RECLAMATION

Managing Water in the West

MIAD Overlay Project: Valley Elderberry Longhorn Beetle Survey

U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
Denver, Colorado

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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

MIAD Overlay Project: Valley Elderberry Longhorn Beetle Survey

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Introduction

The Mormon Island Auxiliary Dam (MIAD) Overlay Project is expected to begin in October 2013. The project duration is estimated to be approximately 30 months completing as early as 2015 or as late as 2020 depending on the when construction commences. There are four main components of the project which include the installation of a toe drain, a blanket drain, a sand filter, gravel drain system, and a rockfill berm covering the drain elements and the entire downstream face of the dam. This overlay is intended to add additional stability to the downstream face of the earthen structure.

After foundation preparation, the toe drain would be constructed by excavating a small trench along the toe of the embankment in the central and western portions of the dam founded on rock. The toe drain trench would be backfilled with sand, gravel, and piping to collect seepage water and safely discharge it in two locations just downstream of the dam. In the eastern portion of the dam, a blanket drain would be constructed of sand and gravel in lieu of trench and piping. The overlay would be constructed by widening the crest and downstream portion of the dam with large quantities of soil material. A small portion of the downstream shell of MIAD would be removed by excavating 2 to 9 feet of material on the existing face of the dam to expose a surface free of vegetation. After the foundation drainage components are in place, the berm and filter component of the overlay would be constructed using materials that are currently stockpiled near the west end of the dam. The volume of rockfill berm materials used for the overlay is expected to be approximately 1.5 million cubic yards.

Bureau of Reclamation, Technical Service Center biologists performed an elderberry stem count and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*; hereafter VELB) survey within suitable habitat in the proposed project disturbance area in Sacramento and El Dorado County, California (Figure 1) on February 5 and 6, 2013. The survey focused on identifying, mapping and classifying all elderberry stems with emphasis on those measuring greater than 1 inch at ground height and documenting the presence or absence of VELB emergence/exit holes.

The VELB is Federally listed as threatened and critical habitat has been designated by the U.S. Fish and Wildlife Service (USFWS). The VELB is endemic to riparian systems along the margins of rivers and streams and in adjacent grassy savannahs in California's Central Valley. The VELB is primarily found in association with its host plant, elderberry (*Sambucus* spp.). The adult female beetle deposits eggs in the crevices of the bark on living plants. The larvae bore into the pith of the larger elderberry stems where the majority of the animal's life is spent. Following pupation in the spring, the adult beetle emerges, creating a hole in the bark of the stem or branch. Adults feed on foliage and are present from March through early June. Survey techniques focus on the presence of emergence holes for evidence of the beetle. Emergence holes are circular to oval and are usually 7-10 millimeters (mm) in diameter (USFWS 1991).

Figure 1.—Survey area.

Methods

The study area consists of all MIAD that has not already been disturbed by the current construction operations, north of the Green Valley Road (Figure 1). Most of the area has been severely disturbed by the original dam construction and the ongoing Folsom Dam Safety and Flood Reduction Joint Federal Project. The remaining undisturbed areas consist of a riparian corridor and several stands of mature oaks in the upland areas.

The survey was conducted in accordance with USFWS (1999). The survey primarily focused on locating and identifying all elderberry stems, classifying them by diameter measured at ground height, and documenting presence/absence of emergence/exit holes. The USFWS guidelines only require the documentation of stems greater than or equal to one inch, but all stems were recorded for a complete inventory. For the purpose of this survey, riparian habitat was defined as occurring within 25 feet of a waterway. A shrub was defined as an assemblage of stems that appeared to originate from a common root mass and could include multiple stems/shoots/trunks. Shrubs or individuals occurring in the same general vicinity were recorded as clusters with the same GPS location. Stems of all mapped elderberry shrubs measuring greater than 1 inch at ground height were examined for evidence of VELB emergence/exit holes. To be counted as a VELB emergence/exit hole, the hole would have to be recent (current year - clean cut with light colored wood inside) and of proper size and shape (circular or oval, and 7-10 mm in diameter). The survey was conducted on February 5-6 which facilitated the identification of elderberry, since it is one of the first shrub/trees in the area to have emerging leaves.

Results

Fifteen elderberry bushes (36 stems) in nine clusters that meet the USFWS guideline criteria for VELB habitat were documented (Table 1 and Figure 2). There were twenty three stems less than 1 inch in diameter that did not meet the criteria. All stems were evaluated for the potential presence of VELB and no exit holes were found meeting the criteria. Two stems at MIAD 4 contained exit holes that were approximately 3 mm in diameter, which are considerably smaller than the 7-10mm criteria for VELB (Figure 3). Seven shrubs greater than or equal to 1 inch in diameter were located in riparian habitat. The majority of the stems (35 of 36) in the study area fell into the 1-3 inch category, with only one stem greater than 3 inches.

Table 1.—Elderberry locations and associated data.

Cluster #	No. of Stems by Stem Diameter				GPS Coordinates*	Exit holes	Riparian
	<1"	≥1" to ≤3"	>3"-< 5"	≥ 5"		Y/N	Y/N
MIAD 1.0	0	2	0	0	663520/4284821	N	Y
MIAD 1.1	0	1	0	0	663520/4282821	N	Y
MIAD 2.0	1	5	0	0	663449/4284889	N	Y
MIAD 2.1	2	0	0	0	663449/4284889	N	Y
MIAD 3.0	2	3	0	0	663397/4284876	N	Y
MIAD 3.1	4	2	0	0	663397/4284876	N	Y
MIAD 4.0	2	1	0	0	663394/4284839	N	Y
MIAD 5.0	1	3	0	0	663470/4284890	N	Y
MIAD 6.0	0	1	0	0	663463/4284919	N	N
MIAD 7.0	0	2	0	0	663358/4284814	N	N
MIAD 7.1	0	2	0	0	663358/4284814	N	N
MIAD 7.2	3	0	0	0	663358/4284814	N	N
MIAD 7.3	0	0	1	0	663358/4284814	N	N
MIAD 8.0	2	2	0	0	663361/4284807	N	N
MIAD 8.1	5	1	0	0	663361/4284807	N	N
MIAD 8.2	0	1	0	0	663361/4284807	N	N
MIAD 9.0	1	9	0	0	663431/4284781	N	N
TOTAL	23	35	1	0			

*GPS coordinates are reported as UTM, NAD83, Zone 10S.

Figure 2.—Elderberry locations at MIAD.

Figure 3.—Exit hole at MIAD 4.

Conclusions

The majority of the elderberry documented in this survey (MIAD 1-6 in Figure 2) are growing in association with Goodding's willow (*Salix gooddingii*), sandbar willow (*Salix exigua*) and cottonwood (*Populus deltoides*) in a remnant riparian feature on the downstream face of the dam. All of these locations except for MIAD 1 (located in an incised drain) would be easily accessible for transplant operations. The elderberry located at MIAD 7 and 8 are interspersed in a waste rock/discarded concrete disposal area and would be difficult to access for transplanting (Figure 4).

There was no documented evidence of recent or past VELB activity in any of the stems that were surveyed. The proposed construction activities for the MIAD Overlay will eliminate all elderberry in the survey area. BOR has initiated Section 7 consultation for this action and will develop mitigation measures as appropriate.

Figure 4.—MIAD 7 and 8.

Literature Cited

USFWS. 1991. The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). USFWS, Sacramento, CA.

USFWS. 1999. Conservation Guidelines for the Valley Elderberry Longhorn Beetle. USFWS, Sacramento, CA.