Valley Elderberry Longhorn Beetle
(Desmocerus californicus dimorphus)

5-Year Review:
Summary and Evaluation

U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
Sacramento, California

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5-YEAR REVIEW
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1. GENERAL INFORMATION

1.1. Contacts

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1.2. Methodology used to complete the review:

This review was prepared by Sacramento Fish and Wildlife Office (SFWO) staff using information from: (a) a status review that was prepared by an entomologist from the private sector and two entomologists at the University of California at Davis; (b) the 1984 *Recovery Plan for the Valley Elderberry Longhorn Beetle* (Recovery Plan) (U.S. Fish and Wildlife Service 1984); (c) peer-reviewed journal articles; and (d) documents generated as part of section 7 and section 10 consultations. The status review, peer-reviewed journal articles, Recovery Plan, and section 7 and section 10 consultations were our primary sources of information used to update the species status and threats sections of this review. All information provided during the public request for information was used during this review. A structured decision making was used to review all of the information collected for this review and to determine an appropriate recommendation.

1.3. Background:

1.3.1. FR Notice citation announcing initiation of this review:

On July 7, 2005, the U.S. Fish and Wildlife Service announced initiation of the five-year review for valley elderberry longhorn beetle and asked for information from the public regarding the species' status (70 FR 39327). A second notice announcing the five-year review and extending the public request for information until January 3, 2006, was published on November 3, 2005 (70 FR 66842). Information was received from three individuals/groups during this period.

1.3.2. Listing history

Original Listing
Federal Register notice: 45 FR 52803
Date listed: August 8, 1980
Entity listed: subspecies
Classification: Threatened

1.3.3. Associated rulemakings

Critical Habitat: 45 FR 52803

1.3.4. Review History

1984 *Recovery Plan for the Valley Elderberry Longhorn Beetle*

1988, 1994, 1996, and 1999 Conservation guidelines for the valley elderberry longhorn beetle

1991 *The distribution, habitat, and status of the valley elderberry longhorn beetle Desmocerus californicus dimorphus* Fisher *(Insecta: Coleoptera: Cerambycidae)* prepared by Cheryl Barr for the Service

1.3.5. Species' Recovery Priority Number at start of 5-year review

The current priority number for the valley elderberry longhorn beetle is 9. This number indicates the animal is a subspecies that is under moderate threat with a high recovery potential.

1.3.6. Recovery Plan or Outline

Name of plan: *Valley Elderberry Longhorn Beetle Recovery Plan*
Date issued: June 8, 1984
Dates of previous revisions: Not Applicable

2. REVIEW ANALYSIS

2.1. Application of the 1996 Distinct Population Segment (DPS) policy

2.1.1. Is the species under review a vertebrate?

No. The Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This definition limits listing as DPS to only vertebrate species of fish and wildlife. Because the species under review is an insect and the DPS policy is not applicable, the application of the DPS policy to the species listing is not addressed further in this review.

2.2. Recovery Criteria

2.2.1. Does the species have a final, approved recovery plan containing objective, measurable criteria?

No. The 1984 Recovery Plan does not contain objective, measurable recovery criteria. At the time the Recovery Plan was written, there was insufficient information regarding the species' needs to develop specific recovery criteria. Instead, interim objectives and actions were outlined in the Recovery Plan. New information regarding the beetle's distribution, biology, and ecology indicate that the recovery criteria may no longer be appropriate for this species. A discussion of each of the primary interim objectives included in the Recovery Plan and progress made towards each of those primary interim objectives is provided below.

However, because those criteria may no longer be appropriate, this review is based upon the most current information about species status and an assessment of threats.

Primary Interim Objective 1. Preserve and protect known habitat sites to provide adequate conditions for the beetle. The Recovery Plan discussed the protection of those sites known to be occupied by the valley elderberry longhorn beetle (beetle) at the time the Recovery Plan was written. These sites include: American River (Sacramento County), Putah Creek (Yolo and Solano Counties), and the Merced River (Merced County).

The majority of the beetle's habitat along the lower American River has been protected as part of the approximately 4,600 acre American River Parkway, which includes both designated critical habitat and essential habitat (as described in the Recovery Plan) for the species. The American River Parkway is a public use area with utility maintenance activities (e.g., power lines) and recreational activities consisting of biking, hiking, horse back riding and river access. According to Talley *et al.* (2006), the American River Parkway appears to provide sufficient protections for the beetle and those activities that do occur there such as road and trail maintenance do not appear to harm the beetle (e.g., Klasson *et al.* 2005, Talley 2005, Talley *et al.* 2006). Although some activities occur in the American River Parkway that may impact habitat (e.g., cutting of branches from shrubs for trail maintenance), they likely do not result in a significant amount of beetle habitat loss.

The majority of lands along Putah Creek are agricultural lands in private ownership. The status of the beetle and its habitat on most of these private lands is unknown. The known beetle location along Putah Creek at the time the Recovery Plan was prepared is at Solano Lake Park, which is administered by Solano County. The beetle is now known from at least three other locations along Putah Creek, all within10 kilometers (km) of Solano Lake Park (California Department of Fish and Game 2006). One of these three locations is on public land. A number of other public lands adjoin Putah Creek, including the University of California's Stebbins Cold Canyon and Putah Creek Riparian Reserves, Yolo County's Putah Creek Nature Park, and fishing accesses in Solano County. According to Talley *et al.* (2006), activities allowed in the public lands adjoining Putah Creek are similar to those at the American River Parkway.

The single location along the Merced River referred to in the Recovery Plan is from McConnell State Recreation Area, which is administered by the California Department of Parks and Recreation. Surveys completed since the development of the Recovery Plan have failed to find the beetle along the Merced River. Barr (1991) failed to observe any sign of the beetle when she surveyed the area, and did not observe any sign of beetles at six other sites she surveyed along the river. She also described that elderberry shrubs appeared to be in poor health at least a couple of the sites surveyed. The beetle is known from at least two other locations along the Merced River, both of which are from less than 4 km of McConnell State Recreation Area (one upstream and one downstream of the recreation area); the

ownership of both of these locations is unknown (California Department of Fish and Game 2006). There are no recent studies of the beetle or its habitat from this area and therefore, its current status along the Merced River is unknown (Talley *et al.* 2006). According to Talley *et al.* (2006), much of the lands surrounding the lower Merced River are private agricultural lands, with parkland (e.g., McConnell State Recreation Area) and public river accesses in several places. They also were aware of at least 5 riparian restoration efforts in the area, and concluded that further beetle surveys and land protection should be conducted there.

