CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Western Joshua Tree Conservation Plan

VOLUME II: APPENDICES

Presented to the California Fish and Game Commission

JUNE 2025

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Appendix A.

Agency Feedback Questionnaire

Western Joshua Tree Conservation Plan – Government Agency Request for Feedback

Specific western Joshua tree (WJT) feedback could be related to any of the following items, whether applicable on lands you manage or are familiar with from other entities within your surrounding area:

1. What is your agency currently doing to manage WJT? (Can relate to vegetation in general or specific to WJT)
2. What are your agencies' best management practices for the following:
    a. Wildfire suppression/prevention in WJT habitat
    b. Invasive species control in WJT habitat
    c. Relocation of WJT (if so, do you have a relocation specialist that can provide guidance?)
    d. Soil Erosion
    e. Grazing
    f. Motor vehicle recreation
3. Have there been any WJT-specific restoration/conservation efforts in the past, present, or in future planning? (e.g., seed collection/banking, replanting WJT, replanting/seeding native nurse plants for WJT, WJT relocation, etc.)
4. CDFW is currently seeking input from agencies on acceptable parameters for a WJT conservation agreement between federal, state, and local jurisdictions. Would your agency approve of the following: (agree, disagree, agree but with conditions)
    a. Making WJT a species of management/conservation concern,
    b. Implementing special management considerations in WJT habitat, including long-term management and habitat enhancement strategies,
    c. Implementing special management considerations in WJT climate refugia once identified,
    d. Limiting ground disturbing impacts in WJT habitat,

e. Limiting vegetation removal in WJT habitat,
f. Establishing avoidance buffers around WJT based on tree size,
g. Limiting WJT removal,
h. Relocating WJT when removal is needed,
i. Restoring degraded WJT habitat,
j. Restoring degraded WJT climate refugia,
k. Enhancing WJT habitat (e.g. planting additional WJT and/or nurse plants),
l. Enhancing WJT climate refugia (e.g. science-based assisted gene flow),
m. Accepting relocated WJT from projects outside of your jurisdiction boundaries (limited to10 miles and 500 ft elevation difference), or
n. Hosting range-wide monitoring plots.

5. Would your agencies be interested in receiving and managing adjacent or privately in-held WJT land that was purchased using state mitigation funds (i.e. durability agreements)?

6. Does your agency have partnerships/agreements with local Native American tribes? If so, please describe.

7. Is there any other feedback/information you would like to provide to CDFW regarding WJT conservation? Examples could include the following:

    a. Locations of your healthiest WJT stands
    b. Locations where your WJT stands are most stressed
    c. Planning documents related to WJT
    d. Yucca moth pollinators studies/reports or management activities
    e. Criteria not mentioned in the presentation for identifying priority WJT conservation lands

Please contact Drew Kaiser, CDFW Senior Environmental Scientist and Western Joshua Tree Coordinator with feedback, comments, or additional questions:

Email: WJT@wildlife.ca.gov
Phone: (916) 224-6469

Thank you!

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Appendix B.

Agency and Public Input Summary Memo

Input Summary Memo

Date: March 31, 2025

To: Andrew Kaiser, California Department of Fish and Wildlife

From: Curtis Alling, Linda Leeman, Jessie Quinn, Ascent

Subject: Summary of Input from Interagency, Researcher, and Public Outreach Meetings on the Western Joshua Tree Conservation Plan

INTRODUCTION

The California Department of Fish and Wildlife (CDFW) conducted a series of meetings to gather input from public agencies, the scientific community, and the general public to inform and guide development of the Western Joshua Tree Conservation Plan (Conservation Plan). The purpose of this memo is to summarize the key topics raised by meeting attendees to ensure that this input is captured in the Conservation Plan. The following table lists the outreach meetings focused on the development Conservation Plan that have occurred to date with federal, state, and local agencies; researchers; and the public. CDFW has held other outreach meetings related to permitting under the Western Joshua Tree Conservation Act (WJTCA). Input from meetings that occur after the Fish and Game Commission takes final action on the initial Conservation Plan in June 2025 will be addressed in future amendments or versions of the Conservation Plan.

Meeting Type	Meeting Date & Time
State and Federal Agency Meeting #1	Thursday, February 29, 2024, 2–4pm
Local Agency Meeting #1	Thursday, February 29, 2024, 10–12pm
Researcher Outreach Meeting #1	Thursday, March 7, 2024, 10–12pm
California State Parks Meeting #1	Wednesday, March 27, 2024, 10–11am
Public Outreach Meeting #1	Thursday, April 4, 2024, 10–12pm
California State Parks Meeting #2	Wednesday, May 8, 2024, 10–11:45am
State and Federal Agency Meeting #2	Wednesday, May 15, 2024, 2–4pm
Local Agency Meeting #2	Wednesday, May 15, 2024, 10–12pm
California State Lands Commission Meeting #1	Wednesday, May 22, 2024, 10–11am
California State Parks Meeting #3	Wednesday, June 12, 2024, 1–2pm
Public Outreach Meeting #2	Thursday, July 11, 2024, 2–4pm
California Department of Forestry and Fire Protection Meeting #1	Monday, July 15, 2024, 9–10am
Public Workshops #1 and #2	Monday, March 10, 2025, 10–1pm and 3–6pm

SUMMARY OF INPUT

State and Federal Agency Meeting #1

The purpose of this meeting was to solicit input about current efforts to protect western Joshua tree from state and federal agencies that manage land in the geographic focus area of the Conservation Plan. In addition, the meeting provided an opportunity for CDFW to identify opportunities for collaboration with these state and federal agencies and gather feedback on issues of concern that the agencies would like to see addressed in the Conservation Plan.

Representatives from the following agencies attended the meeting: California State Parks (CSP), National Park Service (NPS), US Department of Fish and Wildlife Service (USFWS), US Navy (Naval Air Weapons Station China Lake), US Bureau of Land Management (BLM), US Department of Defense (DOD) (Edwards Air Force Base), California Department of Transportation (Caltrans), and US Forest Service (USFS). A full list of attendees and their affiliations is provided in the "List of Attendees" section below.

The following sections summarize the key topics relevant to the Conservation Plan that were discussed during the meeting:

CURRENT MANAGEMENT AND RESEARCH EFFORTS

- National Park Service
  - Based on climate modeling, NPS anticipates losing approximately 80 percent of currently occupied western Joshua tree habitat in Joshua Tree National Park (JTNP) in the next 100 years. In a worst-case greenhouse gas emissions scenario, NPS anticipates that less than 1 percent of suitable habitat will remain within JTNP. NPS is exploring the suitability of higher elevation areas outside of JTNP for potential conservation of western Joshua tree.
  - NPS has focused western Joshua tree restoration efforts on climate refugia areas within JTNP. Based on preliminary data, NPS assumes that populations of western Joshua tree in the eastern extent of JTNP are better adapted to dry environmental conditions that would be similar to the future conditions of climate refugia. NPS emphasized the importance of assisted migration (either as fruit, seeds, or trees) to locations that will be suitable for western Joshua tree in the future because climate change will occur quicker than the species can migrate on its own.
  - NPS implements aggressive fire control measures and full fire suppression in JTNP to prevent the loss of western Joshua trees. NPS implements fuel breaks around larger expanses of western Joshua tree that have not burned and around unburnt islands within woodland areas in climate refugia. NPS is currently protecting western Joshua tree populations in non-refugia to allow for collection of genetic material. NPS also replants western Joshua trees in burned areas.
- California State Parks
  - CSP manages four parks with western Joshua tree range—Red Rock Canyon State Park (SP), Arthur Ripley Desert Woodland SP, Onyx Ranch State Vehicular Recreation Area (SVRA), and Hungry Valley SVRA. (Saddleback Butte SP was not mentioned in the meeting, but also contains western Joshua trees.) Current management efforts for western Joshua tree include enhancing native stands through collecting seeds and planting.
  - CSP conducted a study of the natural postfire regeneration of western Joshua trees with and without predator exclusion fencing at Arthur Ripley Desert Woodland SP. The findings of this study can be used to inform the Conservation Plan.

TOPICS TO ADDRESS IN THE CONSERVATION PLAN

- The Conservation Plan should discuss the indirect impact of erosion on western Joshua tree and address the protection of soil and biological soil crusts. (CSP)
- USFWS facilitates a western Joshua tree working group made up of State and federal agencies. The working group is developing standardized monitoring protocols to collect information on abundance trends across the range of the species. USFWS asked if there is potential to incorporate monitoring protocols in the Conservation Plan. A database to track western Joshua tree monitoring data may be time consuming and costly to develop and maintain. Outside support would be helpful in database efforts and would be within the scope of the working group's research and efforts. (USFWS)
- Priority areas for conservation should include climate refugia within western Joshua tree habitat and areas that do not presently support western Joshua trees but will become suitable habitat for the species in the future. (JTNP)

OPPORTUNITIES FOR COLLABORATION

- Arthur Ripley Desert Woodland SP is interested in being a receiver site for relocated western Joshua trees. (CSP)
- Coordination between researchers and agency land managers would be helpful in developing Conservation Plan goals and management strategies. (USFWS)
- USFWS works with DOD agencies on conservation activities within military installations. USFWS recommends reviewing the integrated natural resource management plans for military installations that incorporate western Joshua tree management. Need to outreach more to DOD land management divisions to understand the policies that are already in place at DOD facilities for western Joshua tree management and conservation. (USFWS)

Local Agency Meeting #1

The purpose of this meeting was to address and to gather feedback on issues of concern that local agencies would like to see addressed in the Conservation Plan. In addition, the meeting provided an opportunity for local agencies to identify how they would like to engage in the development of the Conservation Plan and how CDFW can align the plan's strategies with local agency conservation goals.

Meeting attendees included representatives from the following local agencies: City of Hesperia, City of Lancaster, City of Palmdale, City of Ridgecrest, San Bernardino County, Los Angeles County, Town of Yucca Valley, and Kern County. A full list of attendees and their affiliations is provided in the "List of Attendees" section below.

The following sections summarize the key topics that were discussed during the meeting:

PERMITS, DELEGATION AGREEMENTS, AND OUTREACH

- A representative from the Town of Yucca Valley (Jared Jerome) noted that many residents have western Joshua trees in their yards and will likely need Western Joshua Tree Conservation Act (WJTCA) hazard management permits or incidental take permits (ITPs). Jared emphasized the importance of community outreach. Jared expressed interest in learning about protocols for delegation agreements for permit authorization and how the delegation agreements relate to the Conservation Plan. Jared also asked questions about funding mechanisms (i.e., how much property owners will be compensated for conservation easements on private property) and how conservation easements will be applied (e.g., as mitigation for development or as a strategy for protecting undeveloped properties).

- A representative from the Los Angeles County Planning Department (Caroline Chen) noted that town councils in Antelope Valley, such as Pearblossom, are interested in participating in outreach meetings and are awaiting direction for developing community standards to protect western Joshua trees.

CONSERVATION APPROACHES

- The Los Angeles County Planning Department representative (Caroline Chen) suggested that the Conservation Plan include measures to protect biological soil crust.

Researcher Outreach Meeting #1

The purpose of this meeting was to gather feedback on research topics and their potential conservation implications from researchers studying western Joshua tree. The meeting provided an opportunity for researchers to identify research to be incorporated into the Conservation Plan and opportunities for CDFW to align the plan's strategies with the best available science.

Meeting attendees included researchers affiliated with the following universities and agencies: Willamette University; California State University, Northridge (CSUN); Reed College; University of California, Riverside; University of California, Santa Cruz (UCSC); USFWS; and City of Lancaster. A full list of attendees and their affiliations is provided in the "List of Attendees" section below.

The following sections summarize the key topics that were discussed during the meeting:

RELOCATION

- Michael Loik (UCSC) stated that there is not enough data to determine appropriate relocation distances for western Joshua trees. More information is needed on existing population genetic structures, availability of potential habitat, and land ownership of receiver sites.
- Consider developing a seed transfer zone map for western Joshua tree.
- Relocation strategies may differ between seedlings and mature trees.

ASSISTED GENE FLOW

- Jeremy Yoder (CSUN) is gathering genetic data to determine whether trees at lower elevations and in drier climates (i.e., "hot adapted") are better adapted to future conditions.
- Consider whether western Joshua trees in areas where more permit applications have been received (e.g., Town of Yucca Valley) and areas of lower elevation that are experiencing environmental stressors (e.g., Town of Apple Valley, City of Victorville) are more appropriate for assisted gene flow.

SOIL MICROBE RESEARCH

- Based on an environmental DNA (eDNA) study for an endangered lupine (*Lupinus* sp.), a researcher in Michael Loik's lab (UCSC) found a difference in microbial communities in plants grown in native habitats and plants grown in nurseries. Research on western Joshua tree microbial communities can help inform how plants are grown for restoration.
- Juniper Harrower (Reed College) is interested in the effects of microbial communities on restoration success in burned areas. Juniper noted that survival rates of out-planted western Joshua trees are low due to predation. She is conducting research that involves adding microbial communities from existing western Joshua trees and noted

that it would be important to use locally adapted mycorrhizae associated with nurse plants. She found that seedlings can be inoculated with a teaspoon of soil and the same mycorrhizal communities will form.

