activity can be found in elderberry stems without showing evidence of an exit (USFWS 1999).

**Population Levels and Occurrence in Plan Area.** Valley elderberry longhorn beetles are typical of elderberry plants growing within the Riparian vegetation of the Riparian, Streams, and Freshwater Marsh Natural Community within the Plan Area. The species can occasionally be found in elderberry shrubs located within the Inner Coast Range and Valley Floor Grassland and Vernal Pool Natural Communities as well. In Solano County, valley elderberry longhorn beetles are known from 15 locations, most of which are along Alamo and Ulatis Creeks in Vacaville, Putah Creek, and in one in the Green Valley area of Fairfield. Suitable habitat occurs along many other streams and adjacent upland areas within the County. The Recovery Plan for the valley elderberry longhorn beetle (USFWS 1984) considers an area along Putah Creek in Solano County as essential habitat.

**Dispersal.** Since the spatial distribution of the valley elderberry longhorn beetle is often minimal (Barr 1991), the beetle is assumed to be a poor disperser (Collinge *et al.* 2001). This lack of dispersing capability and the beetles' presumed naturally low population densities (USFWS 1984) results in an increased vulnerability to impacts from habitat fragmentation (USFWS 1999). Non-fragmented stands of elderberries are essential for dispersal corridors for the species and may be necessary to maintain long-term gene-flow over large areas.

**Threats to the Species.** Alteration and fragmentation of riparian habitats are the main threats to the valley elderberry longhorn beetle. The construction of dams, dikes, levees, stream and river

channelization, drainage works, bypasses, and bank protection systems has altered and continues to impact the habitat of valley elderberry longhorn beetles. Other threats to the survival of the beetle include agricultural conversion, grazing, rip-rapping of shoreline, and urban and recreational development (USFWS 1999). Insecticide use and vegetation control practices may also impact beetle populations (USFWS 1999). Additionally, Huxel (2000) postulated that the introduced, invasive Argentine ant (*Linepithema humile*) may exclude populations of valley elderberry longhorn beetles from otherwise suitable habitat. Habitat destruction through vegetation removal probably has had the most deleterious effect on the distribution and abundance of the valley elderberry longhorn beetle (Kellner 1986).

**Critical Habitat.** Critical habitat was designated for the valley elderberry longhorn beetle on August 8, 1980 (45 FR 52803 52807). The Service designated two critical habitat areas along the American River in the Sacramento area. According to the Recovery Plan for the species (USFWS 1984), an area along Putah Creek in Solano County and an area west of the Nimbus Dam along the American River Parkway in Sacramento County are considered essential habitat.

**Conservation Issues.** The primary threats to the valley elderberry longhorn beetle in the County are loss of elderberry and riparian habitat associated with flood control activities and urban and agricultural development along stream courses.

Maintenance of dispersal corridors is a very important conservation issue because of the fragmentation of habitat along existing watercourses. Establishing and maintaining connectivity of the Solano County populations of the valley elderberry longhorn beetle with those along the Sacramento River could be considered critical for maintaining healthy populations. Connections should be maintained along Ulatis Creek and its tributaries (Alamo, Sweeney, McCune, Gibson Canyon, etc.) with Cache Slough and the Sacramento River. The fragmented stands of elderberry along the Sacramento River should be connected such that there could be dispersal to and from other populations of the valley elderberry longhorn beetle outside of Solano County.

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