Primary Interim Objective 2. Survey Central Valley rivers for remaining beetle colonies and habitat and incorporate findings into short and long-term management programs. A number of surveys have been conducted for the beetle since the time it was listed (e.g., USFWS 1984, Halstead and Oldham 1990, Barr 1991, Halstead and Oldham 2000, Collinge *et al.* 2001, Talley 2005). Additional surveys would improve our knowledge of the range of the beetle within the Central Valley and surveys are especially lacking in the San Joaquin Valley and portions of the lower Sacramento Valley. In those areas where surveys have been conducted, longer-term data sets are needed to measure the response of the species to changing land use and environmental conditions.

Beetle habitat protected through implementation of Habitat Conservation Plans (HCPs) and section 7 consultations is almost always accompanied by a habitat management plan. Some other areas, such as Sacramento River National Wildlife Refuge (NWR) (further described below), have restored habitat specifically for the beetle and are managing for this species. Each NWR has or is developing a Comprehensive Conservation Plan, which is a document that provides a framework for guiding refuge management decisions. Many other protected areas that are known to be inhabited by the beetle do not have management plans prepared with the intention of preserving the species. A notable exception includes collaboration between resource managers, utility companies, regulatory agencies, public works agencies, and academics who currently are preparing a habitat management plan for the American River Parkway (Talley *et al.* 2006).

Primary Interim Objective 3. Provide protection to remaining beetle habitat within its suspected historic range. Knowledge regarding the beetle's range has improved since its listing and the time the Recovery Plan was prepared. At the time the Recovery Plan was prepared, the beetle was known from less than 10 locations along the American and Merced Rivers, and along Putah Creek. As described in section *2.3.1.*, the known range now extends from southern Shasta County to Fresno County, and from the east side of the Coast Range to the foothills of the Sierra Nevada in the Central Valley (Barr 1991, California Department of Fish and Game 2006). The beetle and its habitat have received protection in many areas, most of which are along the Sacramento River and its tributaries.

Primary Interim Objective 4. Determine the number of sites and populations necessary to eventually delist the species. No progress has been made with regard

to accomplishing this interim objective. However, a significant amount of information regarding the beetle's distribution, biology, and ecology has been developed since the time the Recovery Plan was written. This information can provide some of the data needed to develop models to predict outcomes of population persistence under varying scenarios of changing land use (both loss and addition), climate, and stochasticity. Still, additional information such as longer-term data sets is needed to capture natural population fluctuations and turnover. According to Talley *et al.* (2006), studies such as those by Collinge *et al.* (2001) have revealed the need for longer-term data sets with either annual or bi-annual surveys to understand the beetle's population fluctuations and patch turnover.

2.3. Updated Information and Current Species Status

2.3.1. Biology and Habitat

Valley elderberry longhorn beetle is a medium sized (2 cm long) beetle that is endemic to the Central Valley of California. The beetle is found only in association with its host plant, elderberry (*Sambucus spp.*). Adult beetles are sexually dimorphic with females having a dark metallic green to black elytra with a bright red boarder and males having predominantly red elytra with four dark oblong spots. The beetle has been found only in association with its host plant, elderberry (*Sambucus* spp.). Adults feed on the foliage and perhaps flowers and are present from March through early June. During this period the beetles mate, and females lay eggs on living elderberry plants. The first instar larvae bore to the center of elderberry stems where they develop for one to two years feeding on pith. Prior to forming their pupae, the elderberry wood boring larvae chew through the bark (Halstead and Oldham 1990) and then plug the holes with wood shavings. The larvae crawl back to their pupal chamber which they pack with frass (Barr 1991). In the pupal chamber, the larvae metamorphose into their pupae and then into adults where upon they emerge between mid-March through June (Barr 1991).

Distribution

At the time of its listing in 1980, the beetle was known from less than 10 locations on the American River, Putah Creek and the Merced River in the Central Valley of California (U.S. Fish and Wildlife Service 1980). The beetle currently inhabits the Central Valley from southern Shasta County south to Fresno County in the San Joaquin Valley (Barr 1991). There are approximately 190 records of the animal (largely based on exit holes) in the Central Valley (California Department of Fish and Game 2006). Although records exist for Kern County (California Department of Fish and Game 2006), no specimens or observations of living beetles exist that support the assertion that the species is found there (Talley *et al.* 2006).

Population Trends

Since the time of listing, the number of sites from which the beetle is known has increased from less than 10 to approximately 190 (California Department of Fish

and Game 2006), primarily due an increased effort to look for the beetle. It should be noted that the number of records does not indicate the number of known populations. In many cases, there are multiple records from within close proximity to one another within the same watershed or river. For example, 24 records are known from within two miles of the American River (California Department of Fish and Game 2006).

The accuracy of population estimates may be impacted by two types of survey error: overestimates due to misidentification of exit holes and underestimates due to difficultly locating exit holes and beetles. Sightings of the beetle are rare and in most circumstances, evidence of the beetle is derived from the observation of the exit holes left when adults emerge from elderberry stems. It is possible that some of the holes may have been misidentified as VELB exit holes and were actually holes made by other animals such as horntails or wood wasps (Siricidae), beetles of the family Bostrichidae, or solitary bees (Service 1989). It is also possible that a number of VELB sightings have gone unrecorded during surveys due to the difficulty in locating exit holes. During surveys, the number of recent exit holes found per shrub (for occupied shrubs only) has been generally low, ranging on average from 1.6 holes per shrub in non-riparian scrub to 2.2-2.9 holes per shrub in riparian habitat along the American River (Talley *et al.* in press; Talley *et al.* 2006). Dense vegetation combined with the low number of exit holes per shrub makes VELB difficult to find during surveys and may have resulted in an underestimate of occupied habitat. Of these two types of error (misidentification and failure to locate exit holes), difficulty in locating beetle exit holes likely has a greater effect on our understanding of the beetle's distribution and numbers.

There is little information regarding range-wide population trends for the beetle. Collinge *et al.* (2001) provides the only long-term data set for the species. They surveyed for beetles at most of the sites that had previously been surveyed by Barr (1991). Both studies observed evidence of the beetle (i.e., recent exit holes) at approximately 20% of the sites examined, and 25% of the total number of elderberry groups examined at those sites (more than one elderberry group was examined at some sites). Collinge *et al.* (2001) found that while the proportions of occupancy were similar, the number of sites examined containing elderberry and the density of elderberry at sites had decreased since Barr (1991), resulting in fewer occupied sites and groups.

