

Study 5.1
**ENDANGERED SPECIES ACT-LISTED
PLANTS STUDY**
February 2016

1.0 Project Nexus

South Sutter Water District's (SSWD) continued operation and maintenance (O&M) of the Camp Far West Hydroelectric Project (Project) may have an adverse effect on Endangered Species Act (ESA-listed) plants.

For the purpose of this Endangered Species Act-Listed Plants Study (Study), an ESA-listed botanical species is a species that has a reasonable possibility of being affected by Project O&M or associated recreation and is listed under the ESA as endangered (FE) or threatened (FT) or is a botanical species which is a candidate or proposed for listing under the ESA.

2.0 Study Goals and Objectives

The goal of this Study is to provide information to determine whether continued Project O&M or recreational use of Project facilities may have a measurable, adverse effect on ESA-listed plant species.

The objective of this Study is to gather the information necessary to meet the Study goal.

This Study does not include Section 7 ESA informal consultation with the United States Department of the Interior, Fish and Wildlife Service (USFWS).

The Study does not include the development of potential requirements in the new license.

3.0 Existing Information and Need for Additional Information

Existing, relevant and reasonably available information regarding botanical resources in the Project Vicinity¹ is provided in Section 3.2.4.2 of SSWD's Pre-Application Document (PAD). Existing, relevant and reasonably available information regarding ESA-listed plant species known or with a potential to occur in the Project Vicinity is provided in Section 3.2.5 of the PAD. SSWD identified one ESA-listed plant species that has a reasonable potential to occur in the Project Vicinity. Table 3.0-1 provides for this species: 1) status; 2) flowering period; 3) elevation range; 4) habitat requirements; and 5) documented occurrence in the Project Vicinity. The list has been developed as a guide of ESA-listed species likely to occur within the existing

¹ In this Study, "Project Vicinity" refers to the area surrounding the Project on the order of USGS 1:24,000 topographic quadrangle.

Federal Energy Regulatory Commission (FERC) Project Boundary; however, all ESA-listed plant species located during the Study will be mapped and reported.

Table 3.0-1. ESA-listed plant species potentially occurring in the Camp Far West Hydroelectric Project Vicinity.

Common Name/ Scientific Name	Status ¹	Flowering Period	Elevation Range (ft)	Habitat Requirements	Occurrence in Project Vicinity ²
Hartweg's golden sunburst (<i>Pseudobahia bahiiifolia</i>)	FE, SE, CRPR 1B	Mar-Apr	50-500	Valley and foothill grassland, cismontane woodland (CNPS 2015)	Present in quads (Knights Ferry and Yuba City) adjacent to the Project Vicinity (CNPS 2015).

¹ Regulatory Status:
 CRPR: California Native Plant Society California Rare Plant Rank
 1B: Species considered rare or endangered in California and elsewhere
 FE: Federal Endangered Species
 SE: CESA Endangered Species

² Occurrence in Project Vicinity: Some of the USGS topographic quadrangles are found entirely within the Project Vicinity and some are partially within the Project Vicinity. Results based on CNPS nine-quadrangle search.

None of the available reports are from surveys within the existing FERC Project Boundary.²

Additional information, which will be provided by this Study, is needed to address the Study goal. The Study will provide the specific location of ESA-listed plants in relation to Project facilities, Project O&M activities, Project recreation, and any other Project-related activities that might affect ESA-listed plants.

4.0 Study Methods and Analysis

4.1 Study Area

The Study Area consists of four specific areas, each with a 100-foot-wide buffer around them, within the existing FERC Project Boundary: 1) the North Shore Recreation Area (NSRA); 2) the South Shore Recreation Area (SSRA); 3) the Camp Far West Dam and associated dikes and Spillway; and 4) the Camp Far West Dam Powerhouse, for a total of 505 acres. The facilities are described in Section 2 of SSWD's PAD, and shown in Figure 4.1-1.

If SSWD proposes an addition to the Project, the Study Area will be expanded, if necessary, to include areas potentially affected by the addition.

² The FERC Project Boundary is the area SSWD uses for normal Project operations and maintenance and is shown on Exhibits J, K and G of the current license.

