

## A.21 VALLEY ELDERBERRY LONGHORN BEETLE (*DESMOCERUS CALIFORNICUS DIMORPHUS*)

### A.21.1 Legal and Other Status

The Valley elderberry longhorn beetle is listed as threatened under the ESA (45 FR 52803). The U.S. Fish and Wildlife Service (USFWS) announced a recommendation for this species to be removed from the endangered species list on October 2, 2006 (USFWS 2006a).

While critical habitat was designated for this species, none exists in Butte County.

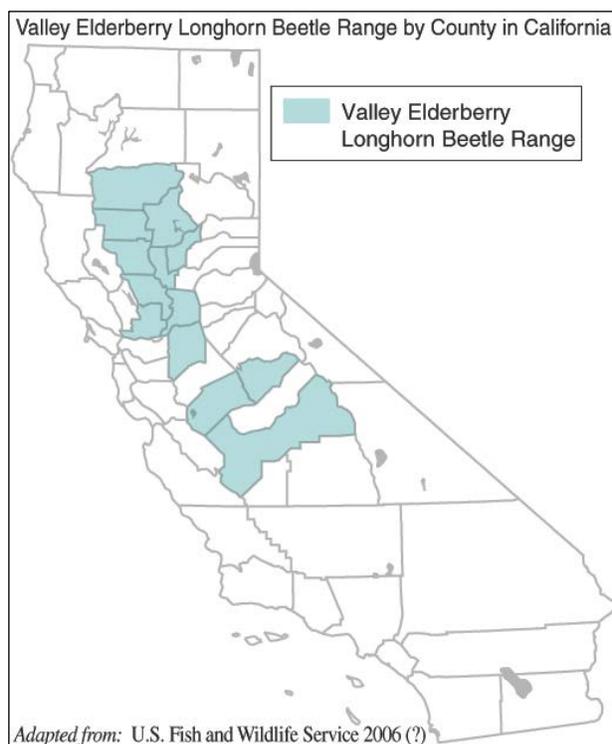


photo courtesy BCAG

### A.21.2 Species Distribution and Status

#### A.21.2.1 Range and Status

Historically, valley elderberry longhorn beetle occurred throughout the Central Valley of California. While little is known about the historical abundance of this species, the extensive destruction of its habitat suggests that the beetle's range has been greatly reduced and fragmented (USFWS 1984). The beetle tends to be located in population clusters that are not evenly distributed across the Central Valley.



#### A.21.2.2 Distribution and Status in the Plan Area

Valley elderberry longhorn beetle has been recorded from several locations along the Sacramento River and a few along Big Chico Creek and Butte Creek between 1986 and 1998. The habitat at these locations consists of riparian woodland with elderberry dominant or present within cottonwoods and willows; valley oak riparian surrounded by fallow fields; and savanna-like areas with herbs, grasses, and massive clusters of elderberry scattered throughout.

Adult beetles have been observed, along with numerous accounts of old and new exit holes from the stems of elderberry. No California Natural Diversity Database (CNDDB)

recorded observations have been made (see Figure A.21-1, *Valley Elderberry Longhorn Beetle Modeled Habitat and Recorded Occurrences*).