At least one study observed occupancy rates of sites to be greater than that observed by Barr (1991) and Collinge *et al.* (2001). Lang *et al.* (1989) observed occupancy rates of 64% along the Sacramento River between Sacramento and Red Bluff in the mid-1980's. Occupancy rates varied from 28% of sites between Sacramento and Colusa to 94% of sites between Chico and Red Bluff. The authors attributed the difference in occupancy rates at different areas of the Sacramento River to the greater extent of flood control efforts (and accompanying reduction in width of the riparian corridor) along the southern reach of the Sacramento River flood. Methodology utilized in Barr (1991) and Collinge *et al.* (2001) was not consistent

with that in Lang *et al.* (1989) and therefore, straight comparison of occupancy rates is not advisable.

Habitat

At the time of listing, the loss of riparian habitat was identified as a major threat to VELB. Loss of riparian habitat between 1900 and 1990 in the Central Valley was about 96% in the southern portion of the Valley (Kern County to Fresno County) (16,000 acres remaining), 84% in the middle Valley (Merced County to San Joaquin County) (21,000 acres remaining) and 80% in the northern Valley (Sacramento and Solano counties to Shasta County) (96,000 acres remaining). Between 1960 and 1990, loss rates had slowed somewhat but were still high with 59% loss in the south, 65% loss in the middle, and 35% loss in the northern Central Valley (Geographic Information Center 2003).

While loss of riparian habitat has been extensive, it is unclear how much of that riparian habitat contained elderberry shrubs or was occupied VELB. Quantifying the loss of elderberry shrubs as a result of the agricultural and urban development over the past 200 years is near impossible. Lang *et al.* (1989) observed fewer numbers of elderberry shrubs in the lower reach (i.e., between Sacramento and Colusa) of the Sacramento River than the northern reach (i.e., Chico to Red Bluff). They attributed this difference to the loss of elderberry shrubs and riparian habitat in the southern reach of the Sacramento River as a result of extensive flood control activities such as the construction and maintenance of levees.

Approximately 50,000 acres of existing riparian habitat has been protected in the Sacramento and San Joaquin Valley since 1980. In addition, approximately 5,000 acres of habitat has been restored for the benefit of the beetle (including planting of elderberries) and another 1,600 acres of riparian habitat has been restored with no elderberry plantings included (Talley *et al.* 2006). An undetermined amount of additional habitat has been restored as a result of compensation for section 7 projects. Based on a review of 110 of the 526 section 7 consultations completed by SFWO, it estimated that approximately 400 and perhaps as many as 1,900 acres of additional conservation lands would be provided for the beetle as a result of section 7 consultations, if all of the compensation was implemented and successful. However, these estimates of compensation are likely very inaccurate as indicators of actual amount of beetle habitat restored because: (a) the Service has used more than one set of guidelines to recommend compensation for section 7 effects since the beetle was listed; (b) the assumption that the subset of 110 section 7 consultations were representative of the overall 526 total consultations.

Taxonomy and Genetics

The elderberry longhorn beetle is found throughout California's Central Valley and Coastal Range (Linsley and Chemsak 1972; U.S. Fish and Wildlife Service1984). Two subspecies of *D. californicus* have been described: the California elderberry longhorn beetle (*D. c. californicus*), which lives along the coast and in the Coast Ranges from San Diego to Mendocino County (Lindsay and Chemsak 1972; U.S.

Fish and Wildlife Service 1984); and the valley elderberry longhorn beetle (*D. c. dimorphus*), which is endemic to the Central Valley.

The ranges of the California elderberry longhorn beetle and valley elderberry longhorn beetle overlap along the eastern edge of the Coast Range. While California elderberry longhorn beetle male and female adults resemble each other with elytra, or wing covers, that are dark metallic green to black colored and a bright red border, valley elderberry longhorn beetle males and females differ from each other in appearance. The females of the valley elderberry longhorn beetle appear similar to the California elderberry longhorn beetle, while the valley elderberry longhorn beetle males have elytra that are predominantly red with 4 oblong, dark metallic spots. Individuals possessing intergrades of the two color patterns exist (U.S. Fish and Wildlife Service 1984; Talley *et al.* 2006). Adult males with atypical color patterns (i.e., resembling that of *D. c. californicus*) have been observed in Colusa, Yolo, Placer, Sacramento, San Joaquin, Mariposa, Merced, Fresno, Kern and Tulare counties, although it is unclear if these were intergrades or *D.c. californicus* (Halstead and Oldham 1990; Barr 1991; Kaweh Oaks Preserve 2003; Rogers 2005; California Department of Fish and Game 2006; Ehrhardt 2006;Haines 2006; Talley 2006; Weintraub 2006; Wright 2006).

Some biologists believe the valley elderberry longhorn beetle may simply be a color morph of the California elderberry longhorn beetle rather than a subspecies (Halstead and Oldham 1990), but no peer-reviewed papers have been published on this issue to date. Some beetle specialists do not agree with this assessment (Hovore 2000; Chemsak 2005; Rogers 2005) and believe the two to be separate subspecies with the presence of intergrades in areas of overlap. No investigations are known to have been conducted on the genetics of the valley elderberry longhorn beetle or related taxa.

2.3.2. Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)

2.3.2.1. Present or threatened destruction, modification or curtailment of its habitat or range:

Habitat Destruction

At the time of listing, habitat destruction was identified as one of the most significant threats to the beetle based on the 90% loss of riparian habitat in the Central Valley (Barr 1991). Riparian habitat loss has resulted in fragmented and isolated remnants or valley elderberry beetle habitat. Sub-populations of the animal confined to small habitat areas are likely vulnerable to extirpation from random, unpredictable environmental, genetic, and demographic events (Schonewald-Cox *et al.* 1983). The distances between subpopulations and the beetles limited dispersal ability could make recolonization difficult if extirpation occurred (Collinge *et al* 2001; Talley 2005).

Over the past 25 years, the rate of riparian habitat loss has slowed significantly due to limitations in the amount of riparian habitat remaining, protections provided under the Act for the beetle (as well as other species), other regulatory protections (as discussed below), and restoration efforts. A review of the Section 7 consultations done for valley elderberry longhorn beetle provides some estimate of the amount of elderberry habitat lost since the beetles listing in 1980. During this period, the Service had authorized incidental take in the amount of 10,000 to 20,000 acres of beetle habitat, primarily for projects associated with urbanization, transportation, water management, and flood control. A number of HCPs are in development to allow for urbanization projects in the Sacramento Valley (Talley *et al.* 2006).

Ongoing maintenance of levees and canals for purposes of flood control and agriculture may result in loss of habitat for the beetle. Flood control activities appear to be responsible for there being fewer elderberry shrubs and beetles along the lower Sacramento River than the upper Sacramento River (Talley et al. 2006). The lower Sacramento River is constrained by flood control levees and the limitation of available restoration sites will limit future restoration opportunities along this waterway. Additionally, Reclamation Board concerns over potential negative consequences from allowing a federally-listed species to inhabit their facilities prevents the establishment of beetle habitat in many riparian areas that would otherwise be suitable for the beetle.