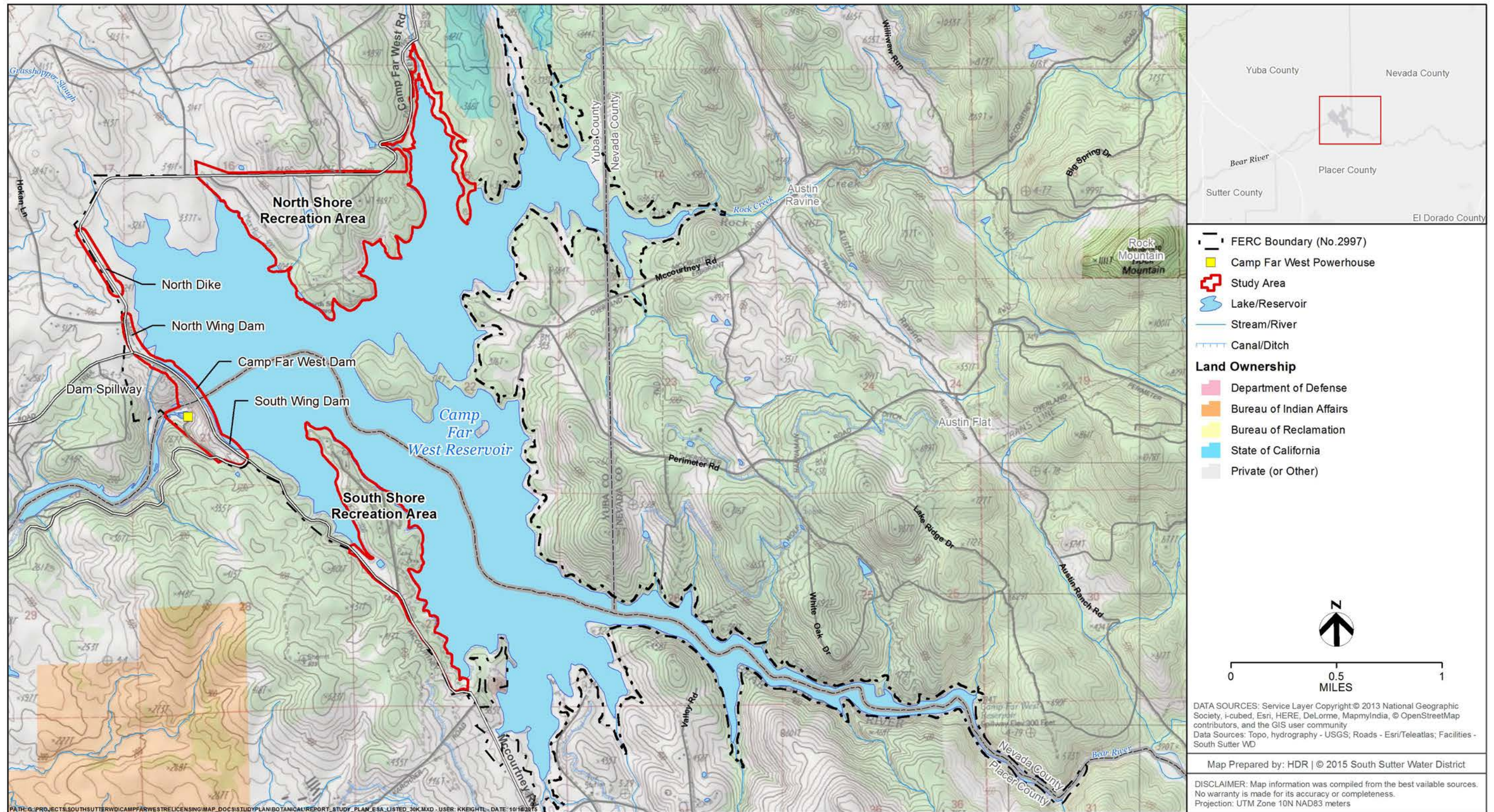


Figure 4.1-1. Study Area for ESA-listed Plants.

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4.2 General Concepts and Procedures

The following general concepts and practices apply to all SSWD relicensing studies:

- Personal safety is the most important consideration of each fieldwork team.
- If required for the performance of the study, SSWD will make a good faith effort to obtain permission to access private property well in advance of initiating the study. SSWD will only enter private property if such permission has been provided by the landowner.
- SSWD will acquire all necessary agency permits and approvals prior to beginning fieldwork for a study that requires them.
- Field crews may make variances to the study plan in the field to accommodate actual field conditions and unforeseen problems. When a variance is made, the field crew will follow to the extent applicable the protocols in and intent of the study plan.
- When SSWD becomes aware of a variance to the study plan, SSWD will issue an e-mail to FERC, United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS), USFWS, California Department of Fish and Wildlife (Cal Fish and Wildlife) and the State Water Resources Control Board (SWRCB) describing the variance and reason for the variance. SSWD will summarize in its Draft Application for New License (DLA) and in its Final Application for New License (FLA) all study plan variances.
- SSWD's performance of the study does not presume that SSWD is responsible in whole or in part for measures that may arise from the study.
- If Global Positioning System (GPS) data are required by a study plan, they will be collected using either a Map Grade Trimble GPS (i.e., sub-meter data collection accuracy under ideal conditions), a Recreation Grade Garmin GPS unit (i.e., 3-meter data collection accuracy under ideal conditions), or similar units. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS) compatible file format in an appropriate coordinate system using desktop software. The resulting GIS file will then be reviewed by both field staff and SSWD's consultant's relicensing GIS analyst. Metadata will be developed for deliverable GIS data sets. Upon request, GIS maps will be provided to NMFS, USFWS, Cal Fish and Wildlife or SWRCB in a form, such as ESRI Shapefiles, GeoDatabases, or Coverage with appropriate metadata. Metadata will be Federal Geographic Data Committee compliant.
- SSWD's field crews conducting relicensing studies will record incidental records of aquatic, botanical and wildlife species observed during the performance of a study. All incidental observations will be reported in the DLA and FLA. The purpose of this effort is not to conduct a focused study (i.e., no effort in addition to the specific field tasks identified for the specific study plan) or to make all field crews experts in identifying all species, but only to opportunistically gather data during the performance of a relicensing study. Species included for incidental observation will include, but are not limited to: bald eagle (*Haliaeetus leucocephalus*); golden eagle (*Aquila chrysaetos*); osprey

(*Pandion haliaetus*); any bats or positive sign of bats; Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*), including redds and carcasses; northern western pond turtle (*Actinemys marmorata*); foothill yellow-legged frog (*Rana boylei*); American bullfrog (*Lithobates catesbeianus*), and aquatic invasive species.

- Field crews will be trained on, provided with, and use materials (e.g., Quat disinfectant) for decontaminating their boots, waders, and other equipment between water-based study sites. Major concerns are amphibian chytrid fungus, and invasive invertebrates (e.g., zebra mussel, *Dreissena polymorpha*).
- If in the performance of a study, SSWD observes an ESA-listed or special-status species, within 30 days of the observation SSWD will submit to Cal Fish and Wildlife's California Natural Diversity Database a record, on the appropriate form, of the observation.
- If a study plan requires collection and reporting of time series data, the data will be provided at a minimum in HEC-DSS format. A viewer for these files (HEC-DSSVue) can be obtained from the United States Army Corps of Engineers at the following website as of March 2008: <http://www.hec.usace.army.mil/software/hec-dss/hecdssvue-dssvue.htm> in both Microsoft® Excel and *.DSS formats.
- If a field crew encounters human remains during field work, all work within a 100-foot radius of the discovery will stop immediately. The field crew will not disturb the remains in any way, secure the area to the best of its ability, mark the location with flagging tape in such a way as to not draw attention to the remains, and record the location using a GPS unit or plot the location by hand on a map if no GPS unit is available. As soon as possible thereafter, the field crew will contact SSWD and the relicensing Cultural Resources Lead to report the discovery. SSWD will report the finding and initiate the appropriate steps required under State of California and federal law to address the discovery. Any human remains encountered will be treated with respect, and the field crew members will keep the location confidential and will not disclose the location of the discovery to the public or to any other study crews. The field crew will keep a log of all calls/contacts it makes regarding the discovery and that details the event. Work will not proceed in the secured area of the discovery until provided clearance by SSWD.

4.3 Methods

Study methods will consist of the following five steps: 1) gather data and prepare for field effort; 2) conduct field surveys; 3) prepare data and quality assure/quality control (QA/QC) data; 4) consult with SSWD's Project operations staff; and 5) prepare report. Each step is described below.

4.3.1 Step 1 – Gather Data and Prepare for Field Efforts

SSWD will identify and map known occurrences of ESA-listed plants within the Study Area, and prepare field maps for use by field survey teams. The maps will include aerial imagery, Project features, and known ESA-listed plant occurrences. Survey timing will be planned based on herbarium collection dates.