CLIMATE REFUGIA

- Lynn Sweet (UC Riverside) noted that JTNP has implemented fuel treatments (e.g., fuel breaks) to protect western Joshua tree at higher elevations. Lynn is currently developing a Refugia Management Plan for JTNP which includes mapping areas where western Joshua trees are most vulnerable and identifying priority areas for fuel treatments (draft plan expected in June 2024). However, fuel treatments can have negative effects of increasing invasive species cover and disturbing existing western Joshua trees and its obligate pollinator, the yucca moth (*Tegeticula synthetica*).
- Lynn pointed out that the boundaries of predicted areas of future climate refugia should be regularly assessed and revised if they are being used to enact fine-scale conservation efforts based on established management units represented in geographic information system (GIS) shapefiles, given the uncertainty associated with modeled projections of those boundaries. Also, the planning team should consider whether the model timescales align with management timescales.
- Lynn published a study in Ecosphere in 2019 that modeled future habitat within JTNP under one future climate scenario. The study found higher seedling survival in upper elevations.
- USGS is conducting a 12-year resurvey on JTNP plots.

POLLINATORS

- Jeremy Yoder's lab (CSUN) is working on a distribution model of western Joshua tree's obligate pollinator, the yucca moth, independent of the tree's distribution and is looking to identify the specific environmental conditions that the moths use to transition from larvae to adults. The researcher is planning to collect data on the temperature profile of soil where western Joshua tree populations are found. Based on the literature, low winter temperatures may be a cue for the moths to transition out of diapause and begin pollination. The research is attempting to understand how climate drives the moth's activities and how the moth's distribution may align with western Joshua tree's modeled climate refugia. This research would not be available for incorporation in the initial draft of the Conservation Plan, but distribution models may be available in August.

NURSE PLANTS AND RECRUITMENT

- Based on surveys at Covington Flats in JTNP, Michael Loik (UCSC) observed that the shrub blackbrush (*Coleogyne ramosissima*) was important for western Joshua tree recruitment.
- Michael noted that Viceroy gold mine in Searchlight, Nevada had a restoration program for eastern Joshua tree (*Yucca jaegeriana*), which may provide useful information that can be applied to western Joshua tree.
- Nurse plants may be an important aspect of ensuring western Joshua tree survival in assisted migration or gene flow efforts. Research was conducted on eastern Joshua tree at Mojave National Preserve. The experiment evaluated the effects of different treatments (caged/non-caged and shaded/non-shaded) on the initial survival of small seedlings in a postfire environment. Caging showed a significant benefit to survival of small seedlings, but shading showed a negative impact on small seedlings (potentially related to competition).
- Lynn Sweet (UC Riverside) intends to research nurse plants for eastern Joshua trees.

ADAPTIVE MANAGEMENT

- Consider adaptive management as an aspect of the Conservation Plan because science will continue to evolve beyond the deadline for the Conservation Plan. Consider strategies employed at JTNP.
- A poll of researchers could be used to assess whether research supports the proposed management actions and avoidance and minimization measures.

OTHER RESEARCH TOPICS

- Michael Loik (UCSC) has unpublished baseline spectral data for western Joshua trees used in assessing plant health.

California State Parks Meeting #1

The purpose of this meeting was to solicit input about current efforts by CSP to protect western Joshua tree and CSP's approach to co-management with California Native American tribes. In addition, the meeting provided an opportunity for CDFW to identify opportunities for collaboration with CSP, with the ultimate goal of developing a cooperative agreement. Meeting attendees included CSP staff from Headquarters, Great Basin District, Hungry Valley SVRA, and Onyx Ranch SVRA. A full list of attendees is provided in the "List of Attendees" section below.

The following sections summarize the key topics that were discussed during the meeting:

LAND MANAGEMENT

- CSP has a high standard of resource stewardship; however, western Joshua tree may experience different levels of protection on CSP land depending on the use (e.g., off-highway vehicle [OHV] recreation areas receive less protection than ecological reserves).
- CSP may be interested in acquiring land purchased next to State Parks using the Western Joshua Tree Conservation Fund (Conservation Fund).
- CSP typically does not receive mitigation because of the potential to degrade conserved landscape. Land reclassification for receiver sites may occur at CSP discretion based on the General Plan goals and guidelines for each park.
- Grant funding can potentially be used to implement invasive species control at Arthur Ripley Desert Woodland SP.
- CSP will share policies, best management practices, and restoration activities relevant to western Joshua tree conservation.

CONSERVATION APPROACHES

- Conservation approaches for western Joshua tree should include establishing reserves, addressing stressors, restoring habitat, responding to climate change, and protecting/restoring populations at higher elevations.
- CSP is interested in opportunities to be part of the Conservation Plan implementation (e.g., being part of a reserve system, acquiring land, developing collaborations, sharing protocols, using park land as receiver sites, and hosting long-term monitoring plots).

RESEARCH

- CSP is conducting postfire research on western Joshua tree regeneration at Arthur Ripley Desert Woodland SP. The study is investigating impacts on western Joshua tree from high severity fire using basal sprouts. The study is attempting to determine the protocols that should be implemented when a stand of western Joshua tree burns.

TRIBAL CO-MANAGEMENT

- CSP recently developed an memorandum of understanding (MOU) with a local Tribe and will share the document if it can be made publicly available.
- CSP indicated that western Joshua tree conservation has not been a high priority for Tribes in the area.

Public Outreach Meeting #1

The purpose of this meeting was to solicit input from the public on the elements, content, and issues to be addressed in the Conservation Plan. Meeting attendees included land/property owners, real estate brokers, trade association representatives, non-profit land conservancy and conservation association representatives, town council association representatives, regulatory consultants, biologists, local agency staff, and legislative office representatives.

The following sections summarize the key topics that were discussed during the meeting:

MITIGATION APPROACHES

- Commenters expressed concerns that current mitigation approaches still result in the net loss of western Joshua tree. A researcher stated that a 1:1 tree replacement ratio is not sufficient because approximately 10 seeds and 100 years are needed to produce one mature western Joshua tree.
- One commenter requested consideration for mitigation of western Joshua trees that colonize fallowed agricultural land.
- One commenter (regulatory consultant) asked how management approaches will differ in reduced fee areas.

TRANSPLANTING STRATEGIES

- Commenters recommended that CDFW establish guidelines for transplanting trees to ensure survival. Commenters suggested that transplanted trees be relocated near their points of origin to areas with similar altitude and soil conditions. However, another commenter recommended assisted migration and moving trees to cooler sites that serve as climate refugia.
- Commenters suggested that CDFW consider the efficacy of transplant methods. One commenter stated that using spades for relocation is 6 to 8 times more successful than bare rooting for western Joshua trees over 8 feet tall.
- Commenters recommended that CDFW develop a system of tracking trees to monitor survivability.
- One commenter asked for clarification on whether relocation is considered an impact or a conservation strategy.

CONSERVATION STRATEGIES

- Commenters stated that the Conservation Plan should place higher emphasis on in situ preservation of western Joshua tree over habitat creation and restoration due to the length of time it takes for the species to mature and provide functioning habitat. Subsequently, a commenter suggested that the fee structure favor preservation.

- One commenter expressed concerns that western Joshua trees are being transplanted to landscaped areas rather than conservation lands. The commenter suggested that the Conservation Plan treat western Joshua tree as a keystone species with habitat value rather than a landscape plant.
- One commenter suggested that the Conservation Plan ensure habitat connectivity for species that use western Joshua tree habitat (e.g., LeConte's thrasher [*Toxostoma lecontei*], loggerhead shrike [*Lanius ludovicianus*]) to prevent these species from declining and becoming listed.
- Commenters suggested that the Conservation Plan incorporate measures to maintain existing soil mycorrhizae and protect western Joshua tree's obligate pollinator.
- One commenter recommended that the Conservation Plan establish a baseline, describe long-term management opportunities, and consider uncertainties.
- Commenters expressed concerns that mitigation and conservation lands are located outside the current distribution of western Joshua tree.
- Commenters suggested that the Conservation Plan should deter development and solar and wind projects from high density populations of western Joshua tree and encourage developers to build in disturbed areas.

PERMITTING

- Commenters expressed concerns about how permit requirements will be enforced at the local level. Commenters recommended that CDFW develop a mechanism and funding for oversight to ensure that applicants adhere to permit requirements.
- Commenters (particularly landowners/developers, real estate brokers, regulatory consultants, and government representatives) expressed concern about balancing western Joshua tree conservation with housing needs and impacts on property owners. Commenters expressed concerns about permitting costs and diminished property values due to these costs. One commenter suggested fee waivers for single-family homeowners. One commenter expressed support for placing limits on tree removal, but noted that sprouts on a single tree make it too easy to exceed these limits.
- Commenters asked whether the WJTCA allows landowners to collect seeds and reproduce, plant, or relocate western Joshua trees within their private property without risk of take.
- A representative from San Bernardino County requested permitting streamlining for public works safety projects (e.g., emergency repairs).
- One commenter asked how conservation efforts will be funded if the money received from permitting fees is not sufficient.

OTHER TOPICS

- One commenter suggested that environmental justice be a consideration in the Conservation Plan.
- One commenter expressed interest in reviewing input from Tribes.

California State Parks Meeting #2

The purpose of this meeting was to solicit input from CSP on their Tribal MOU program. A full list of attendees is provided in the "List of Attendees" section below.

During the meeting, CSP discussed lessons learned from their prior experience establishing agreements with California Native American tribes. CSP also provided recommendations related to the following:

- Collaborations and funding sources;
- Protocols and procedures for communication and information sharing, including tailored approaches to the unique needs of each Tribe;
- MOU content, including the importance of defining the regulatory framework and legal obligations and identifying priorities and mutually beneficial activities for the agreements;
- Importance of including all relevant staff and leadership;
- Strategies for decision-making; and
- Suggestions on the format for discussions and process of incorporating input from Tribes.

State and Federal Agency Meeting #2

The purpose of this meeting was to solicit additional input about current efforts to protect western Joshua tree from state and federal agencies that manage land in the geographic focus area of the Conservation Plan. In addition, the meeting provided a second opportunity for CDFW to provide updates to the proposed management actions, identify opportunities for collaboration with these state and federal agencies, and gather feedback on issues of concern that the agencies would like to see addressed in the Conservation Plan.

Representatives from the following agencies attended the meeting: CSP, California State Lands Commission (CSLC), California Department of Forestry and Fire Protection (CAL FIRE), DOD, NPS, USFWS, US Navy, BLM, Caltrans, and USFS. A full list of attendees and their affiliations is provided in the "List of Attendees" section below.

The following topics relevant to the Conservation Plan were discussed during the meeting:

- CSP (Leah Gardner) indicated that OHV use is more impactful to western Joshua trees in open riding areas than on designated trails within State Parks. Accordingly, the Conservation Plan should clarify that negative impacts related to OHV use refer to unrestricted off-trail use.
- CSP (Leah Gardner) noted that land use categories in State Parks include natural and cultural preserves, which have more restricted use than recreation areas.
- CSP (Leah Gardner) recommended expanding on the management actions to include actions that minimize erosion and minimize impacts on biological soil crusts.
- CSP (Chris Hon) recommended clarifying what is meant by grazing in the Conservation Plan, since there is a difference in the effects from grazing by livestock and by native mammals.

Local Agency Meeting #2

The purpose of this meeting was to provide updates to the proposed management actions and address and gather additional feedback on issues of concern that local agencies would like to see addressed in the Conservation Plan. In addition, the meeting provided a second opportunity for local agencies to identify how they would like to engage in the development of the Conservation Plan and how CDFW can align the plan's strategies with local agency conservation goals.

Meeting attendees included representatives from the following local agencies: Los Angeles County, San Bernardino County, Riverside County, City of Adelanto, City of Palmdale, California City, City of Victorville, and City of Hesperia. A full list of attendees and their affiliations is provided in the "List of Attendees" section below.

The following sections summarize the key topics that were discussed during the meeting:

- A representative from the Los Angeles County Planning Department (Caroline Chen) raised concern with using mulch to cover exposed soils during the creation of fire lines because of the potential for mulch to catch on fire.

- A representative from the Los Angeles County Planning Department (Mark Herwick) asked about the likelihood of developing preserves, whether there is a minimum size requirement for preserves, and if the Conservation Plan considers connectivity between preserves.
- Local jurisdictions expressed concerns related to permitting and requested clarification about the types of impacts that would occur within certain distances of trees. Representatives from the Los Angeles County Planning Department (Lorraine Acuna) and City of Hesperia (Andrew Lemke) expressed concerns about how single family homeowners would be affected by impact buffers around trees and noted that different jurisdictions use different buffers. A representative from the City of Victorville (Alex Jauregui) requested clarification on the requirements for triggering an incidental take permit and asked if different requirements would apply depending on the ecological value of the land. A representative from San Bernardino County (Karen Carter) expressed concerns about maintaining existing roads that are within the avoidance buffers of trees.

California State Lands Commission Meeting #1

The purpose of this meeting was to solicit input from the CSLC about current efforts to protect western Joshua tree. In addition, the meeting provided an opportunity for CDFW to identify opportunities for collaboration with CSLC and gather feedback on issues of concern that CSLC would like to see addressed in the Conservation Plan. A full list of attendees and their affiliations is provided in the "List of Attendees" section below.