Habitat Protection and Restoration

There has been an increase in the number of riparian restoration projects occurring in the Central Valley in recent years. Most plantings of elderberry have been on Federal lands, such as National Wildlife Refuges. There are 22 Federal, State, and local agencies, and private organizations, such as land trusts, that have protected approximately 50,000 acres of existing riparian habitat in the Central Valley, primarily in the Sacramento Valley (Table 1). In addition, eight agencies and private organizations have or are completing 26 projects enhancing or restoring 5,193 acres, including the planting of 130,345 elderberry shrubs and seedlings (Table 2). Seven agencies and private organizations have or are completing 19 projects restoring or enhancing riparian habitat totaling 1,592 acres, but no elderberry are being planted at these sites (Table 3) (Talley *et al.* 2006).

The Sacramento River National Wildlife Refuge and the San Joaquin River National Wildlife Refuge have completed habitat enhancement and restoration for the beetle. Acquisition of existing riparian habitats on these two Refuges totals 11,000 acres and 6,600 acres, respectively. Restoration and enhancement of additional habitat currently totals more than 2,408 acres and 875 acres, respectively, on these refuges. The Sacramento River National Wildlife Refuge part of the Sacramento National Wildlife Refuge Complex was established in 1989, with a focus on conserving the beetle as well as other native riparian species. This Refuge is authorized to acquire up to 18,000

acres of riparian lands generally within the 100-year floodplain along the Sacramento River between Red Bluff and Colusa. The current size of this Refuge is about 11,000 acres between Red Bluff and Princeton, California. Over 100,000 elderberry seedlings or transplants have been planted at the refuge (J. Silveira, USFWS, pers. comm. in Talley *et al.* 2006). In 2003, monitoring of elderberries planted at the Sacramento River National Wildlife Refuge found 449 beetle exit holes or 3.8% in 299 of 7,793 shrubs surveyed (River Partners 2004a). Exit holes were found at all five units (Flynn, Ord Bend, Packer, Phelan Island, and Rio Vista) surveyed in the Sacramento National Wildlife Refuge. A greater percentage of the beetle exit holes were found at sites with older elderberry plantings or in proximity to existing riparian vegetation.

Another large sized protected riparian area that provides habitat for beetle is the 4,600-acre American River Parkway in Sacramento County, which includes critical habitat and essential habitat for the animal. Much of this Parkway was in place at the time of listing of the valley elderberry longhorn beetle and within the species' range as it was understood at that time. The Parkway continues to provide essential habitat to the beetle.

South of the American River, along the lower Cosumnes River, potential habitat for elderberry shrubs has been protected by The Nature Conservancy and others parties. Roughly 5,500 acres of floodplain which may be suitable for the valley elderberry longhorn beetle have been protected. Not all of the floodplain area is inhabited by elderberry shrubs, but restoration is proceeding, and the beetle occurs in the watershed (Talley 2005, Talley *et al.* 2006). At this time, we are not aware of any plans to conduct beetle surveys on the Nature Conservancy's lands.

An urban river parkway is being implemented along the San Joaquin River, as a result of Federal, local and State efforts, along with the San Joaquin National Wildlife Refuge. In 2003, the San Joaquin River Parkway protected 1,749 acres, including all or portions of Spanos Ranch, Rank Island, Jensen River Ranch, and Wildwood Park. The beetle's status presence at this parkway is unknown.

Two programs that additionally have some benefits for the valley elderberry longhorn beetle are the Landowner Incentives Program, a cooperative program of the California Department of Fish and Game, the Service, and Ducks Unlimited, and the U.S. Department of Agriculture Natural Resources Conservation Service. No information was available on acres or number of elderberry shrubs or seedlings that have been planted under these two programs. Under the Landowner Incentives Program, landowners receive financial assistance for 3 years to irrigate and weed riparian plantings or riparian vegetation in need of management. This assistance is intended to increase the chances that native riparian vegetation will successfully establish

at the site. In 2005, the contracts for 967 acres in five Central Valley counties were issued under the Landowners Incentives Program. However, this program does not have long-term protections on the riparian areas. The U.S. Department of Agriculture Natural Resources Conservation Service also partners on substantial riparian areas, however, no data were available on the number of acres or elderberry shrubs that have been planted.

A number of restoration and enhancement projects did not plant elderberry shrubs (Table 3), but may have some benefit for beetle, since the beetle's hostplant will likely colonize many of these areas on its own at a slower rate (River Partners 2003, River Partners 2004b) than if the area had been planted with elderberries. The benefit to the species from sites not initially planted with elderberry shrubs or seedlings is dependent on whether the animal is found near the site or if it will be able to successfully disperse to and colonize the locations.

The riparian restoration and enhancement actions discussed above should be specifically examined for their benefits to the beetle. The animal is dependent on the age and/or location of the restoration because the elderberry plants may be young, small, and prone to considerable year-to-year mortality; the restoration sites may not all be ecologically suitable for the survival and recruitment of elderberry over the long term; the sites may not be currently inhabited by the beetle; and the animal may be unlikely or incapable of dispersing to some locations. Colonization by the beetle into unoccupied restoration and enhancement sites can be facilitated by transplanting occupied shrubs, and also by targeting locations adjacent to existing habitat that is occupied by the animal, which are not biologically or physically isolated (e.g., roadway or barrier of unsuitable habitat). Given the above constraints, factors such as distance from known beetle locations, the availability/suitability of transplanting occupied shrubs, and the monitoring for the beetle should be taken into account when choosing potential restoration and enhancement actions for the species.

The benefit of riparian restoration and enhancement projects for the beetle has been limited to a certain degree due to the apparent concerns of the State of California Reclamation Board, which oversees the integrity of floodways and flood control systems in the Central Valley. Most riparian restoration projects require an encroachment permit from the Reclamation Board. The Reclamation Board for more than a decade has generally denied planting of elderberry in floodplains within their broad jurisdiction, because they are concerned that the presence of the valley elderberry longhorn beetle habitat will interfere with flood-fighting or entail costly mitigation afterward (e.g., River Partners 2003a, 2004b, c, d). However, the Reclamation Board's concerns may not be warranted. The Service has issued two biological opinions for two riparian restoration projects: the 471-acre O'Connor Lakes project on the Feather River and the approximately 1,500 acre Hamilton City

Flood Damage Reduction and Ecosystems Restoration Project on the Sacramento River. Both of these projects are restoring significant amounts of riparian habitat including elderberry shrubs, and the Service has authorized the incidental take of all valley elderberry longhorn beetles within the restoration area, both those currently living at the sites and for those beetles that become established in the future. In addition, other landowner incentives, such as Safe Harbor Agreements, are available to the Reclamation Board and other potentially interested parties to conduct proactive efforts for the species without fear of negative consequences.