4.3.2 Step 2 – Conduct Field Surveys

In conjunction with the SSWD's relicensing Study 4.1, *Special-Status Plants* and Study 5.2, *ESA-listed Wildlife – Valley Elderberry Longhorn Beetle*, SSWD's surveyors will conduct ESA-listed plant surveys as outlined in the "Botanical Survey" section of the Cal Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFG 2009). Surveys will be comprehensive over the entire Study Area, except for areas deemed to be unsafe (e.g., due to steep, unstable terrain) by the field team, using systematic field techniques to ensure thorough coverage, with additional efforts focused in habitats with a higher probability of supporting ESA-listed plants. Surveys will be floristic in nature, documenting all species observed; taxonomy and nomenclature will be based on The Jepson Manual (Baldwin et al. 2012).

When an ESA-listed plant is documented within the Study Area, the following information will be collected:

- Digital photographs to describe the occurrence, its habitat, and any potential threats (i.e., at least one digital photograph will be collected for each occurrence, with other photographs to document potential threats, or as needed).
- Estimated area (i.e., approximate length and width) covered by the ESA-listed plant population and estimated number of individual plants in the population. If plant population is estimated to cover an area greater than 0.1 acre (ac), surveyors will delineate the occurrence boundary using a GPS unit, collecting either polygon data, or sufficient point data that a realistic occurrence polygon can be constructed from the point data using GIS. For occurrences less than 0.1 ac in size, the location of the approximate center of the occurrence will be taken as point data using a GPS unit.
- Dominant and subdominant vegetation in the area.
- Estimated distance to nearest Project facility, feature, or Project-related activity.
- Activities observed in the vicinity of the population that have a potential to adversely affect the population (e.g., recreational trails and uses).
- Estimated phenology and descriptions of reproductive state.

4.3.3 Step 3 – Prepare Data and Quality Assure/Quality Control Data

Following field surveys, SSWD will develop GIS maps depicting ESA-listed plant occurrences, Project facilities, features, and specific Project-related impacts (e.g., dispersed use camping) and

other related information collected during the Study. Field data will then be subject to QA/QC procedures, including spot-checks of transcription and comparison of GIS maps with field notes to verify locations of ESA-listed plant occurrences.

4.3.4 Step 4 – Consult with SSWD’s Project Operations Staff

Once the locations of ESA-listed plant occurrences in the Study Area are defined, SSWD’s O&M staff will be consulted to identify Project O&M and Project-related activities that typically occur in the area of the ESA-listed plant populations that have a potential to adversely affect ESA-listed plant populations.

4.3.5 Step 5 – Prepare Report

SSWD will prepare a report that includes the following sections: 1) Study Goals and Objectives; 2) Methods; 3) Results; 4) Discussion; and 5) Description of Variances from the FERC-approved Study plan, if any. The report will include GIS maps that show by ESA-listed plant species the location in respect to Project facilities and features.

5.0 Consistency of Methodology with Generally Accepted Scientific Practices

This Study is consistent with the goals, objectives, and methods outlined for most recent FERC hydroelectric relicensing efforts in California, including for the Don Pedro Project (FERC No. 2299), Yuba River Hydroelectric Project (FERC No. 2246) and Merced River Hydroelectric Project (FERC No. 2179) relicensings; and the Study uses standard botanical survey methods as defined by the Cal Fish and Wildlife.

6.0 Schedule

SSWD anticipates the schedule to complete the Study as follows:

Planning	May 2016
Fieldwork	June 2016 – May 2017
QA/QC Review	June 2017
Study Report Preparation	July 2017 – December 2017

The Study report will be included in SSWD’s DLA and FLA. If SSWD completes the Study report before preparation of the DLA, SSWD will post the report on SSWD’s Relicensing Website and issue an e-mail to Relicensing Participants advising them that the report is available.

7.0 Level of Effort and Cost

For the purpose of estimating the cost for this Study, SSWD assumed that much of the Study fieldwork cost would be covered under SSWD’s relicensing Study 4.1, *Special-Status Plants*.

The remaining cost to complete this ESA-Listed Plants Study is related primarily to reporting, and SSWD estimates the cost in 2015 dollars is between \$10,400 and \$12,700.

8.0 References Cited

- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley.
- California Department of Fish and Game (CDFG). 2009. Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities. Available online: <www.fws.gov/sacramento/es/.../Listed_plant_survey_guidelines.PDF>
- California Native Plant Society (CNPS). 2015. California Native Plant Society Rare Plant Program – The California Rare Plant Ranking System. Available online: <<http://www.cnps.org/cnps/rareplants/ranking.php>>. Accessed July 2, 2015. California Native Plant Society, Sacramento, CA.

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