The following sections summarize the key topics relevant to the Conservation Plan that were discussed during the meeting:

- CSLC has jurisdiction over State Lands, which include School Lands and Sovereign Lands.
- On School Lands, CSLC issues leases for various project types, including electrical transmission infrastructure, grazing, guzzlers, state highway improvements, mineral extraction, and renewable energy development. All leases on School Lands must undergo the California Environmental Quality Act (CEQA) process, which evaluates impacts on western Joshua tree. CSLC is typically the lead agency under CEQA and is open to receiving guidance from CDFW on recommended protections for western Joshua tree. Fees are required for leases on School Lands. CSLC has been seeking to consolidate School Lands for conservation, but the Federal government has not made progress on implementation. CSLC generally does not sell School Lands parcels.
- Sovereign lands include navigable lakes, rivers, the area from the shore to three miles into the ocean, and other larger natural water bodies. CSLC has jurisdiction on lands where these resources were located on the date of California statehood. Fees for leases on Sovereign Lands can be waived.
- Projects on State Lands must consider the historic lands inventory as part of the CEQA analysis. One wind energy project on State Lands involved evaluation of a historic Joshua tree display and incorporated mitigation to locate infrastructure away from this population of trees.
- CSLC has issued leases on State Lands to CSP and CDFW for conservation and preservation purposes. These types of leases are typically long-term (10–20 years). CSLC can issue long-term leases to CDFW for preservation of land in modeled climate refugia. However, leases are not exclusive and applicants may apply for leases on parcels held under long-term leases for conservation and preservation. CSLC would be required to review any applications, but is unlikely to approve the application if the new project conflicts with the conservation and preservation of western Joshua tree.
- CSLC is amenable to disclosing a collaboration between CDFW and CSLC to preserve western Joshua tree on State Lands in the Conservation Plan.

California State Parks Meeting #3

The purpose of this meeting was to solicit input from CSP on the management actions that are being developed for the Conservation Plan and potential implementation in State Parks with western Joshua trees. A full list of attendees is provided in the "List of Attendees" section below.

The following sections summarize the key topics that were discussed during the meeting:

OFF-HIGHWAY VEHICLE USE

- CSP requires each State Vehicular Recreation Area to follow a Wildlife Habitat Protection Plan and a Soil Conservation Plan. These plans are in development and are expected to be released to the public by the end of 2024. CSP recommends referencing these plans in the Conservation Plan.
- CSP requires park visitors and employees to stay on designated trails and roads. CSP manages off-trail riding by repairing and replacing fences and erecting barriers (e.g., straw bales or permanent fences).

CONSERVATION AGREEMENTS

- CSP staff expressed that they need to understand more specifics about the Conservation Plan before making commitments. They suggested that the Conservation Plan should allow for flexibility and should identify the commitment to maintain ongoing collaboration, restoration opportunities that could be funded by the Conservation Fund, and guidance for relocating western Joshua trees.

MANAGEMENT PRACTICES

- CSP typically manages habitat rather than individual species. CSP staff indicated that they would not agree to blanket avoidance buffers (e.g., 1 meter buffer around western Joshua tree).
- CSP does not deal with mitigation or conservation easements.
- The Natural Resources Department of CSP does not deal with acquiring land for management; however, this topic can be discussed with another division of CSP.

WESTERN JOSHUA TREE RELOCATION

- CSP staff wants to understand their responsibilities if they were to accept relocated western Joshua trees on State Park lands.
- There was disagreement among CSP staff about whether a 10-mile limit on relocation distances would be acceptable.
- CSP indicated that they cannot participate in gene flow management activities.
- CSP raised questions related to success rates of relocating trees and the length of time for maintenance activities, such as watering.
- CSP identified challenges with relocating trees to Onyx Ranch SVRA because much of the land is inaccessible (e.g., bringing water trucks to relocation sites, liabilities). CSP indicated that Arthur B. Ripley Desert Woodland SP is more accessible.

PROJECT EVALUATION

- CSP is required to fill out a Project Evaluation Form for any project involving ground disturbance, including tree relocation and habitat enhancement. The review period for form approval is 3 to 6 months. Tribes may request to consult during this process.

LONG-TERM MONITORING

- CSP encourages scientific research and issues permits for research activities. Science permits typically take a few months to process. CSP would accept establishment of long-term monitoring plots and recommends that are clearly marked.

Public Outreach Meeting #2

The purpose of this meeting was to solicit additional input from the public on the elements, content, and issues to be addressed in the Conservation Plan. Meeting attendees included regulatory consultants, government agency and special district representatives, private landowners, attorneys, construction and landscaping companies, non-profit land conservancy and conservation association representatives, university affiliates, utility and solar companies, and news reporters.

The following topics relevant to the Conservation Plan were discussed during the meeting:

- Commenters expressed concerns related to permitting. Commenters opposed the permitting of certain solar projects and expressed concerns that permitting will pose a higher financial burden for individual property owners and disadvantaged communities compared to large-scale developers. Commenters also expressed concern about enforcement of permit conditions when delegating permitting authority to local governments. In addition, commenters asked whether mitigation fee levels would correspond with habitat quality.
- Commenters recommended conducting additional research on seed dispersers and the effects of grazing animals on western Joshua trees.
- Commenters suggested that translocation success rates are overstated and expressed a preference for preservation over relocation, particularly for clonal trees.
- Commenters raised questions about the types of activities covered under the WJTCA.
- Commenters raised questions about how conservation funds would be sourced, managed, spent, and made transparent to the public.
- Commenters raised questions about the enforceability of management actions in the Conservation Plan.
- A representative from the Town of Yucca Valley (Jared Jerome) raised questions about impacts from fire breaks and the reasoning behind fire break recommendations.

California Department of Forestry and Fire Protection Meeting #1

The purpose of this meeting was to solicit input from the CAL FIRE San Bernardino Unit about potential fire and fuel treatment strategies. In addition, the meeting provided an opportunity for CDFW to identify opportunities for collaboration with CAL FIRE and gather feedback on issues of concern that CAL FIRE would like to see addressed in the Conservation Plan. A full list of attendees and their affiliations is provided in the "List of Attendees" section below.

The following sections summarize the key topics that were discussed during the meeting:

FUEL TREATMENT STRATEGIES

- CAL FIRE's approach to fuel reduction in western Joshua tree habitat is implementing manual treatments, with mechanical treatments where possible. CAL FIRE has had issues with grazing in the past and noted that herbicide application may become more limited due to the listing of bumble bees. CAL FIRE has not implemented prescribed fire because western Joshua tree is not a fire-adapted species. CAL FIRE recommends including manual and mechanical treatments in the Conservation Plan.
- The San Bernardino Unit implements treatments within the State Responsibility Area. Treatments typically occur on state and private land, but CAL FIRE is interested in cooperating more with federal agencies. Western Joshua trees are also present in Los Angeles County (contracted with CAL FIRE) and the Riverside Unit.
- CAL FIRE has implemented one fuel treatment project in an area with a large population of western Joshua trees. The treatment area encompassed approximately 60–80 acres in Piñon Hills, a transition zone with pinyon pine. Manual treatments were implemented within buffers around western Joshua trees and mechanical treatments were implemented outside of buffers. CAL FIRE noted that treatments may not be feasible if typical buffers (e.g., 50 feet) are required around trees.
- The Conservation Plan can include fire management strategies. CAL FIRE can implement treatments to protect climate refugia if they receive input on design elements. Fire prevention strategies (e.g., implementing fuel treatments) are more likely to be followed than strategies implemented during an active fire.

OPPORTUNITIES FOR COLLABORATION

- CAL FIRE is primarily concerned with implementing fuel treatments to protect health and safety (e.g., evacuation routes) and infrastructure. CAL FIRE is already working with CDFW to ensure that they are adequately protecting western Joshua tree during implementation of projects. CAL FIRE has funding for collaboration with CDFW. Edith Martinez is CDFW's current point of contact with CAL FIRE.
- CDFW would like to work with CAL FIRE to develop mitigation measures to protect western Joshua tree for projects that benefit ingress/egress and infrastructure. Fuel treatment projects may be funded through the Conservation Fund.
- The Conservation Plan could describe the process for collaboration between CDFW and CAL FIRE, as follows: (1) CAL FIRE develops a project; (2) CAL FIRE submits the project to CDFW fire staff (currently Edith Martinez); and (3) CDFW fire staff connects with the western Joshua tree team for review.
- CAL FIRE is interested in participating in the fire fuels and invasive species subgroup of the interagency biological working group for Joshua tree.

Public Workshop Meetings #1 and #2

CDFW held two public workshop meetings on March 10, 2025, one in the morning (10–1pm) and one in the afternoon (3–6pm). The same content was presented at both workshops, with different times available to the public to allow for increased attendance. The purpose of these workshops was to address comments on the draft Conservation Plan released to the public on November 22, 2024 that were provided by mail/email, as well as verbal comments received during the Commission's February 12, 2025 public hearing on the Conservation Plan. The workshops also aimed to address comments received about the WJTCA, and provided clarity on the difference between the Conservation Plan and WJTCA and a description of ITPs under the WJTCA and California Endangered Species Act. The workshop presentation included a brief overview of these topics, a summary of comments received to date on the draft Conservation Plan, and anticipated changes to the Conservation Plan based on these comments. The workshops also provided an open public forum to solicit additional feedback and answer questions on these topics.

Meeting attendees included government agency and special district representatives; town council association representatives; Tribal representatives; regulatory consultants; biologists; private land/property owners; real estate brokers and developers; property management companies; trade association representatives; attorneys; contractors; arborists; non-profit land conservancy and conservation association representatives; agricultural advocacy group representatives; university affiliates; news reporters; and professionals from utility and renewable energy companies, engineering and architecture firms, construction companies, and landscaping companies.

The following sections summarize some of the key topics relevant to the Conservation Plan that were discussed during the workshops:

WESTERN JOSHUA TREE CONSERVATION PLAN CONTENT

- Commenters expressed support for the recommendations and management actions in the Conservation Plan.
- One commenter advocated for low-conflict siting of renewable energy development to ensure the retention of intact western Joshua tree habitat.
- One commenter requested additional details about the Tribal monitoring that may be recommended or required for removal, trimming, and relocation of western Joshua trees.

WESTERN JOSHUA TREE CONSERVATION ACT REQUIREMENTS AND PERMITTING

- Commenters raised questions and concerns related to permit requirements under WJTCA. One commenter expressed concern about equitable consideration of individual landowners in decision-making related to permitting requirements under the WJTCA. Some commenters questioned whether a 50-foot-radius buffer for protecting western Joshua tree root zones is supported by best available science and suggested that smaller buffer distances may be warranted. One commenter expressed support for retaining the recommended buffer distance, but allowing for some exemptions (e.g., in areas where existing development occurs within a buffer or for some residential properties). One commenter suggested expanding the fees required for removal of trees taller than 5 meters to include trees taller than 3.5 meters.
- Several residential landowners and utility districts expressed concern about in-lieu fee mitigation costs associated with implementing mandated connections to utility lines.
- Commenters raised concerns about costs associated with relocation and additional mitigation requirements that could be imposed outside of the WJTCA, particularly due to the size of the avoidance buffers being infeasible to implement.
- Commenters were concerned about costs for individual residential landowners to complete CEQA review of ITP applications.
- Commenters requested additional information, including sources of information for census survey methods and guidance for becoming a Desert Native Plant Specialist.
- Commenters requested information and provided suggestions related to relocation methods, including requests for data on the success of relocation and other mitigation efforts, a list of relocation sites, and guidance for cases when there are no willing receiver sites.
- Commenters expressed concerns about unauthorized western Joshua tree removal and permit violations by utility companies and local jurisdictions regarding take of western Joshua tree, and suggestions for tracking compliance.

LIST OF ATTENDEES

The following tables provide lists of attendees from CDFW's meetings with public agencies and the scientific community. Attendees are grouped by organization and then listed alphabetically by first name. In total, nearly 800 members of the general public attended the public outreach and workshop meetings; the attendee lists for those meetings are not provided herein.