Safe Harbors Program

The Service's "Safe Harbor" program promotes the issuance of section 10 permits to non-Federal parties to encourage landowners to enhance, restore, or otherwise encourage listed species to use their property for foraging, breeding, resting, or other activities. If the holder of the Safe Harbors agreement decides to return the site to its baseline condition, (i.e., the condition of the site, as mutually determined and agreed-upon by the Service and the landowner, at the time the Safe Harbor agreement became effective), they may do so. To date three Safe Harbors have authorized by the Service for the beetle. They are the 7,450 acre Burrows and Big Bluff Ranches in Tehama County, and a programmatic safe harbor for up to 3,500 acres along 20 miles of the Mokelumne River, and 259 acre safe harbor for habitat enhancement in Glenn County. All three of these safe harbor agreements have been effect less than one year; additional time is needed to determine the actual benefits of these agreements to the species.

Summary of Factor A

At the time of listing, loss of riparian habitat was identified as the primary threat to the beetle. Since that time, the rate of riparian habitat loss has slowed due to efforts to protect and restore riparian areas. Concerns continue about habitat loss caused by levee and canal maintenance and urbanization. The threat caused by levee and canal maintenance has potential to be reduced further through land owner incentive programs.

2.3.2.2. Overutilization for commercial, recreational, scientific, or educational purposes:

Collecting of all species of longhorn beetles is popular among amateur entomologists, however, no commercial or private trade of the valley elderberry longhorn beetle is known at this time. Overutilization is not considered to be a threat to the beetle at this time.

2.3.2.3. Disease or predation:

At the time of listing in 1980, the threats noted in the final rule did not include predation. The invasive Argentine ant (*Linepithema humile*) is a potential threat to the beetle (Huxel 2000). This ant is both an aggressive competitor and predator on native fauna that is spreading throughout riparian habitats in

California and displacing assemblages of native arthropods (Ward 1987; Human and Gordon 1997; Holway 1998). The Argentine ant requires moisture and it may thrive in riparian or irrigated areas. A negative association between the presence of the ant and valley elderberry longhorn beetle exit holes was observed along Putah Creek in 1997 (Huxel 2000). This aggressive ant could interfere with adult mating or feeding behavior, or prey on eggs and larvae (Way *et al.* 1992). Between 1998 and 2002, the number of sites infested by the Argentine ant increased by 3 along Putah Creek and the American River (30 sites total were examined) (Huxel 2000; Holyoak and Talley 2001).

The beetle likely is the prey of insectivorous birds, lizards, and European earwigs (*Forficularia auricularia*) (Klasson *et al.* 2005). These three predators move freely up and down elderberry stems searching for food. The European earwig is a scavenger and omnivore that was often found feeding on tethered mealworm (*Tenebrio monitor*) larvae. The earwig may be common in riparian areas and it may lay its eggs in dead elderberry shrubs. The earwig, like the Argentine ant, requires moisture and is often found in large numbers in riparian and urban areas. Earwig presence and densities tended to be highest in mitigation sites likely because of the irrigation, although this needs to be statistically tested (Klasson *et al.* 2005).

Summary of Factor C

Argentine ant, birds, lizards, and European earwigs have been identified as potential predators of valley elderberry longhorn beetle. Little evidence exists about the impact of these predators upon the beetle, making it difficult to determine the level of threat due to predation.

2.3.2.4. Inadequacy of existing regulatory mechanisms:

A number of State and Federal laws provide some degree of protection for riparian habitats and valley elderberry longhorn beetles, as discussed below. The Service is not aware of any specific county or city ordinances or regulations that provide direct protection for the beetle. The beetle may be indirectly benefiting from the increased attention being given to conversions of grasslands, and oak woodlands to vineyards and orchards. The beetle also may directly and indirectly benefit through some city and county open space designations that coincide with the animal and its elderberry habitat or mitigation plans for special status species that have been developed as part their general plans.

State Laws

The California Endangered Species Act (CESA) does not provide protection to insects (sections 2062, 2067, and 2068, California Fish and Game Code). However, the Swainson's hawk (*Buteo swainsoni*) and bank swallow (Riparia riparia) are both listed as threatened under CESA and are known to inhabit riparian areas with in the beetle's range. Their listing likely affords some

protection to the beetle, such as encouraging entities considering activities in areas occupied by either of the two bird species to minimize the extent of habitat alternation. However, in general, neither the Swainson's hawk nor the bank swallow inhabit the Central Valley throughout the year. Instead, they migrate to Central and South America in the winter. Since the prohibition against take in CESA does not generally include effects to a species as a result of a loss of its habitat (i.e., there is no 'harm" under CESA, as there is under the Act), project proponents may destroy the hawk's and swallow's habitat when once they have migrated south for the winter. In this sense, protections afforded the beetle by the CESA listing of these two birds would be temporary.

The California Environmental Quality Act (CEQA) requires review of any project that is undertaken, funded, or permitted by the State or a local governmental agency. If significant effects are identified, the lead agency has the option of requiring mitigation through changes in the project or to decide that overriding considerations make mitigation infeasible (CEQA Sec. 21002). In the latter case, projects may be approved that cause significant environmental damage, such as destruction of listed endangered species or their habitat. Protection of listed species through CEQA is, therefore, dependent upon the discretion of the lead agency involved.

Section 1600 of the California Fish and Game Code authorizes the California Department of Fish and Game to regulate streambed alteration. The California Department of Fish and Game must be notified of and approve any work that substantially diverts, alters, or obstructs the natural flow or substantially changes the bed, channel or banks of any river, stream, or lake. If an existing fish or wildlife resource may be substantially adversely affected by a project, the California Department of Fish and Game must submit proposals to protect the species within 60 days (Section 1602 of the California Fish and Game Code). However, if the California Department of Fish and Game does not respond within 60 days of notification, the applicant may proceed with the work. Section 1600 does not provide protection to upland habitat beyond the riparian zone and does not regulate stock ponds that are not constructed on natural streams. Mitigation under a streambed alteration agreement is entirely voluntary by a project applicant and is typically agreed upon only when compatible with mitigation required by another permit.