### A.21.3 Habitat Requirements and Special Considerations

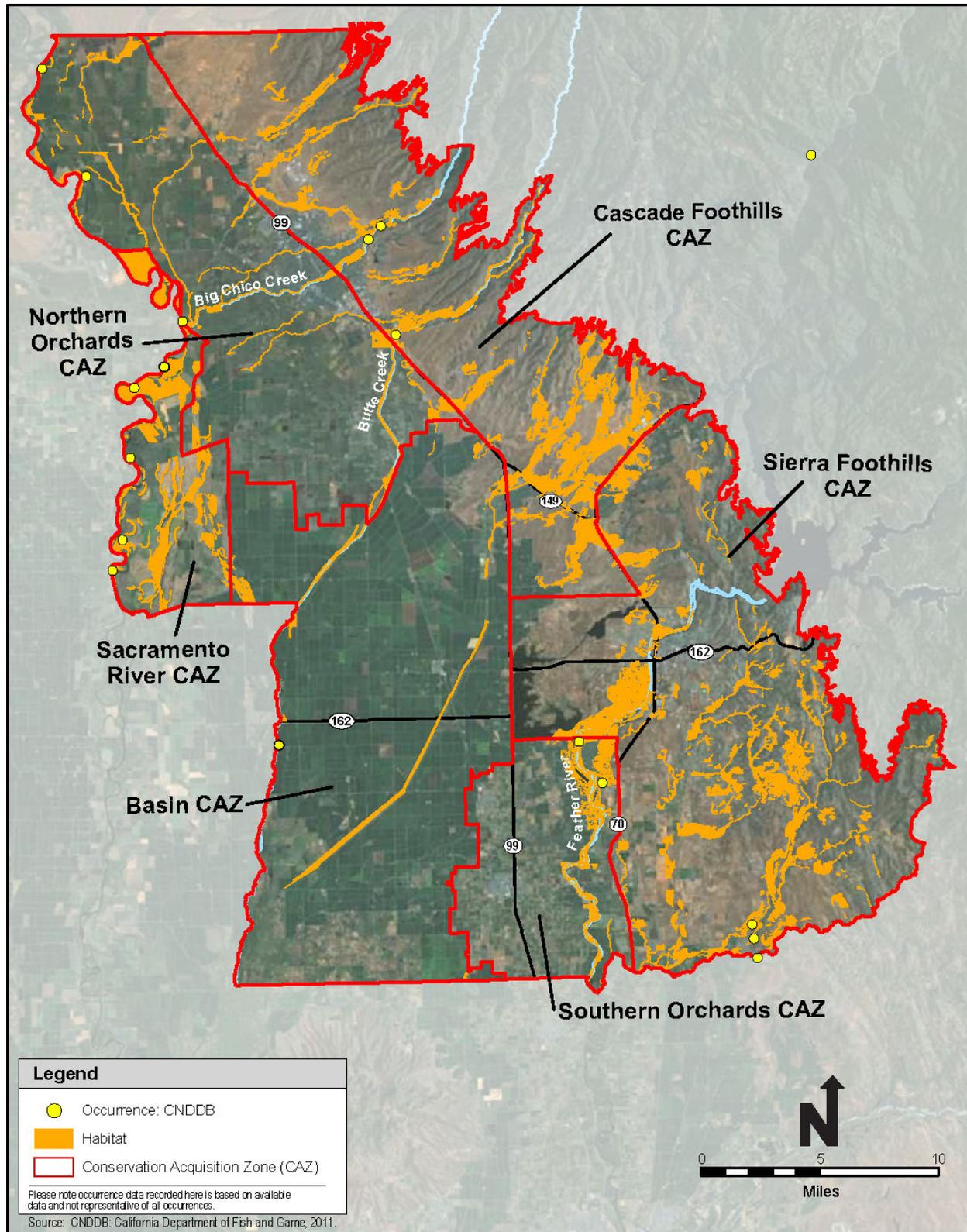
Valley elderberry longhorn beetle is endemic to moist valley oak riparian corridors in the lower Sacramento and lower San Joaquin Valleys (USFWS 1984). It is closely associated with a few species of elderberry (*Sambucus* spp.), which are obligate host plants for larvae and necessary for the completion of the life cycle. The two main species of elderberry utilized by this species are the blue elderberry (*S. mexicana*) and red elderberry (*S. racemosa*). Both of these species occur in Butte County. The existing remnants of riparian woodland and forest within the distribution of valley elderberry longhorn beetle are a collection of various canopy layers and dominant species. The optimal riparian ecosystem consists of several canopy layers with dense understory. Fremont cottonwood (*Populus fremontii*), California sycamore (*Platanus racemosa*), willow (*Salix* spp.), and valley oak (*Quercus lobata*) typically compose the upper canopy of the (USFWS 1984). Common species contributing to the intermediate canopy include box elder (*Acer negundo* var. *californicum*), Oregon ash (*Fraxinus latifolia*), elderberries, and several willows. The understory can be widely diverse and includes many nonnative species (USFWS 1984). In some areas, the margins of riparian woodlands and forests are lined with elderberry savanna with *S. mexicana* as the dominant species (Holland 1986).

### A.21.4 Life History

Little research has been conducted on the life cycle of valley elderberry longhorn beetle. Therefore, current knowledge has been gathered from individual field observations and assumed similarities with closely related taxa. The following account of the life cycle chronicles the one reported in the USFWS Recovery Plan (1984).

Valley elderberry longhorn beetle is found from mid-March through early-June, but is most active from late-April to mid-May. Adult beetles feed on the elderberry foliage, and possibly its flowers. During this time of activity, the beetles mate, and the females lay eggs on living elderberry plants. Eggs are placed individually or in small clusters within crevices in the bark or junctions of the stem and trunk or leaf petiole and stem. Eggs hatch after a short time and the larvae will bore into the stem of the elderberry. Larvae tunnel through the trunks and roots, eating the pith as their only source of food.

Before larvae form pupas in the pith of the elderberry, they tunnel to the surface and open an emergence hole through the bark. One or two years later, the adults emerge through these exit holes in the bark. The exit holes are distinctive and typically are the only sign of the beetle's presence. The timing of adult emergence is similar to the flowering season of the elderberry host.



**Figure A.21-1. Valley Elderberry Longhorn Beetle Modeled Habitat and Recorded Occurrences**

### A.21.5 Threats

Valley elderberry longhorn beetle is in long-term decline caused by human activities that have resulted in widespread alteration and fragmentation of riparian habitats, and, to a lesser extent, upland habitats, which support the beetle.