State and Federal Agency Meeting #1 Attendees

Name	Organization
Curtis Alling	Ascent
Hannah Weinberger	Ascent
Jessie Quinn	Ascent
Linda Leeman	Ascent
Tracy Prybyla	Ascent
Alisa Ellsworth	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Jeb Bjerke	California Department of Fish and Wildlife
Jeff Drongesen	California Department of Fish and Wildlife
Josh Grover	California Department of Fish and Wildlife
Julie Vance	California Department of Fish and Wildlife
Kelley Barker	California Department of Fish and Wildlife
Kevin Thomas	California Department of Fish and Wildlife
Lani Maher	California Department of Fish and Wildlife
Laura Petersen-Diaz	California Department of Fish and Wildlife
Mariel Boldis	California Department of Fish and Wildlife
Sara Kern	California Department of Fish and Wildlife
Steve Ingram	California Department of Fish and Wildlife
Beau Tindall	California Department of Transportation
William Hunt	California Department of Transportation
Leah Gardner	California State Parks
Kathryn Tobias	California State Parks
Jay Goodwin	National Park Service (Joshua Tree National Park)
Frank Giles	US Bureau of Land Management
Judy Perkins	US Bureau of Land Management
Kim Marsden	US Bureau of Land Management
LaReina Van Sant	US Bureau of Land Management
Larry Zimmerman	US Department of Defense, Edwards Air Force Base
Misty Hailstone	US Department of Defense, Edwards Air Force Base
Felicia Sirchia	US Department of Fish and Wildlife Service

Name	Organization
Julie Simonsen	US Department of Fish and Wildlife Service
Laura Ashfield	US Forest Service
Cynthia Hopkins	US Navy, Naval Air Weapons Station China Lake
Julia Hendrix	US Navy, Naval Air Weapons Station China Lake

Local Agency Meeting #1 Attendees

Name	Organization
Drew Kaiser	California Department of Fish and Wildlife
Jeb Bjerke	California Department of Fish and Wildlife
Mariel Boldis	California Department of Fish and Wildlife
Sara Kern	California Department of Fish and Wildlife
Kelley Barker	California Department of Fish and Wildlife
Jeff Drongesen	California Department of Fish and Wildlife
Steve Ingram	California Department of Fish and Wildlife
Kevin Thomas	California Department of Fish and Wildlife
Julie Vance	California Department of Fish and Wildlife
Alisa Ellsworth	California Department of Fish and Wildlife
Lani Maher	California Department of Fish and Wildlife
Jessie Quinn	Ascent
Linda Leeman	Ascent
Curtis Alling	Ascent
Tracy Prybyla	Ascent
Hannah Weinberger	Ascent
John Moreno	Bowman Group
Casey Brooksher	City of Hesperia
Tammy Pelayes	City of Hesperia
Corrie Kates	City of Hesperia
Daniel Aguilar	City of Hesperia
Jocelyn Swain	City of Lancaster
Megan Taggart	City of Palmdale
Heather Spurlock	City of Ridgecrest
Greg Griffith	San Bernadino County
Ayida Smith	San Bernadino County
Lacy Blackwell	San Bernadino County
Julia Addison	San Bernadino County
Linda Mawby	San Bernadino County
Jai Cheng	San Bernadino County

Name	Organization
Mark Wardlaw	San Bernadino County
Karen Carter	San Bernadino County
Nancy Sansonetti	San Bernadino County
Manie Cruz	San Bernadino County
Mark Herwick	Los Angeles County
Thuy Hua	Los Angeles County
Amy Bodek	Los Angeles County
Joseph Decruyenaere	Los Angeles County
Caroline Chen	Los Angeles County
Evan Willoughby	Town of Yucca Valley
Markus Spielgelberg	ICF
Craig Murphy	Kern County

Researcher Outreach Meeting #1 Attendees

Name	Organization
Curtis Alling	Ascent
Hannah Weinberger	Ascent
Linda Leeman	Ascent
Benjamin Waitman	California Department of Fish and Wildlife
Cristin Walters	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Jeb Bjerke	California Department of Fish and Wildlife
Mariel Boldis	California Department of Fish and Wildlife
Jeremy Yoder	California State University, Northridge
Lauren Lien	City of Lancaster
Juniper Harrower	Reed College
Lynn Sweet	University of California, Riverside
Michael Loik	University of California, Santa Cruz
Julie Simonsen	US Department of Fish and Wildlife Service
Christopher Smith	Willamette University

California State Parks Meeting #1 Attendees

Name	Organization
Curtis Alling	Ascent
Hannah Weinberger	Ascent
Ben Waitman	California Department of Fish and Wildlife
Cristin Walters	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Isabel Baer	California Department of Fish and Wildlife
Jeb Bjerke	California Department of Fish and Wildlife
Arthur Heredia	California State Parks
Christopher Hon	California State Parks
Jessica Vannatta	California State Parks
Leah Gardener	California State Parks
Luis DeVera	California State Parks
Melissa Patten	California State Parks
Poya Kouchesfahani	California State Parks
Ron Melcer	California State Parks
Scott Soars	California State Parks
Tricia	California State Parks

California State Parks Meeting #2 Attendees

Name	Organization
Curtis Alling	Ascent
Jessie Quinn	Ascent
Cristin Walters	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Mariel Boldis	California Department of Fish and Wildlife
Sarah Fonseca	California Department of Fish and Wildlife
Dena Mitchell	California State Parks
Leslie Hartzell	California State Parks
Patricia Garcia	California State Parks

State and Federal Agency Meeting #2 Attendees

Name	Organization
Curtis Alling	Ascent
Hannah Weinberger	Ascent
Jessie Quinn	Ascent
Tracy Prybyla	Ascent
Cristin Walters	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Harvest Vieira	California Department of Fish and Wildlife
Isabel Baer	California Department of Fish and Wildlife
Lani Maher	California Department of Fish and Wildlife
Margaret Mantor	California Department of Fish and Wildlife
Mariel Boldis	California Department of Fish and Wildlife
Carol Snow	California Department of Forestry and Fire Protection
David Haas	California Department of Forestry and Fire Protection
Ian McBride	California Department of Forestry and Fire Protection
Amber Stoerp	California Department of Transportation
Jennifer Blake	California Department of Transportation
Julie Sage	California Department of Transportation
Katie Rodriguez	California Department of Transportation
Michelle Gilmore	California Department of Transportation
Sam Daley	California Department of Transportation
Christina MacDonald	California Department of Transportation, District 9
Laurel Zickler-Martin	California Department of Transportation, District 9
Matt Hoffman	California Department of Transportation, District 9
Sarah Mongano	California State Lands Commission
Alex Estrella	California State Parks
Arthur Heredia	California State Parks
Chris Hon	California State Parks
Elizabeth Freed	California State Parks
Jessi Vannatta	California State Parks
Leah Gardner	California State Parks
Luis De Vera	California State Parks
Scott Soares	California State Parks
Tricia Farmer	California State Parks
Misty Hailstone	Edwards Air Force Base (412th Civil Engineer Group Environmental Management Division)
Rick McNeill	National Park Service
Emma Lynch	US Bureau of Land Management

Name	Organization
Judy Perkins	US Bureau of Land Management
Martin Oliver	US Bureau of Land Management
Felicia Sirchia	US Fish and Wildlife Service
Anna Bonnette	US Forest Service
Laura Ashfield	US Forest Service
Scott Eliason	US Forest Service
Joseph Esparza	US Forest Service (San Bernardino National Forest)
Cynthia Hopkins	US Navy
Dylan Layfield	US Navy (Naval Air Weapons Station China Lake)
Meghan Branson	US Navy (Naval Facilities Engineering Systems Command Southwest)

Local Agency Meeting #2 Attendees

Name	Organization
Hannah Weinberger	Ascent
Jessie Quinn	Ascent
Tracy Prybyla	Ascent
Clark Blanchard	California Department of Fish and Wildlife
Cristin Walters	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Isabel Baer	California Department of Fish and Wildlife
Kelley Barker	California Department of Fish and Wildlife
Lani Maher	California Department of Fish and Wildlife
Mariel Boldis	California Department of Fish and Wildlife
Nyeka Allen	City of Adelanto
Anu Doravari	City of California City
Andrew Lemke	City of Hesperia
Tammy Pelayes	City of Hesperia
Megan Taggart	City of Palmdale
Alex Jauregui	City of Victorville
Markus Spiegelberg	ICF
Lorraine Acuna	Los Angeles County
Caroline Chen	Los Angeles County Planning
Mark Herwick	Los Angeles County Planning
Casey Escutia	Riverside County
Harry Sandoval	Riverside County
AJ Gerber	San Bernardino County
Fabian Villenas	San Bernadino County

Name	Organization
Jai Cheng	San Bernardino County
Nancy Sansonetti	San Bernardino County
Ayida Smith	San Bernardino County Department of Public Works
Karen Carter	San Bernardino County Department of Public Works
Manie Cruz	San Bernardino County Department of Public Works
Lacy Blackwell	San Bernardino County Office of Emergency Services

California State Lands Commission Meeting #1 Attendees

Name	Organization
Curtis Alling	Ascent
Hannah Weinberger	Ascent
Jessie Quinn	Ascent
Cristin Walters	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Jeb Bjerke	California Department of Fish and Wildlife
Drew Simpkin	California State Lands Commission
Sarah Mongano	California State Lands Commission

California State Parks Meeting #3 Attendees

Name	Organization
Curtis Alling	Ascent
Hannah Weinberger	Ascent
Jessie Quinn	Ascent
Cristin Walters	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Isabel Baer	California Department of Fish and Wildlife
Jeb Bjerke	California Department of Fish and Wildlife
Mariel Boldis	California Department of Fish and Wildlife
Arthur Heredia	California State Parks
Christopher Hon	California State Parks
Jessica Vannatta	California State Parks
Leah Gardner	California State Parks
Luis DeVera	California State Parks
Madison Eklund	California State Parks
Melissa Patten	California State Parks
Patricia Farmer	California State Parks

Name	Organization
Poya Kouchesfahani	California State Parks
Ron Melcer	California State Parks
Russ Bradley	California State Parks
Scott Soars	California State Parks

California Department of Forestry and Fire Protection Meeting #1 Attendees

Name	Organization
Curtis Alling	Ascent
Hannah Weinberger	Ascent
Cristin Walters	California Department of Fish and Wildlife
Drew Kaiser	California Department of Fish and Wildlife
Elliot Chasin	California Department of Fish and Wildlife
Jeb Bjerke	California Department of Fish and Wildlife
Mariel Boldis	California Department of Fish and Wildlife
Mika Samoy	California Department of Fish and Wildlife
Carol Snow	California Department of Forestry and Fire Protection (San Bernardino Unit)
Davis Haas	California Department of Forestry and Fire Protection (San Bernardino Unit)

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Appendix C.

Tribal Input Summary Memo

Memo

Piñon Heritage Solutions LLC
3733 E. Pacific Avenue
Sacramento, CA 95820
916.926.2736

ASM Affiliates
2034 Corte Del Nogal
Carlsbad, CA 92011
760.804.5757

Date: May 12, 2025

To: Drew Kaiser, Isabel Baer, Cristin Walters, Jeb Bjerke, Mariel Boldis, Mika Samoy, CDFW

From: Diana T. Dyste, MA, RPA, Dr. Elizabeth Bagwell, RPA, and Lucien David Osas – Piñon Heritage Solutions LLC
Brian Williams, MMA, RPA – ASM Affiliates

Subject: Tribal Input Summary, Western Joshua Tree Conservation Plan

Piñon Heritage Solutions LLC (Piñon) and ASM Affiliates (ASM) respectfully submit the Tribal input summary presented herein as part of the Western Joshua Tree Conservation Plan (Conservation Plan) preparation. This summary includes information about the California Department of Fish and Wildlife's (CDFW) outreach process to California Native American tribes (Tribes) who are identified as being culturally affiliated with the habitat of the Joshua tree in California, and a list of Tribes who have responded in the affirmative that they are interested in participating in government-to-government consultation with CDFW or non-governmental collaborative tribal meetings with the Native American Land Conservancy (NALC). CDFW and NALC are engaged in an ongoing process of consultation, communication, and collaboration with Tribes, and as such, a summary of preliminary ideas from Tribes and broad ideas about potential Tribal co-management strategies is included.

This memorandum has been prepared in partial fulfillment of CDFW's Tribal Communication and Consultation Policy and is considered a living document. Forthcoming meeting notes from CDFW, NALC, and other parties engaging with Tribes, as well as future meetings and associated principles, methods, and strategies for Joshua tree co-management will be incorporated in updated memoranda when the Conservation Plan is updated or amended in the future. A central purpose of this memorandum is to document California Native American Tribal outreach efforts completed by CDFW and NALC during development of the Conservation Plan Tribal Co-Management sections occurring from October 2023 to April 2025 (see Section 1.3.2, "California Native American Tribes", and Section 5.3.3, "Tribal Co-Management").

CDFW OUTREACH PROCESS

CDFW began the outreach process with the goal of identifying California Native American Tribes who may have an interest in Tribal co-management of the western Joshua tree and its habitat. To accomplish this, CDFW requested an AB 52 Tribal Consultation List, a Statewide Tribal Contact List, and a Sacred Lands File search for the region encompassing the proposed California western Joshua tree habitat from the Native American Heritage Commission (NAHC). As the NAHC contact lists were in preparation, the consulting firms (Piñon and ASM) hired by Ascent Environmental to assist CDFW with Tribal engagement, provided their current lists of Native American contacts for Tribes within the western Joshua tree habitat, or who were thought to have potential cultural traditions that involve use of western Joshua tree. The contact list from NAHC was received on December 4, 2023 and added to the ASM/Piñon Native American contact list to create a single master tribal contacts list. A subsequent contact list provided by CDFW Department Tribal Liaison, Sarah Fonseca, in February 2025 was used to update the Native American contact list for future mailings.