The California Porter-Cologne Act of 1969 (California Water Code section 13000 *et seq.*) is the primary law regulating water quality in California. The Porter-Cologne Act designated the State Water Resources Control Board and the nine Regional Water Quality Control Boards to serve as California's water quality planning agencies with authority over surface and groundwater quality. The Porter-Cologne Water Quality Control Act (Porter-Cologne) regulates the discharge of fill to wetlands and other water bodies (California Water Code 13260 *et seq.*). It is possible that projects in riparian areas could

require compliance with Porter-Cologne. However, since the focus of this law is the protection of waterways and water quality, beneficial impacts to elderberry shrubs and the beetle are limited.

Federal Protections

The National Environmental Policy Act (NEPA) provides some protection for the beetle. For activities undertaken, authorized, or funded by federal agencies, NEPA requires the project be analyzed for potential impacts to the human environment prior to implementation (42 U.S.C. 4371 et seq.). Instances where that analysis reveals significant environmental effects, the federal agency must propose mitigations that could offset those effects (40 CFR 1502.16). These mitigations are usually developed in coordination with the Service during Section 7 consultation and should provide some protection for listed species. However, NEPA does not require that adverse impacts be fully mitigated, and so some impacts could still occur. Additionally, NEPA is only required for projects with a federal nexus, and therefore, actions taken by private landowners are not required to comply with this law.

Under section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (Corps) regulates the discharge of fill material into waters of the United States, which include navigable and isolated waters, headwaters, and adjacent wetlands (33 U.S.C. 1344). In general, the term "wetland" refers to areas meeting the Corps criteria of having hydric soils, hydrology (either sufficient flooding or water on the soil surface), and hydrophytic vegetation (plants specifically adapted for growing in wetlands). Any actions within the beetle's habitat that has the potential to impact waters of the United States would be reviewed under the Clean Water Act as well as NEPA and the Endangered Species Act (Act). These reviews would require consideration of impacts to the beetle and their habitat, and when significant impacts could occur, mitigations would be recommended. However, since the focus of this law is the protection of waterways and water quality, beneficial impacts to elderberry shrubs and the beetle are limited.

The Endangered Species Act is the primary Federal law providing protection for the valley elderberry longhorn beetle. Since its listing, the Service has analyzed the potential effects of many projects under section 7(a)(2) of the Act, which requires Federal agencies to consult with the Service prior to authorizing, funding, or carrying out activities that may affect listed species. A jeopardy determination is made for a project that is reasonably expected, either directly or indirectly, to appreciably reduce the likelihood of both the survival and recovery of a listed species in the wild or reducing its reproduction, numbers or distribution (50 CFR § 402.02). A non-jeopardy opinion may include reasonable and prudent measures that minimize the amount or extent of incidental take of the beetle from a project. Incidental take refers to taking that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or applicant (50

CFR § 402.02). While projects that are likely to result in adverse effects often include minimization measures, the Service is limited to requesting minor modifications in the project description. In instances where some incidental take is unavoidable, the Service requires that additional measures be performed by the project proponents to compensate for negative impacts.

The Service has completed 526 formal consultations between 1983 and 2005 (Talley *et al.* 2006). One jeopardy biological opinion was issued to the U.S. Army Corps of Engineers for the Sacramento River Bank Protection Program's effects on the beetle in the early 1980's. The Service issued two programmatic biological opinions in 1997 for projects permitted by the U.S. Army Corps of Engineers and the Federal Highways Administration that have minimal adverse effects on the beetle. The total amount of incidental take that was authorized in the 526 formal consultations is difficult to determine due to the differences in the forms of incidental take that was issued (e.g., acres, elderberry shrubs, or elderberry stems that are one inch or greater in diameter at ground level). However, during this period, Talley *et al.* (2006) estimated that the Service had authorized incidental take in the amount of 10,000 to 20,000 acres (equating to12,000 to 15,000 elderberry shrubs or 40,000 to 50,000 elderberry stems one inch in diameter). A subset of approximately 110 of the total 526 section 7 consultations performed by the SFWO indicates that project applicants proposed the planting of approximately 47,300 elderberry plantings and the transplanting of approximately 1,600 elderberry shrubs to minimize the effects of proposed projects on the beetle. Given the Service's current requirement that no more than 5 elderberry shrubs be planted per 1,800 square feet on beetle conservation lands (Service 1999), we would expect that approximately 400 acres of additional conservation lands would be provided for the beetle as a result of these 110 section 7 consultations, if all of the compensation was implemented and successful. Further extrapolation of this estimate would result in the restoration and protection of approximately 1,900 acres of beetle habitat from all 526 section 7 consultations. However, these estimates of compensation were likely very inaccurate as indicators of actual amount of beetle habitat restored because: (a) the Service has used more than one set of guidelines to recommend compensation for section 7 effects since the beetle was listed; (b) the assumption that the subset of 110 section 7 consultations were representative of the overall 526 total consultations; and (c) due to staff and workload constraints, the SFWO has been unable to determine which compensation measures were actually implemented and their success.

Section 10(a)(1)(B) permits are issued for take of listed species by non-Federal parties. Eighteen permits under section 10(a)(1)(B) have been issued for habitat conservation plans that include the beetle. The total area of these 18 habitat conservation plans is approximately 970,000 acres. Take of the beetle will be less than this total, since relatively little of the total acreage is suitable habitat.

The valley elderberry longhorn beetle conservation measures for section 7 consultations and 10 permits typically include the following: (1) transplanting affected elderberry shrubs with stems one inch or greater at ground level to a permanently protected conservation area; (2) planting a specific number of elderberry seedlings and associated native plants in a permanently protected conservation area; (3) monitoring and management, and (4) implementing specific minimization measures at the project site. The success is not known for the approximately 38,000 elderberry seedlings that have been planted as compensation or mitigation for projects authorized under sections 7 and 10. Due to the number of projects for which incidental take has been authorized, investigation of the completion and success of the proposed compensation will require significantly more research and field time than are available for this 5-year status review. Therefore, the overall effect to the beetle from the issuance of programmatic and individual biological opinions, and section 10(a)(1)(B) permits is not yet precisely known.

Critical habitat was designated for several species of salmon and steelhead in 2005 (70 FR 52488) and includes many rivers and their adjoining riparian areas throughout much of the beetle's range north of Merced County. However, this critical habitat may not provide substantial additional protections to the beetle, as the extent of the designated critical habitat is the limited to the width of the stream channel defined by the ordinary high water line. In many areas, the majority of the beetle's suitable elderberry habitat is located above the ordinary high water line and would therefore, not be protected by the designation. In addition, if restoration were performed in order to minimize the effects of a project on designated salmonid critical habitat, the restoration would likely favor vegetation capable of producing large woody debris, as opposed to elderberry (K. Brown, USFWS, pers. comm.). A review of the Corps' records between September 2005 (the month that the salmonid critical habitat was designated) and September 14, 2006, indicates that the Corps initiated formal consultation with the NOAA Fisheries Service for potential effects to listed salmonids on approximately 60% of the projects that it initiated formal consultation with the Service for potential effects to the beetle (C. Mayo, Corps, pers. comm.).