The primary threats to survival of the beetle include loss and alteration of habitat by agricultural conversion; inappropriate grazing; levee construction; stream and river channelization; removal of riparian vegetation; rip-rapping of shorelines; nonnative species such as the Argentine ant (*Linepithema humile*), a predator of the early phases of the beetle; and recreational, industrial, and urban development.

The beetle's distribution may be limited by the use of insecticide and herbicide in agricultural areas and along roadways. Declining quality and maturity of elderberry shrubs/trees as individuals and stands may be another cause of the beetle's limited distribution (USFWS 1984).

### A.21.6 Relevant Conservation Efforts

Conservation Guidelines for the Valley Elderberry Longhorn Beetle were established by the USFWS in 1999 (USFWS 1999). They were designed primarily to mitigate development-related impacts on valley elderberry longhorn beetle habitat. Using a formula based on stem sizes, habitat association, and presence of emergence holes, the guidelines require losses of elderberry shrubs that meet the minimum standard for potential occupancy to be mitigated through a program that: 1) identifies and secures suitable and approved mitigation land, and 2) includes transplanting of mature elderberry shrubs to the mitigation site, and replacement compensation using a standardized stem replacement formula. Numerous private valley elderberry longhorn beetle mitigation banks have become established throughout the Sacramento region in response to the increasing need for valley elderberry longhorn beetle mitigation. While the USFWS valley elderberry longhorn beetle mitigation compensates for the loss of elderberry shrubs (USFWS 1999), there is no evidence that it has been successful at compensating for the loss of occupied valley elderberry longhorn beetle habitat or mitigating direct impacts on valley elderberry longhorn beetle.

Several regional conservation plans have also addressed the conservation of valley elderberry longhorn beetle. It is a covered species under the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan and the Natomas Basin Habitat Conservation Plan, as well as proposed for coverage under the South Sacramento Habitat Conservation Plan, the Solano County Multispecies Habitat Conservation Plan, the Yolo County Natural Heritage Program Plan, the Placer County Conservation Plan, and the Bay Delta Conservation Plan.

## A.21.7 Species Habitat Suitability Models

### A.21.7.1 Habitat

Habitat for the valley elderberry longhorn beetle in the Plan Area consists of the following:

1. Riparian vegetation (the cottonwood-willow riparian forest, valley oak riparian forest, willow scrub and dredger tailings with riparian land cover types).
2. Grassland adjacent to riparian vegetation:
  - Grasslands within one quarter mile of the cottonwood-willow riparian forest, valley oak riparian forest, and willow scrub riparian land cover types and riparian vegetation land cover types listed above; and
  - Grasslands within one quarter mile from perennial streams.
3. Undeveloped/undisturbed land cover types alongside and within the Cherokee Canal (e.g., within the levees on either sides of the canals).

### A.21.7.2 Assumptions

As stated before, the valley elderberry longhorn beetle is endemic to moist valley oak riparian corridors in the Sacramento and San Joaquin Valleys (USFWS 1984). It is completely dependent on its host plant, the elderberry (*Sambucus* species) (Collinge et al. 2001). The model identifies habitat for the valley elderberry longhorn beetle as locations where elderberry shrubs are expected to be in the Plan Area. Elderberry is a common component of the remaining riparian forests and woodlands of the Central Valley (USFWS 1984). Fremont cottonwood (*Populus fremontii*), California sycamore (*Platanus racemosa*), willow (*Salix* spp.), and valley oak (*Quercus lobata*) commonly compose the upper canopy of these forests (USFWS 1984). The cottonwood-willow riparian forest, valley oak riparian forest and willow scrub land cover types encompass these forests and woodlands. Elderberry is also found in grassland adjacent to riparian forests and woodlands (Barr 1991). Therefore, this model designates additional habitat as grasslands within one quarter mile of perennial streams (with and without riparian vegetation). Finally, areas contained by and within 50 feet of the Cherokee Canal are known to harbor elderberry shrubs and are also included in the model (Estep pers. comm.).

## A.21.8 Recovery Plan Goals

The Recovery plan for valley elderberry longhorn beetle was established in 1984 (USFWS 1984). Due to limited knowledge of the species requirements, recovery objectives were restricted to these: (1) preserve and protect known habitat sites to provide adequate conditions for the beetle; (2) survey riparian vegetation along certain Central Valley rivers for remaining colonies and habitat; (3) determine ecological requirements and management needs; (4) preserve and protect newly discovered habitat to provide suitable conditions for the species; (5) reestablish the species at rehabilitated habitat sites within the presumed historical range; (6)

increase public awareness of the species through education and information programs; and (7) enforce laws and regulations to protect the species.

## A.21.9 References

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45 FR 52803. 1980. Listing the Valley Elderberry Longhorn Beetle as a Threatened Species with Critical Habitat. Final Rule. *Federal Register* 45:52803.

**Personal Communications**

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