The CDFW engaged with Tribes through the following events and forms of communication:

- Initial outreach to Tribes
  - CDFW emailed information about the Western Joshua Tree Conservation Act and Tribal Co-Management coordination, to the initial contacts provided by Piñon and ASM on 10/12/2023 and invited them to view an online recorded CDFW video presentation about the Conservation Plan (see Attachment 1 to this memorandum).
  - ASM mailed hardcopy letters to the initial contact list provided by Piñon and ASM on 10/18/2023.
  - Piñon and ASM made follow up calls between 10/23/2023 and 10/27/2023.
- Invitation to participate in a live, online tribal listening session
  - CDFW emailed informational letters on 11/27/2023. The letters included details about the prerecorded CDFW video (e.g. under initial outreach) and the tribal listening session. The emails were sent by CDFW to the list of contacts provided by Piñon and ASM.
  - ASM mailed hardcopy letters to the initial contacts provided by Piñon and ASM on 12/1/2023.
  - CDFW emailed informational letters to the additional contacts provided by the NAHC on 12/5/2023.
  - ASM mailed hardcopy letters to the additional NAHC contacts on 12/7/2023.

- Piñon and ASM made follow up calls to the master tribal contact list between 12/5/2023 and 12/12/2023.
- CDFW sent a reminder email about the online tribal listening session on 12/14/2023.

- CDFW held a live, online tribal listening session on 12/14/2023.
- Written Letters "Notification of the Development of a western Joshua tree conservation plan pursuant to the Western Joshua Tree Conservation Act" were sent to all listed in the master tribal contacts list.
  - CDFW emailed Notification Letters on 2/22/2024.
  - ASM mailed hardcopy Notification Letters on 3/4/2024.
  - Piñon and ASM made follow-up calls to all Tribes on the master tribal contact list from 3/19/2024 to 4/12/2024.
- The NALC began facilitating in-person, virtual, and telephone non-governmental collaborative meetings with Tribes on 5/9/2024. These are ongoing.
- CDFW began meeting with interested Tribes for one-on-one informational meetings or government-to-government consultation on 5/24/2024. These are ongoing.
- Emails labeled, "WJT Community Workshop – October 26, 2024," were sent to select Tribes included in the master tribal contacts list.
  - NALC emailed Notification Letters between 9/20/2024 and 10/15/2024.
  - NALC followed up with an email to Tribal members who had RSVP'd on 10/22/2024.
- The CDFW, NALC, and interested Tribes met in person for a site visit to western Joshua tree habitat in the town of Lone Pine on 10/26/2024. Topics discussed at this meeting included installation of interpretative signage in areas populated with western Joshua tree; establishing an intertribal coalition to integrate Tribes' voices in contributing to the Conservation Plan; land opportunities and land prioritization for Tribes such as co-management, nursery establishment, and involvement of Tribal monitors to assist with western Joshua tree protection during development; and western Joshua tree ecology, biology, horticulture, Tribal Environmental Knowledge or Tribal Ecological Knowledge, and Tribal Ecological Practices. Representatives from the following Tribes attended the meeting:
  - Chemehuevi Indian Tribe
  - Kern Valley Indian Community
  - San Gabriel Band of Mission Indians
  - Fernandeño Tataviam Band of Mission Indians

- San Manuel Band of Mission Indians
- Big Pine Paiute Tribe of the Owens Valley
- Gabrielino-Tongva Tribe/Pit River
- Lone Pine Paiute Shoshone Tribe
- Fort Yuma Quechan Indian Tribe

- Emails labeled, "WJTCW - Two Day Event (02/21-02/22)," were sent to select Tribes included in the master Tribal contacts list.
  - NALC emailed Notification Letters between 1/24/2025 and 2/19/2025.
  - NALC followed up with an email to tribal members who had RSVP'd on 2/19/2025.
- CDFW, NALC, and interested Tribes met in person or virtually for a two-day workshop in the community of Joshua Tree on 2/21/2025 and in the town of Yucca Valley on 2/22/2025. During the first day of the workshop, staff from the Mojave Desert Land Trust (MDLT) led a tour of their nursery and seedbank. Staff from MDLT, The Wildlands Conservancy, and CDFW led tours of preserves and other properties with western Joshua trees. During the second day, staff from CDFW, NALC, US Fish and Wildlife Service, Center for Biological Diversity, and Joshua Tree National Park shared presentations on Western Joshua Tree Conservation Plan updates, potential grant opportunities, Inter-Tribal coalitions, the Western Joshua Tree Conservation Act and California Endangered Species Act listings, range-wide conservation agreements, and National Park Service research, conservation, and partnerships. Representatives from the following Tribes attended one or both days of the workshop.
  - Agua Caliente Band of Cahuilla Indians
  - Cahuilla Band of Indians
  - Fort Yuma Quechan Indian Tribe
  - Kern Valley Indian Community
  - Twenty-Nine Palms Band of Mission Indians
  - Tübatulabals of Kern Valley

CALIFORNIA NATIVE AMERICAN TRIBES AND INDIVIDUALS PARTICIPATING IN JOSHUA TREE CO-MANAGEMENT DISCUSSIONS

The following eighteen (18) Tribes and one individual are participating in co-developing the principles, approach, and elements of Tribal co-management of western Joshua tree conservation in consultation with CDFW at various stages of the Conservation Plan preparation:

- Agua Caliente Band of Cahuilla Indians
- Agua Caliente Tribe of Cupeño Indians
- Cahuilla Band of Indians
- Carmen Lucas, Native American individual
- Chemehuevi Indian Tribe
- Fernandeño Tataviam Band of Mission Indians
- Fort Independence Indian Community of Paiute Shoshone
- Fort Mojave Indian Tribe
- Fort Yuma Quechan Indian Tribe
- Gabrieleno San Gabriel Band of Mission Indians
- Kern Valley Indian Community
- Kwaaymii Laguna Band of Mission Indians
- Lone Pine Paiute-Shoshone Tribe
- Pala Band of Mission Indians
- Rincon Band of Luiseño Indians
- Tejon Indian Tribe
- Tübatulabals of Kern Valley
- Tule River Indian Tribe
- Twenty-Nine Palms Band of Mission Indians

PRELIMINARY CDFW/TRIBAL CO-MANAGEMENT IDEAS

CDFW, NALC, and the eighteen Tribes and individual identified above are actively engaged in ongoing discussions about the Western Joshua Tree Conservation Act and Conservation Plan. Discussions are focused on defining the best approach to planning and implementing feasible Conservation Plan Tribal Co-Management strategies. These may include, but are not limited to, Tribal programming, funding, co-developing western Joshua tree conservation policies, and exploring ways to gather culturally significant data. The bulleted list below summarizes the conversational topics that emerged during the initial meetings between Tribes and CDFW or the NALC. This list is not exhaustive and is expected to become more detailed and refined as additional meetings are held between Tribes and CDFW or NALC. Topics include:

- Strategies for more effective controlled burning and reduction of fuel loads to help regeneration in post-fire conditions.
- Strategies for acquiring additional land across the western Joshua tree habitat for mitigation purposes with a focus on preserving genetically diverse stands.
- Funding a co-equal partnership between CDFW and Tribes, including Tribal facilities for mitigation efforts, funding for Tribal members to co-manage lands on an ongoing basis, and providing training for Tribal members interested in becoming co-managers.
- Setting permit fees to cover costs associated with mitigation or establishing a mitigation fund to buy land for mitigation, with developers or other sources contributing to the fund.
- Providing Tribes with funding and staff capacity support to grow western Joshua trees for mitigation, and to receive trees during relocation/transplanting.
- Providing Tribal members with training in western Joshua tree monitoring and desert native plant specialist certification.
- Develop, fund, and administer western Joshua tree conservation-focused Tribal youth programs or activities.
- Including project provisions to have Tribal cultural monitors on site for ground disturbing activities involving take of western Joshua trees, and to provide prayer rituals for the removal and relocation of western Joshua trees.
- Thinking more broadly about mitigation to include high country habitat and modification of development plans to account for preserving western Joshua trees in situ.
- Thinking holistically about supporting plants, insects, and animals that help ensure western Joshua trees' survival or enhance a suitable habitat.
- Conducting a habitat-wide ethnographic study of Tribes values, use, and management of western Joshua tree habitat.
- Funding additional cooperative research on western Joshua tree growth patterns and habitat needs in various conditions, including fire impacts in various landscapes, germinating western Joshua tree in post-fire soil conditions, and understanding better the thresholds for wind and water exposure.
- Completing a review of spring development and sustainability of water sources within western Joshua tree habitat and conservation lands, including consideration of Tribal water rights and access to water within lands they are being asked to hold in trust for mitigation.
- Supporting restoration of Tribal knowledge through funding and programming related to western Joshua tree and traditional use of the plant.

- Working towards adopting and implementing foundational commitments adapted from the state-applicable Policy Principles outlined in the March 2024 "Advisory Council on Historic Preservation's Policy Statement on Indigenous Knowledge and Historic Preservation" (Available at: https://www.achp.gov/sites/default/files/policies/2024-03/PolicyStatementonIndigenousKnowledgeandHistoricPreservation21March2024.pdf).

While Tribes are interested in holding additional conservation lands, the Tribes encourage balance and restraint in developing an approach that adequately provides funding to manage the newly acquired lands through new/additional hires.

CONCLUSION

CDFW's Tribal outreach and consultation efforts will be ongoing throughout the duration of the Western Joshua Tree Conservation Plan. The Conservation Plan has a process for amending future drafts with Traditional Ecological Knowledge that may come forward after the Conservation Plan is finalized. CDFW is committed to continuing this engagement with Tribes and that commitment will be codified in the co-management strategies and communication processes being developed. As more Tribes confirm participation in the Conservation Plan, their names will be added to this memorandum.

Attachment 1. Tribes Contacted to participate in the Conservation Plan development

Agua Caliente Band of Cahuilla Indians
Agua Caliente Tribe of Cupeño Indians
Augustine Band of Cahuilla Indians
Barbareño Band of Chumash Indians
Barbareño/Ventureño Band of Mission Indians
Barona Band of Mission Indians
Bear River Band of Rohnerville Rancheria
Big Pine Paiute Tribe of the Owens Valley
Big Sandy Rancheria of Western Mono Indians
Big Valley Band of Pomo Indians
Bishop Paiute Tribe
Blue Lake Rancheria Tribe of Indians
Bridgeport Paiute Indian Colony
Buena Vista Rancheria of Me-Wuk Indians
Cabazon Band of Mission Indians
Cahuilla Band of Indians
Calaveras Band of Mi-Wuk Indians
Calaveras Band of Mi-Wuk Indians - Grimes
California Valley Miwok Tribe
Campo Band of Kumeyaay Indians
Chemehuevi Indian Tribe
Cher-Ae Heights Indian Community of the Trinidad Rancheria
Chicken Ranch Rancheria of Me-Wuk Indians of California
Chumash Council of Bakersfield
Coastal Band of the Chumash Nation
Cocopah Indian Tribe
Cold Springs Rancheria of Mono Indians of California
Colorado River Indian Tribes
Death Valley Timbisha Shoshone Tribe
Dry Creek Rancheria Band of Pomo Indians
Dumna Wo-Wah Tribal Government
Dunlap Band of Mono Indians
Elem Indian Colony
Elk Valley Rancheria
Enterprise Rancheria of Maidu Indians
Ewiiaapaayp Band of Kumeyaay Indians
Federated Indians of Graton Rancheria
Fernandeño Tataviam Band of Mission Indians
Fort Independence Indian Community of Paiute Indians
Fort Mojave Indian Tribe
Fort Yuma Quechan Indian Tribe
Gabrieleño Band of Mission Indians - KIZH Nation
Gabrieleno/Tongva San Gabriel Band of Mission Indians
Gabrielino/Tongva Nation
Gabrielino-Tongva Indian Tribe
Gabrieleno Tongva Indians of California Tribal Council
Habematolel Pomo of Upper Lake
Hoopa Valley Tribe
Hopland Band of Pomo Indians
Iipay Nation of Santa Ysabel
Inaja-Cosmit Band of Indians
Jamul Indian Village
Juaneño Band of Mission Indians
Juaneño Band of Mission Indians Acjachemen Nation - Belardes
Juaneño Band of Mission Indians Acjachemen Nation 84A
Karuk Tribe
Kashia Band of Pomo Indians of Stewart's Point Rancheria
Kern River Paiute Council
Kern Valley Indian Community
Kitanemuk & Yowlumne Tejon Indians
Kwaaymii Laguna Band of Mission Indians
La Jolla Band of Luiseño Indians
La Posta Band of Diegueño Mission Indians
Lone Pine Paiute-Shoshone Tribe

Los Coyotes Band of Cahuilla and Cupeño Indians
Manzanita Band of Kumeyaay Nation
Mechoopda Band of Chico Rancheria
Mesa Grande Band of Diegueño Mission Indians
Middletown Rancheria of Pomo Indians
Mission Creek Band of Mission Indians
Monache Intertribal Association
Mono Lake Kootzaduka'a Tribe
Mooretown Rancheria of Maidu Indians
Morongo Band of Mission Indians
Nashville-Enterprise Miwok-Maidu-Nishinam Tribe
North Fork Mono Tribe
North Fork Rancheria of Mono Indians of California
Northern Chumash Tribal Council
Northern Valley Yokut / Ohlone Tribe
Owens Valley Career Development Center
Pala Band of Mission Indians
Paskenta Band of Nomlaki Indians
Pauma Band of Luiseño Indians
Pechanga Band of Indians
Picayune Rancheria of the Chukchansi Indians
Pinoleville Pomo Nation
Pit River Tribe
Ramona Band of Cahuilla
Rincon Band of Luiseño Indians
Round Valley Indian Tribe
Salinan Tribe of San Luis Obispo and Monterey Counties
San Fernando Band of Mission Indians
San Luis Rey Band of Mission Indians
San Manuel Band of Mission Indians
San Pasqual Band of Mission Indians
Santa Rosa Band of Cahuilla Indians
Santa Rosa Rancheria Tachi Yokut Tribe
Santa Ysabel Band of the Iipay Nation
Santa Ynez Band of Chumash Indians
Serrano Nation of Mission Indians
Sherwood Valley Band of Pomo Indians of California
Shingle Springs Band of Miwok Indians
Soboba Band of Luiseño Indians
Southern Sierra Miwuk Nation
Susanville Indian Rancheria
Sycuan Band of the Kumeyaay Nation
Table Mountain Rancheria
Tejon Indian Tribe
Timbisha Shoshone Tribe
Tolowa Dee-ni' Nation
Tongva Ancestral Territorial Tribal Nation
Torres-Martinez Desert Cahuilla Indians
Traditional Choinumni Tribe
Tübatulabals of Kern Valley
Tule River Indian Tribe
Tuolumne Band of Me-Wuk Indians
Twenty-Nine Palms Band of Mission Indians
United Auburn Indian Community of the Auburn Rancheria
Utu Utu Gwaitu Tribe of the Benton Paiute Reservation
Viejas Band of Kumeyaay Indians
Walker River Paiute Tribe
Washoe Tribe of Nevada and California
Wilton Rancheria
Wiyot Tribe - Table Bluff Reservation
Wuksache Indian Tribe/Eshom Valley Band
Xolon Salinan Tribe
yak tityu tityu yak tiłhini – Northern Chumash Tribe
Yocha Dehe Wintun Nation
Yuhaaviatam of San Manuel Nation
Yurok Tribe

Appendix D.