The National Wildlife Refuge System Improvement Act of 1997 (Pub. L. 105–57) establishes the protection of biodiversity as the primary purpose of the national wildlife refuge system. This has lead to various management actions to benefit the beetle, as discussed in Section 2.3.2.1.

Summary of Factor D

A number of State and Federal laws exist that provide some degree of protection of valley elderberry longhorn beetle and its habitat. However, the extent to which these laws provide protection varies with each individual action and may not always be adequate to prevent the loss and degradation of

beetle habitat. Additionally, actions without a State or Federal nexus may not be required to comply with these laws and could result in adverse impacts to the beetle. Overall inadequacy of regulatory mechanisms appears to pose a threat to the beetles at this time.

2.3.2.5. Other natural or manmade factors affecting its continued existence:

Pesticides

Commonly used pesticides within the range of the beetle include insecticides, most of which are broad-spectrum and likely toxic to the beetle; herbicides, which may harm or kill its host elderberry plants; and broad-spectrum pesticides toxic to many forms of life. The California Department of Pesticide Regulation (CDPR) in 1997 listed 239 pesticide active ingredients applied in proximity to locations of beetle (same square mile per Marovich and Kishaba 1997 cited in Talley *et al.* 2006).

In 2004, 180 million pounds of pesticide active ingredients were reported used in California. The greatest pesticide use occurs in the San Joaquin Valley where four counties had the highest use: Fresno, Kern, Tulare, and San Joaquin (CDPR 2006). The peak timing of application depends on the chemical agent and other factors including the activity period of the targeted pest insects; the use of the agents may coincide with the most vulnerable period of valley elderberry longhorn beetle adult activity, egg-laying and initial larval exposure on the outside of elderberry stems (Talley *et al.* 2006).

Pesticide use reported to the California Department of Pesticide Regulation is only a fraction of the pesticides sold in California each year. About two-thirds of the active ingredients sold in a given year are not subject to use reporting, including home-use pesticide products. Pesticide active ingredients sold in California have averaged on the order of 600 million pounds per year since about 1998 (California Department of Pesticide Regulation 2006). In 1999, the Service prepared a draft jeopardy biological opinion on the beetle and other listed species for a national consultation with the U.S. Environmental Protection Agency on the registration of 15 pesticides (Service file 1-1-99-I-464); this consultation was never finalized. Many of these chemicals are still used very widely in California. For example, in 2004 the following acreages of use were reported (CDPR 2006): 1) Acephate-212,000 acres; 2) Chlorpyrifos- 1,323,000 acres; 3) Esfenvalerate-680,000 acres; 4) Naled-110,000 acres; 5) Permethrin-698,000 acres; and 6) Trifluralin-920,000 acres.

As part of their Endangered Species Project, the California Department of Pesticide Regulations has developed an on-line database that matches listed species locations with an area where a pesticide applicator proposes to use pesticides. Called PRESCRIBE, the database provides the pesticide user with protective measures or use limitations that can protect listed species. Use limitations include requirements such as buffer zones, timing of pesticide use,

application methods, and even use prohibition. However, PRESCRIBE is a voluntary program and until it is fully implemented and made mandatory by the EPA or CDPR, effects from the use of pesticides will not be avoided or minimized.

Given this amount and scope of pesticide use, along with unreported household and other uses, and the proximity of agriculture to riparian vegetation in the Central Valley, it appears that pesticides may be affecting the beetle and its elderberry habitat. However, none of the hundreds of pesticides is use have been consulted on under section 7 of the Act, and there have been no specific evaluation of exposures or response of the beetle to any of these pesticides. The magnitude and population-level importance of pesticide effects on the beetle remains uncertain, and merits empirical study.

2.4. Synthesis

At the time of its listing in 1980, the beetle was known from less than 10 locations on the American River, Putah Creek, and the Merced River in the Central Valley of California. Its two primary threats were 1) loss of riparian habitat due to flood control, agricultural practices and park management and 2) inadequate regulatory mechanisms. It is estimated that riparian habitat loss has ranged form 80% in the northern Central Valley to 96% in the southern Central Valley.

Since the time of listing, surveys have identified approximately 190 locations of the beetle ranging from Shasta County to Fresno County. Loss of riparian habitat has slowed throughout the Central Valley and a number of programs exist to restore and protect it. Efforts specific to valley elderberry longhorn beetle have resulted in the protection of 50,000 acres of riparian habitat and the restoration of over 5,100 acres of beetle habitat.

Based upon the number of sightings throughout the Central Valley and the reduction of the primary threats to the species, it is recommended that valley elderberry longhorn beetle be delisted.

3. RESULTS

3.1. Recommended Classification

____ **Downlist to Threatened**
____ **Uplist to Endangered**
_X_ **Delist** (*Indicate reasons for delisting per 50 CFR 424.11):*
____ *Extinction*
_X_ *Recovery*
____ *Original data for classification in error*
____ **No change is needed**

3.2. Listing and Reclassification Priority Number

The delisting of valley elderberry longhorn beetle is given a reclassification number of "2" indicating that it is an unpetitioned action with a high management impact.

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

Develop a Post-Delisting Monitoring Plan

A post-delisting monitoring plan should be developed to ensure that the beetle remains secure from the risk of extinct after it has been removed from the protections of the Act. The plan should include continued monitoring of the 195 currently known locations. Surveys should be expanded to other places in the Central Valley in attempt to identify new locations. Surveys should be conducted in upland areas to determine the extent this habitat type is used. Surveys should include assessment of the amount and quality of elderberry habitat remaining in the Central Valley. The monitoring plan should consider ways to reduce surveyor error and to efficiently sample a greater number of sites in the Central Valley. The monitoring plan should include studies to determine the effectiveness of restoration efforts.

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Table 1. Summary of projects in which riparian habitat was acquired or protected in the Central Valley since 1980 (excerpted from Talley *et al.* 2006).

Project/Program	Floodplain acres (approx.)	Comments
Sacramento Valley:		
Sacramento River NWR	11,000	May acquire up to 18,000 ac
TNC Sacramento	3000?	Many projects turned over to Sac. R. NWR
Big Chico Creek Ecological Preserve, CSU Chico Research Fdn.	4000	
Fenwood Ranch, Shasta Land Trust	2160	2.5 mi river frontage. Conservation easement
Gover Ranch/Bloody Island, BLM	800	Conservation easement
Hamilton City levee setback	1500	
[Bobelaine Sanctuary, Audubon]	[400]	[Acquisition pre-dates listing (1975) but was then considered outside VELB range]
Feather River Wildlife Area, CDFG	2500	Units flank Bobelaine Sanctuary. [May pre-date listing]
American River Parkway	4,600	Much park area pre-dates listing
Cosumnes River Preserve, TNC and partners	5500	Approx. 40,000 ac non-floodplain
Stone Lakes NWR	4000	May acquire up to 18,200 ac
San Joaquin Valley:		
San Joaquin River NWR	6600	May acquire up to 12,900 ac
Partners for Fish & Wildlife, NRCS		23+ miles river frontage. Conservation easements
San Joaquin River Parkway	~1000-2000?	http://www.sjrc.ca.gov/docs/Parkway_map_01-06.pdf
Bobcat Flat, Friends of the Tuolumne	300	
Big Bend, Tuolumne R., NRCS (easement)	250	Conservation easement
Grayson River Ranch, Tuolumne R., NRCS	137	Conservation easement
Mining Reach-7/11 Segment, Tuolumne R., Turlock ID	87	2.2 river miles. Don Pedro 1996 FERC Settlement Agmt.
Merced River Salmon Habitat Restoration Program		Mostly for channel restoration
Fine Gold Creek, CDFG	708	
Kaweah River watershed, Sequoia Riverlands Trust	2200+	in fee and conservation easements
Kern River Preserve, Audubon California	1,000	Benefit to VELB not established
Total:	~50,000	

Table 2. Summary of projects in which riparian habitat was restored and elderberry were planted in the Central Valley (excerpted from Talley *et al.* 2006).

Project/Name	Owner/Manager	Planted by	River	Acres	# EB planted	Comments
Llano Seco	USFWS	River Partners	Sacramento	271	1472	
Ord Bend	USFWS	River Partners	Sacramento	111	1616	
Turtle Bay	McConnell Arb., Turtle Bay Explor'n Pk.	River Partners	Sacramento	100	1323	Has FWS BiOp 1-1-03-F-189, appears pure restor'n
Flynn	USFWS	TNC	Sacramento	247	5605	
Kopta	State Controller's Trust	TNC	Sacramento	105	2086	
Lohman		TNC	Sacramento	20	882	
Ohm	USFWS	TNC	Sacramento	206	7613	
O'Connor Lakes Ecological Reserve	CDFG	River Partners	Feather	471	900	300-400 more elderberry plantings planned
Packer Island	USFWS	TNC	Sacramento	175	7633	
Partners for Fish & Wildlife projects	private		Sacramento	700		Elderberry planted, number not recorded
Phelan Island	USFWS	TNC	Sacramento	117	2730	
Pine Creek	USFWS	TNC	Sacramento	270	6781	
Princeton Ferry	USFWS	TNC	Sacramento	44	2700	
Rio Vista	USFWS	TNC	Sacramento	799	36735	
River Unit	DWR	TNC	Sacramento	27	486	
Ryan	USFWS	TNC	Sacramento	164	6164	
Sam Slough	DWR	TNC	Sacramento	72	7200	
Shaw	DWR	TNC	Sacramento	11	383	
Southam	USFWS	TNC	Sacramento	65	2574	
Sul Norte	USFWS	TNC	Sacramento	46	1271	
Mohler Tract II	USFWS	River Partners	Stanislaus	35	520	AFRP funding
McHenry Ave Recreation Area	ACoE	River Partners	Stanislaus	32	512	
Merced NWR	USFWS	USFWS	San Joaquin	40	160	
San Luis NWR	USFWS	USFWS	San Joaquin	210	840	
San Joaquin River NWR	USFWS	River Partners	San Joaquin	800	32512	
Mining Reach-7/11 Segment	Turlock ID	HART Restoration	Tuolumne	87	160	2.2 river miles. Don Pedro 1996 FERC Settlement Agmt.
Totals:				**5,193**	**130,345**	

Table 3. Summary of projects in which riparian habitat was restored yet no elderberry were planted in the Central Valley (excerpted from Talley *et al.* 2006).

Project/Name	Owner/Manager	Planted by	River	Acres	# EB planted	Comments
Battle Creek	CDFG	River Partners	Battle Creek	21		
Beehive Bend	CDFG	River Partners	Sacramento	59		
Big Bend	Tuolumne R. Preservn. Trust	River Partners	Tuolumne	250		Planning in 2003
Butler Slough	CSU Chico Res. Fdn.	River Partners	Sacramento	54		
Cottonwood Creek	CDFG	River Partners	Cottonwood Creek	15		
Del Rio	?CDFG	River Partners	Sacramento	259		Acquisition. Adj. to Llano Seco NWR unit. Future SHA?
Drumheller Slough	USFWS	River Partners	Sacramento	135		
Gianella Landing/Beard	CDFG	River Partners	Sacramento	20		
Howard Slough, Butte Basin	CDFG	River Partners	Butte Creek	51		
Jacinto	CDFG	River Partners	Sacramento	37		
Moulton Weir	CDFG	River Partners	Sacramento	46		
Partners for Fish & Wildlife, NRCS projects	Private		San Joaquin			23+ river miles
Pine Creek	CDFG	River Partners	Sacramento	235		
Princeton	CDFG	River Partners	Sacramento	34		
River Ranch	Private	River Partners	Sacramento	3		
Sacramento R., Big Chico Ck., Mud Creek [confluence]	CDPR? [Bidwell-Sac R SP]	TNC	Sacramento	217		acquisition and rest'n planning only at this stage?
Thomas	CDFG	River Partners	Sacramento	19		
Merced River Salmon Enhancement	CDWR/CDFG		Merced	unknown		planning stage for vegetation?
Grayson River Ranch	NRCS (easement)		Tuolumne	137		
Total:				**1592**		

U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW OF THE VALLEY ELDERBERRY LONGHORN BEETLE

Current Classification Threatened

Recommendation resulting from the 5-Year Review

____ **Downlist to Threatened**
____ **Uplist to Endangered**
__X__ **Delist**
____ **No change is needed**

Review Conducted By: Mary Grim

FIELD OFFICE APPROVAL:
Lead Field Supervisor, Fish and Wildlife Service

Approve Cay C. Monde Date 9/26/06

REGIONAL OFFICE APPROVAL:
Lead Regional Director, Fish and Wildlife Service

Approve Steve Thompson Date 9/26/2006