Avoidance and Minimization Best Management Practices and Guidelines

AVOIDANCE AND MINIMIZATION BEST MANAGEMENT PRACTICES AND GUIDANCE

The Avoidance and Minimization (A&M) Actions in this Appendix provide additional guidance and best management practices for several Actions in Chapters 5, "Conservation Management Actions and Effectiveness Criteria," Section 5.2.1, "Impact Avoidance and Minimization," with the corresponding A&M number and action title.

Action A&M 1.3.1: Avoid Impacts during Pesticide Application

Project proponents, landowners, land managers, and agencies should not apply pesticides on western Joshua trees and should implement best management practices that avoid pesticide drift onto western Joshua trees, nontarget vegetation (e.g., nurse plants), pollinators, or seed-dispersing rodents. Pesticides are chemicals that are used to control pests. Types of pesticides include herbicides, which aim to destroy or control unwanted vegetation, and insecticides, which aim to kill or control insects. Best management practices include:

1. Prior to pesticide treatment applications, western Joshua trees and buffer zones should be flagged or otherwise marked within treatment areas in western Joshua tree habitat.
2. No pesticide application should occur during precipitation or if precipitation is forecasted 24 hours before or after project activities, or as required by the label.
3. No ground disturbance or insecticide/larvicide use should occur within the dripline (i.e., perimeter edge of tree canopy) of a mature (i.e., reproductive) tree, which includes the tree itself, to avoid impacts on yucca moth pollinators.

However, pesticide application may be useful for the conservation and recovery of western Joshua tree (see Action LC&M 4.3, "Develop and Implement Restoration/Enhancement Plans").

Action A&M 2.5.1: Minimize Impacts from Invasive Plants

Project proponents, landowners, land managers, and agencies should implement best management practices to prevent the spread of invasive plants (Cal-IPC 2012) for all activities that have the potential to spread invasive species in western Joshua tree habitat (e.g., construction and resource extraction, off-highway vehicle (OHV) use, outdoor recreation, fire control and suppression, fuel treatment implementation, and grazing). Invasive plant management includes the following best management practices:

1. A pre-activity assessment should be conducted to determine which activities could spread invasive species and which best management practices are applicable to the site.
2. Vehicles, equipment, and personnel should be inspected and cleaned if they have propagules (i.e., plant parts that can become detached and give rise to a new plant) or materials that may contain propagules (e.g., mud).
3. Inspections should be done when vehicles first arrive at a site and periodically during the activity (e.g., fire suppression, development, restoration project).
4. All clothing, boots, and equipment should be inspected for soil and invasive plant material and should be cleaned before arriving in western Joshua tree habitat.
5. Invasive plant material should be disposed of appropriately outside of western Joshua tree habitat.
6. Vegetation and soil disturbance should be minimized.
7. Weed-free feed for stock animals should be used in western Joshua tree habitat.
8. Local personnel should be contacted to gather information on the locations of high priority invasive plants or to survey sites for their presence.
9. Awareness training should be provided to project personnel about avoiding known areas infested with invasive plants at the beginning of each day.
10. Establishing staging areas (e.g., fire camps, landings for helicopters, camps, laydown yards) in areas infested by high priority invasive plants should be avoided.
11. If infestations of high priority invasive plants occur within or near staging areas, their perimeters should be identified so vehicle and foot traffic can avoid them.
12. Using water from impoundments infested with invasive plants should be avoided, such as when watering western Joshua tree plantings or conducting fire suppression activities.

Action A&M 2.6.1: Minimize Impacts during Pesticide Application

Project proponents, landowners, land managers, and agencies should implement best management practices that minimize pesticide drifting onto western Joshua trees and other nontarget vegetation (e.g., nurse plants). Best practices include:

1. Pesticide use should be limited to targeted ground application (e.g., backpack/hand sprayed application, down-directed ground spray from small vehicles) within western Joshua tree avoidance buffer zones using the minimum amount required to be effective (Figure 5-1 in Chapter 5).

2. Broadcast or aerial spray of pesticides will not occur.
3. Western Joshua tree and nontarget plant species should be physically avoided during pesticide application by methods such as physically avoiding the plant and nurse plants, avoiding application on high heat or windy days to avoid volatilization (i.e., liquid converting to gas), and adjusting the nozzle and pressure to make bigger droplets to avoid pesticide drift.
4. A spill kit and safety plan should be on-site during herbicide treatments in western Joshua tree habitat. Immediate control, containment, and cleanup of fluids and pesticides due to spills or equipment failure (e.g., broken hose, punctured tank) should be implemented.
5. Cleaning and disposal of pesticide containers should be done in compliance with federal, state, and local laws, regulations, directives, and should avoid western Joshua tree, nurse plants, and pollinators.
6. Pesticide applicators should be certified and should comply with all label instructions and restrictions for use.
7. The use of pesticides for the conservation and recovery of western Joshua tree should be considered and applied according to product labels. For example, indaziflam is labeled for use in natural areas, including parks, open spaces, wildlife management areas, recreational areas, fire rehabilitation areas, and fuel breaks. This treatment method is being implemented at Joshua Tree National Park where treatment has not significantly affected established perennial vegetation and successfully controls annual grasses for up to 3 years after application (NPS 2022).

Action A&M 3.2.1: Minimize Impacts from Fire Suppression

While land managers and fire agencies should aggressively fight active wildland fires in or near western Joshua tree habitat to minimize loss of western Joshua trees, such activities can also cause direct and indirect impacts on western Joshua trees and their habitats. Land managers and fire agencies should minimize direct and indirect impacts on western Joshua tree during fire suppression and control activities when safe and feasible. Minimum Impact Suppression Techniques (MIST) and Best Management Practices are only to be considered when it does not threaten the safety of firefighters and can include (Interagency Joshua Tree Biological Working Group 2023):

1. Implementation of fire lines and staging areas should occur away from mature western Joshua trees when safe and feasible. Preference should be given, when safe and feasible, to the installation of smaller handlines and wet lines (i.e., control line installed by spraying water in the unburned areas surrounding the fire) as opposed to black lines (i.e., burned line) or dozer lines (i.e., lines constructed with bulldozers). Firefighters should seek to

minimize amount of retardant drop, if safe, feasible, and in alignment with the tactical suppression plan. Furthermore, when safe and feasible, all clothing and equipment of firefighter personnel should be cleaned before going into the field to reduce the spread of invasive species.

2. Off-road driving or heavy equipment use may be justified to avoid much greater total damage to habitat burned. Resource Advisors or Agency Administrators, or other appropriate CDFW or California Department of Forestry and Fire Protection (CAL FIRE) staff, should always be consulted before using heavy equipment or off-road driving in western Joshua tree habitat. All heavy equipment use or off-road driving should have a ground guide walking in front of the vehicles to watch for Joshua tree juveniles and seedlings.
3. Fire lines should utilize preexisting fuel breaks (e.g., bare rock and managed fuel zones), roads, or fire lines from past fire suppression, when feasible and present on the landscape.
4. Stop all habitat damaging tactics as soon as they are no longer required to prevent a larger or more severe fire. Constantly assess the fire situation and priorities for 1) ensuring firefighter and human safety, 2) minimizing acres burned through fire suppression, and 3) minimizing damage to western Joshua tree and their habitat from suppression as they relate to the operation. Document actions taken during suppression activities to facilitate postfire rehabilitation of suppression actions.
5. Vehicles, equipment, and personnel should be inspected and cleaned to reduce the potential for them to disperse invasive species into burned areas (see Action A&M 2.5, "Minimize Impacts from Invasive Plants," [in Chapter 5] and Action A&M 2.5.1, above, for guidance).

Action A&M 3.3.1: Minimize Impacts from Postfire Rehabilitation

In consultation with CDFW, land managers should develop and implement measures to minimize direct impacts on western Joshua trees when rehabilitating burned areas after a wildland fire. This could include the following elements:

1. A postfire monitoring plan for invasive plants, focusing on populations of high priority invasive plants known to exist before the fire and on areas of significant fire management activity during the fire (e.g., fire camps, dozer lines) should be implemented.
2. Invasive plant control:
    a. New populations of invasive species should be identified and eradicated or contained to prevent spread across the postfire landscape.
    b. A monitoring and re-treatment plan for invasive plants should be implemented after the initial treatments are applied.

3. Exposed soil created during fire line construction should be covered with a thin layer of organic mulch (e.g., chipped fuels, hydromulch) less than 3 cm (1.2 inch) in height to promote microbial activity that will use nitrogen and phosphorus, thus reducing their availability to invading plants (Brooks 2008).
4. Revegetation:
    a. Avoid use of nitrogen-fixing plants in landscapes where increased nitrogen may create conditions for invasive plant colonization.
    b. Revegetating with native species should be prioritized, if feasible. Revegetating with fast-growing but noninvasive species should be considered to increase the uptake of resources that would otherwise be utilized by invasive species (Brooks 2008).
    c. Seed mixes or other types of revegetation materials should be tested to ensure that they are not contaminated by invasive species.
5. Postfire land uses that may reduce vigor of western Joshua tree resprouting or establishment of native plants (e.g., livestock grazing) while the ecosystem recovers from the disturbance should be minimized. Ecosystem recovery postfire can vary even within geographically similar vegetation communities (Engel and Abella 2011), so recovery should be determined on a site-by-site basis.
6. Public access to burned areas should be closed to minimize damage to western Joshua tree and nurse plant propagules already stressed by fire.
7. Vehicles, equipment, and personnel should be prevented from dispersing invasive species into burned areas (see Action A&M 2.5 and Action 2.5.1, above, for guidance).

Action A&M 3.4.1: Minimize Accidental Ignition of Fires

Best practices should be implemented during construction and outdoor recreation activities to reduce the potential for accidental ignition of wildland fires. When construction activities occur in western Joshua tree habitat, fire extinguishers, backpack sprayers, water trailers, or water tenders equipped with hoses should be available to suppress accidental ignitions during hot, dry, or windy conditions. Additionally, best practices should be implemented to reduce the potential for construction and outdoor recreation activities to result in accidental ignition of vegetation:

1. Staging areas should be limited to areas that are naturally void of vegetation or that are cleared prior to use, to reduce the risk of hot equipment and vehicles causing accidental ignitions.

2. To the extent feasible, vehicles and heavy equipment should be limited to already cleared access roads. If heavy equipment must exit access roads to perform construction activities, a designated monitor should be onsite with appropriate resources to quickly extinguish any accidental ignitions.
3. Land managers and regulating agencies should enforce campfire restrictions both outside of and within developed campgrounds in western Joshua tree habitat during hot, dry, and windy conditions or certain portions of the year (e.g., fire season).
4. Land managers and regulating agencies should encourage OHV recreationists to carry fire extinguishing devices when traveling in and around western Joshua tree habitat.

Action A&M 3.5.1: Implement Fuel Treatments

Guidance for best management practices to avoid impacts on western Joshua tree and its habitat during fuel treatments include:

1. Fuel break construction in or adjacent to western Joshua tree habitat can take or damage trees. If feasible, fuel breaks should not be installed within 56.7 meters (186 feet) of western Joshua tree individuals in order to protect nurse plants, seedlings, and the seedbank.
2. If feasible, wildland-urban interface (WUI) fuel reduction treatments should be focused on removing vegetation outside of a 56.7-meter (186-foot) buffer zone around western Joshua tree individuals to reduce fuel continuity and reestablish the composition and structure of the ecosystem in western Joshua tree habitat.
3. Biological staff working with fuel treatment crews should survey treatment areas and flag western Joshua trees prior to fuel treatment implementation. Biological staff should train crews to identify western Joshua trees at different life stages (e.g., seedling, juvenile, adult, resprouts) and likely places to find them (i.e., under nurse plants). Additionally, specific measures should be implemented to avoid potential impacts on the root system and seedbank of individual western Joshua trees such as avoiding soil disturbance, use of manual treatment methods (i.e., use of hand tools both motorized and nonmotorized including chainsaws, but no use of heavy equipment such as dozers or masticators) to remove dead, woody debris, and use of manual or chemical treatment methods to remove or control invasive species.

Guidance to minimize impacts on western Joshua tree and its habitat during fuel treatment implementation includes:

1. Herbicide application should be conducted according to Actions A&M 1.3.1 and 2.6.1 above, and Actions A&M 1.3, "Avoid Impacts during Pesticide Application," and A&M 2.6, "Minimize Impacts during Pesticide Application" in Chapter 5.

2. Prescribed herbivory (i.e., intentional use of domestic livestock to remove, rearrange, or convert vegetation) may be considered to reduce fuel loads in some situations. However, grazing in western Joshua tree habitat should be guided by the minimization measures for grazing described in Action A&M 2.7, "Minimize Impacts from Grazing Activities."
3. Existing dirt roads in western Joshua tree habitat should be maintained and cleared of vegetation within their existing footprint so they may act as effective fuel breaks and allow access if a fire were to occur.
4. If a fuel break is installed, it should use and connect with existing fuel breaks, roads, or old fire lines from past fire events when present on the landscape, to the extent feasible.
5. If western Joshua tree removal is necessary to maintain defensible space or implement WUI fuel reduction treatments, project proponents must obtain take authorization. Organizations implementing fuel treatments should consult with CDFW or other agency administrators to determine the most appropriate type of take authorization and how best to protect western Joshua tree individuals and populations within the project area while still meeting project objectives.
6. If WUI fuel reduction treatments require removal of vegetation other than western Joshua tree within the western Joshua tree avoidance buffer zone to successfully reduce fuel continuity, only manual treatment methods should be used. Additionally, specific measures should be implemented to reduce potential impacts on the root system and seedbank of individual western Joshua trees such as limiting soil disturbance, limiting removal of vegetation to a certain percentage of the vegetation, or avoiding removal of certain nurse plant species such as blackbrush (*Coleogyne ramosissima*) or creosote bush (*Larrea tridentata*).
7. If ecological restoration treatments require removal of vegetation within the western Joshua tree avoidance buffer zone to protect individual western Joshua trees from increased fuel loads and fuel depths, only invasive species or dead, woody debris should be removed. Additionally, specific measures should be implemented to reduce potential impacts on the root system and seedbank of individual western Joshua trees such as limiting soil disturbance, using manual treatment methods to remove dead, woody debris, and use of manual or chemical treatment methods to remove or control invasive species.
8. To minimize the spread of invasive species during fuel treatment implementation, vehicles, equipment, and personnel should be inspected and cleaned to prevent dispersal of invasive species into burned areas (see Action A&M 2.5 and Action 2.5.1, above, for guidance).
9. Land managers should work with local fire departments in the geographic focus area, the CAL FIRE, and the federal agencies to implement Action A&M 3.5.1 guidance.

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Appendix E.

Relocation Guidelines and Protocols

"Pursuant to Fish and Game Code section 1927.3, subdivision (a)(4)(C), the California Department of Fish and Wildlife (Department) has adopted and amended guidelines and protocols, based on the best available science, to relocate western Joshua trees successfully. The current version of the relocation guidelines and protocols, adopted by the Department in May 2025, is included in the Western Joshua Tree Conservation Plan for informational purposes by way of this appendix, consistent with Fish and Game Code section 1927.6, subdivision (a). The Department may adopt further revisions to the guidelines and protocols pursuant to its authority under Fish and Game Code section 1927.3, subdivision (a)(4)(C). For the most current version of the guidelines and protocols, please refer to the Department's Western Joshua Tree Conservation website at https://wildlife.ca.gov/Conservation/Environmental-Review/WJT."

Western Joshua Tree Relocation Guidelines and Protocols

April 2025

State of California
Natural Resources Agency
Department of Fish and Wildlife

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Introduction

The California Department of Fish and Wildlife (CDFW) developed this document to govern how and when to relocate western Joshua trees *(Yucca brevifolia*) in order to minimize impacts to populations, prevent habitat fragmentation, and preserve connectivity corridors for gene flow and pollinator migration.

The Guidelines section of this document discusses the circumstances in which CDFW would consider including permit conditions requiring relocation of one or more western Joshua trees under the Western Joshua Tree Conservation Act (WJTCA). The Protocol section of this document provides a summary of best practices for relocating western Joshua trees and increasing the survival rate of relocated (salvage) western Joshua trees. Information on post-relocation maintenance, monitoring, and reporting is also provided. This document will be updated as needed based on the best scientific information available.

Western Joshua Tree Conservation Act Relocation Provisions

Section 1927.3, subdivision (a) of the California Fish and Game Code gives CDFW authority to issue incidental take permits (ITPs) pursuant to the WJTCA so long as certain conditions are satisfied. Among other conditions, Section 1927.3, subdivision (a)(2) requires that a permittee "avoids and minimizes impacts to, and the taking of, the western Joshua tree to the maximum extent practicable." Section 1927.3, subdivision (a)(2) expressly authorizes CDFW to include minimization measures in a WJTCA incidental take permit, which can include the requirement to relocate one or more western Joshua trees.

Pursuant to Section 1927.3, subdivision (a)(4)(A), where relocation is required, permittees must implement reasonable measures required by CDFW to facilitate the successful relocation and survival of salvage trees. Relocation is deemed successful where the health of a salvaged western Joshua tree is stable or improving without any supplemental care after the post-relocation maintenance period. The relocation measures shall include but are not limited to the following conditions:

1. Salvage trees are placed in locations and with proper orientation to improve their chances of survival.
2. Salvage trees are relocated at a time that maximizes their chances of survival, when feasible.
3. A desert native plant specialist be onsite to oversee relocation.

In addition, section 1927.3, subdivision (a)(4)(B) states that CDFW may limit relocation requirements to certain size classes of trees.

Pursuant to Section 1927.3, subdivision (g)(1), the permittee shall be legally responsible for ensuring the measures included in its WJTCA ITP are implemented consistent with these guidelines. The permittee may, however, contract with the landowner of the relocation site(s) to conduct the post-relocation maintenance and monitoring activities required under its WJTCA ITP.

Subdivision (g)(2) of that section further states, "[u]nless specifically required by written agreement, a landowner that agrees in writing to allow western Joshua trees to be relocated onto land it owns shall not be liable for the continued survival of the western Joshua trees, shall not be required to manage or maintain the translocated western Joshua trees, and shall not be required to change existing land use practices, provided that the land use practices do not result in the taking, possession, sale, or further translocation of the western Joshua trees." While landowners accepting salvage trees are not responsible for maintaining the trees or otherwise ensuring the trees' continued survival, it is important to note that salvage trees receive the full protection afforded to all western Joshua trees pursuant to the WJTCA and CESA and that import, export, take, possession, purchase, and sale of salvage trees or any part or product thereof, is prohibited, except as authorized pursuant to the WJTCA or CESA.

The WJTCA requires CDFW, by December 31, 2024, to prepare a Western Joshua Tree Conservation Plan for review and approval by the Fish and Game Commission that incorporates into the plan, among other provisions, protocols for the successful relocation of western Joshua trees. As such, these guidelines and protocols will be incorporated by reference into the Western Joshua Tree Conservation Plan.

Definitions

The following definitions are used in this document:

Bare root relocation – method for relocating a living western Joshua tree by excavating around the root ball of the tree to dislodge the tree from the ground. Any relocation method other than tree spade relocation (defined below) is considered bare root relocation for the purposes of this document.

Containerize – to place a salvage tree into a container, such as a plastic pot or tree box, for temporary storage.

Project site – the area(s) where project activities are expected to occur (e.g., access, staging, construction, etc.)

Recipient site – a salvage tree's (defined below) final planting location.

Relocation – the removal of a living western Joshua tree from the ground and transplantation back into the ground at another location (referred to as a recipient site).

Relocation area – an area with one or several recipient sites.

Retained tree – a living western Joshua tree that is located within the project site that is being or has been avoided or, minimally impacted by the project and will not be relocated.

Root ball – a mass of soil that contains concentrated roots growing from the base of the stem of a western Joshua tree.

Salvage tree – a living western Joshua tree that is being, or has been, relocated. Each western Joshua tree stem or trunk arising from the ground shall be considered an individual tree, regardless of its proximity to any other western Joshua tree stem or trunk.

Size Class A – a western Joshua tree that is less than one meter in height.

Size Class B – a western Joshua tree that is one meter or greater, but less than five meters in height.

Size Class C – a western Joshua tree that is five meters or greater in height.

Tree spade – a specialized piece of heavy equipment that consists of hydraulically controlled spade blades that can encapsulate the root ball of a salvage tree, as well as adjacent soil.

Tree spade relocation – method for relocating a living western Joshua tree by using a tree spade to dig, transport, and replant a western Joshua tree and its root ball.

Best Available Science on Relocation

There are many accounts of successful western Joshua tree relocation (i.e., stable or increasing signs of tree health without any supplemental care after a period of maintenance), but little scientific research has been done to compare the relative success rates for different relocation techniques. Rather, most relocation efforts that monitor salvage western Joshua tree survivorship evaluate

only one method of relocation (i.e., using hand tools for small trees and/or excavators or tree spade for large trees) (Wagner 2018, Balogh 2019, City of Palmdale 2024). The best available scientific information on how to achieve success when relocating western Joshua trees therefore comes from the experience of experts working in the field of restoration and Joshua tree relocation. In Bainbridge (2007), the author offers advice on relocating Joshua trees and other salvaged succulents, such as cacti and shrubs, based on their expertise and knowledge. The National Park Service (NPS) (Goodwin 2024) and a tree transplanting expert (Reynolds 2024) also provided CDFW with information relevant to the development of this document.

In addition, CDFW reviewed the results of known relocation projects. Bainbridge (2007) states that "Joshua trees often transplant well but require intensive aftercare and irrigation[.]" Bainbridge suggests that relocation is best done with machinery, but hand tools can also be used. Front loaders, excavators, and hydraulic tree spades are useful. Tree spades work best in silty or sandy soils but using them is difficult in rocky soils. Salvaged trees can be placed in containers or immediately replanted but should be protected as much as possible from drying winds, heat, and sun. Bainbridge (2007) also mentions that yucca, such as western Joshua trees, seem to survive better if replanted in the same orientation they grew. Overall, Bainbridge (2007) shows the survival rates for salvage trees can be improved if the relocation work is timed carefully, the trees are handled gently, and there is good aftercare and irrigation in a holding facility or at the recipient site. Goodwin (2024) and Reynolds (2024) suggest that minimizing disturbance to the root ball and adequate care after trees have been relocated are the most important factors for successful relocation. Tree spade relocation of western Joshua tree minimizes impacts to roots and can have a success rate of greater than 90% with sufficient aftercare (City of Palmdale 2024, Goodwin 2024, Reynolds 2024). Bare root relocation of western Joshua tree causes more damage to roots and is reported to have a success rate of approximately 50-90% even with sufficient aftercare, based on preliminary findings of a monitoring period of 1-3 years (Goodwin 2024, Reynolds 2024). Beyond the initial 3-year monitoring period, however, success rates can decline (Graver 2024). This document describes additional methods that can be used to aid long-term survival and improve chances of reproduction events. However, there is no foolproof method that guarantees relocation success, and some mortality is always expected to result. Therefore, relocation is considered a method to minimize impacts to western Joshua tree populations, rather than a substitution for mitigation through the payment of fees.

The size and growth pattern of a western Joshua tree may also present additional challenges. Small trees, especially those salvaged through the bare root method, experience higher rates of mortality even with sufficient aftercare (Goodwin 2024). And, though it may be possible to relocate western Joshua trees over 7 meters in height, tree spades may be unable to sufficiently encapsulate the root ball for trees of this size (Reynolds 2024). These trees may also be difficult to stabilize to withstand high wind speeds after being relocated. Dense, clonal reproduction can also affect relocation success. Separating smaller trees from larger, parent trees that are connected through rhizomes below ground can result in higher mortality rates for those smaller trees (Goodwin 2024, Graver 2024).

Guidelines

Relocation Requirement Considerations

The WJTCA requires that a permittee "avoids and minimizes impacts to, and the taking of, the western Joshua tree to the maximum extent practicable." As such, CDFW may require relocation of one or more western Joshua trees as a WJTCA ITP minimization measure. CDFW will determine whether relocation will be required under an WJTCA ITP during the permit application review process, including evaluation of the site and proposed activities. CDFW has determined that projects involving a single, single-family residence will not be required to relocate any western Joshua trees. The presence of any of the following criteria will likely result in CDFW requiring a western Joshua tree Relocation Plan for a project other than a single-family residential project:

- If greater than 20 trees will be lethally taken;
- If greater than 10 acres of western Joshua tree habitat will be impacted;
- If the project is within predicted climate refugia for western Joshua tree; or
- The inability of the project to avoid take of western Joshua trees and/or the absence of other minimization measures.

When CDFW staff determine that an WJTCA ITP will require relocation of western Joshua trees as a minimization measure, the applicant will receive a letter requesting the development of a Relocation Plan. The letter from CDFW will also inform the applicant of the number of trees, by size class, that must be relocated for the Project. The Relocation Plan must be approved by CDFW prior to the issuance of the WJTCA ITP.

CDFW staff will calculate the number of trees required to be relocated based on the number of trees that will be lethally taken as confirmed by the approved census and use the "WJT Salvage Requirement Calculator spreadsheet" to assist in calculating salvage tree numbers.

The number of trees to be relocated will be based on the expected rate of relocation success for each method used, as well as the size class of each tree proposed for relocation, as explained below:

	Bare root relocation[1]	**Tree spade relocation[2]**
Size Class A (<1 m)	18%	9%
Size Class B (≥1m and <5)	12%	6%
Size Class C (≥5m)	6%	3%

Table 1. Recommended western Joshua tree Relocation Percentages

The number of trees in each size class for relocation under a WJTCA ITP will be rounded to the nearest whole number and be greater than zero, provided at least one tree in that size class will be lethally taken. Because tree spade relocation has a higher expected success rate than bare root relocation, the relocation of fewer trees is required to minimize project impacts and offset the expected mortality of salvage trees when the tree spade method is used.

Example salvage tree calculation:

- Project A is expected to cause lethal take of 200 western Joshua trees: 100 Class A trees, 70 Class B trees, and 30 Class C trees.
- If the bare root relocation method is used a total of 28 tree relocations would be required (18 Class A trees, 8 Class B trees, and 2 Class C trees).
- If the tree spade relocation method is used a total of 14 tree relocations would be required (9 Class A trees, 4 Class B trees, and 1 Class C trees).

[1] When conducted in accordance with this document, the expected success rate of bare root relocation is between 50 and 90 percent (Goodwin, J. 2024. Joshua Tree National Park. Discussion with J. Goodwin, Vegetation Branch Manager. *in*.; Reynolds, D. 2024. The Landscape Center. Discussion with D. Reynolds, Project Manger/ISA Certified Arborist. *in*.).

[2] When conducted in accordance with this document, the expected success rate of tree spade relocation is greater than 90 percent (Goodwin, J. 2024. Joshua Tree National Park. Discussion with J. Goodwin, Vegetation Branch Manager. *in*.; Reynolds, D. 2024. The Landscape Center. Discussion with D. Reynolds, Project Manger/ISA Certified Arborist. *in*.; City of Palmdale. 2024. Report of the City of Palmdale Joshua tree preservation program.).

- If a combination of methods is used, one example of mixed methods may include:
    - Tree Spade: 5 Class A, 3 Class B, 1 Class C and,
    - Bare Root: 8 Class A, 2 Class B, 0 Class C

To expedite the processing of a WJTCA ITP and facilitate the development of a Relocation Plan, CDFW staff recommend that applicants with projects that meet the relocation criteria listed above review the Relocation Plan requirements prior to submitting their application. If relocation is likely to be a WJTCA ITP requirement for a project, the applicant may include a preliminary Relocation Plan with their application to help expedite processing.

Adjustments to the Required Number of Salvage Trees

CDFW may, in its discretion, adjust the number of trees in a size class that must be relocated, including at the request of an applicant. Factors that may weigh in favor of an adjustment to the number of trees within a specific size class that must be relocated include but are not limited to:

- If a higher number of trees will be relocated in a different size class;
- If project impacts will occur in areas with high amounts of clonal growth; or
- If a legal/regulatory or a technical/technological limitation makes the relocation requirement impracticable as discussed in the Evaluation of Legal and Technical Limitations section, below.

The applicant may include rationale for any requested adjustments to the number of western Joshua trees they propose to relocate in their submitted Relocation Plan for consideration by CDFW. The applicant must document the rationale for any proposed modification, including demonstrating a good faith effort to meet the recommended percentages in Table 1.

CDFW recommends that applicants identify contingency trees that could be relocated to meet relocation requirements if a problem arises with the primary trees targeted for relocation in the Relocation Plan. For example, if tree spade relocation is proposed, additional trees must be identified for relocation as a contingency in case the tree spade relocation method is impractical due to rocky terrain or other issues. The number of additional trees that must be identified will vary on a project-by-project basis.

An approved Relocation Plan is an attachment to the WJTCA ITP. If the permittee later wishes to relocate or remove relocated western Joshua trees,

the permittee may need to apply for a new WJTCA ITP and should contact CDFW for more information.

Relocation Areas

The applicant should identify one or more relocation areas in the proposed Relocation Plan they submit to CDFW for approval. The applicant should first evaluate if salvage trees can be relocated on the project site and if any project design or phasing modifications can be made to accommodate salvage trees on site.

If salvage trees cannot be relocated on the project site, the applicant must propose one or more off-site relocation areas that can accept trees designated for relocation. Applicants should prioritize off-site relocation areas that have been degraded by impacts. Relocation areas located within local preserves, parks, land trusts, and conservancies should also be considered. Relocation of salvage trees must be conducted in compliance with all applicable federal, state, and local laws.

Efforts should be made to relocate each salvage tree as close to its original location as is possible. Relocation areas that do not meet the criteria listed below may be approved by CDFW on a case-by-case basis. Criteria for selecting off-site relocation areas include:

- In a natural vegetation community that supports western Joshua trees;
- Prioritize locations within 16 kilometers of the salvage tree's original location, but no more than 50 kilometers from the salvage tree's original location; and
- Within 200 meters of the salvage tree's original elevation.

This document does not provide guidance regarding how to implement or support the assisted migration of western Joshua tree. At this time there is insufficient research published on the geographic boundaries of genetically distinct populations and/or climate adaptive traits within populations that may be suited for long distance (2.5 kilometers or greater from occupied habitat) assisted migration to expand western Joshua's tree's range or assisted geneflow to enhance a population's ability to adapt to climate change impacts. Opportunities for short distance (less than 2.5 kilometers from occupied habitat) assisted migration of western Joshua tree may be approved on a case-by-case basis. Assisted migration, assisted geneflow, and/or boundaries of genetically distinct populations may be discussed in future amendments to this document.

Relocation Plan

Where relocation is required, a Relocation Plan must be approved by CDFW prior to the issuance of an WJTCA ITP. The Relocation Plan may combine bare root and tree spade relocation methods and must include the following information:

- The contact information and qualifications of the desert native plant specialist(s) overseeing relocation;
- The date range when trees will be relocated. If salvage trees will be temporarily stored in containers, the plan must indicate when the trees will be replanted;
- The landowner's name, location name, and address or APN for each relocation area property;
- If salvage trees will be relocated outside of the project site, a signed, written statement from the owner of each relocation area granting the applicant permission to relocate salvage trees to the relocation area property, granting access to implement any maintenance and monitoring measures, and authorizing CDFW staff to access the property to conduct compliance inspections with appropriate advance notification;
- The unique identifier, size class, planned and contingency relocation methods, current and recipient site GPS coordinates (latitude/longitude in decimal degrees), overall health, description of any pest/human damage, and photo for each tree to be relocated (see the census instructions for submitting photographs);
- If utilizing multiple receiver sites, the applicant must document the receiver site where each tree will be relocated using the unique identifier and recipient site coordinates;
- The number of contingency trees be identified for relocation including the information described for each additional contingency tree; and
- Any other pertinent information regarding relocation operations.

Each applicant may, but is not required to, use CDFW's Relocation Plan template and spreadsheet, so long as the applicant's proposed Relocation Plan contains all the required information set forth above. Any questions regarding the development of the Relocation Plan should be discussed with CDFW staff prior to submittal to avoid project delays.

Evaluation of Legal and Technical Limitations

In circumstances where the applicant requested modifications to the number of western Joshua trees to be relocated, the applicant must submit information to demonstrate that relocating the number of trees identified by CDFW is wholly "impracticable." CDFW will evaluate the information provided and may approve adjustments based on the documentation outlined in the applicant's proposed Relocation Plan. Whether the applicant minimized impacts to, and the taking of, western Joshua tree "to the maximum extent practicable" will be determined by CDFW on a case-by-case basis in consideration of several factors including whether one of the following limitations exists to make the relocation wholly impracticable:

1. Legal Impossibility: A statutory or regulatory limitation to relocating western Joshua trees exists such that compliance with the relocation requirement is legally impossible or would necessarily result in fundamental changes to the project that make it impossible to fulfill the project's objectives. For example, a requirement to relocate trees may be legally impossible if compliance with the relocation requirement would clearly cause the project proponent to violate another permit issued for the project.
2. Technical or Technological Impossibility: A significant technical or technological limitation to relocating western Joshua trees exists such that compliance with the relocation requirement is impossible. For example, a requirement to relocate a mature western Joshua tree may be very difficult if the grade of the landscape precludes use of heavy equipment.

If either of the two limitations listed above is present, and changing a minimization measure (e.g., reducing the number of trees to be relocated or limiting relocation to certain size classes of trees) would remove the limitation so that compliance with the modified measure would be possible, then CDFW staff may modify the measure so that compliance is possible.

CDFW shall use all information in its possession relating to the project to determine whether there are legal/regulatory or technical/technological limitations that make the required relocation impossible. Once CDFW informs the project proponent of a relocation requirement, if the project proponent believes that one or more of the limitations above exist to make the relocation wholly impracticable, it may submit additional information with its Relocation Plan to demonstrate the existence of such a limitation. CDFW shall review any such information provided by the project proponent and either: (1) reaffirm the

relocation requirement; (2) modify the relocation requirement pursuant to the Adjustments to Requirements section, above; or (3) remove the relocation requirement pursuant to the Adjustments to Requirements section above. CDFW shall not modify or remove the relocation requirement unless the project proponent provides substantial evidence of one or more limitations that make the relocation wholly impracticable.

Protocols

Pre-Relocation

Selecting Trees for Relocation

Western Joshua trees that are in good health should be prioritized for relocation. Indications that a tree is in good health include where 60% or more of the tree's branches are living; minimal pest damage (no or few bore holes and/or less than 25% periderm [bark] stripping); recent signs of unrestricted hard growth; recent signs of flowering events, and/or strong vigor. Where a tree is greater than 7 meters in height, its size may limit its ability to be successfully relocated. Therefore, healthy salvage trees between 5-7 meters in height should be prioritized within Size Class C.

Siting

Trees identified for relocation should be clearly flagged or marked with a unique identifier and the recipient site should be identified before tree removal begins. Preferred and contingency methods for each relocation should also be identified (e.g., bare root relocation versus tree spade relocation) in advance. Each recipient site should be compatible with the corresponding salvage tree's relocation method (see Tree Spade Relocation under Digging/Tree Removal section below). The recipient site location should also be recorded using a Global Positioning System (GPS) unit and marked with pin flags or wood stakes that are clearly labeled with the unique identifier of the corresponding salvage tree. The applicant should identify a recipient site for each salvage tree that is: accessible for relocation and irrigation equipment, such as water trucks or trailers; provides or enhances connectivity corridors; mimics the density of the surrounding WJT population; and is located at least 4.5 meters from the nearest relocated western Joshua tree and 15 meters from a previously existing western Joshua tree. If possible, recipient site locations should be chosen at random and

be spatially balanced throughout the relocation area. Geographic Information System (GIS) tools can assist with this process.

Timing

When feasible, western Joshua trees should be relocated at a time that maximizes their chance of survival. (Fish & G. Code, § 1927.3, subd. (a)(4)(A)(ii).) The optimal time to relocate trees occurs in the fall when heat/drought stress is low, and roots have adequate time to reestablish before the onset of hot, dry summer conditions. For bare root relocation, winter is a suboptimal but acceptable time to relocate trees but provides less time for roots to re-establish and may result in lower rates of survival. For tree spade relocation, there is a wider range of suboptimal but acceptable times to relocate trees because this method results in less root exposure and potential water loss through evapotranspiration as compared to bare root relocation. Relocating when trees are exposed to hot conditions for an extended period, should be avoided.

Bare Root Relocations

Winter	Spring	Summer	Fall
OK	Avoid	Avoid	Preferred

Tree Spade Relocations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
OK	OK	OK	OK	Avoid	Avoid	Avoid	OK	OK	Prefer	Prefer	Prefer

Pre-Relocation Watering

In preparing for relocation, both the salvage trees and the recipient sites should be watered 24-48 hours in advance. An earthen berm 4-6 inches in height should be created around the trees and recipient sites to create water basins that ensure water saturates the soil around the root ball and recipient site. For bare root relocations, the perimeter of the berm should be no less than 24 inches from the base of the trunk. For tree spade relocations, the size of the berm should be slightly wider than the width of the tree spade to be used on that individual. The water basins should be filled with water to just below the top of the berm twice and allowed to fully drain between fillings. Root stimulant additives such as vitamin B1 and rooting hormone may assist in root regeneration but are not required. Root stimulant additives should be utilized according to product label recommendations.

Orientation

Prior to relocation, using a compass set to the correct declination, mark the north side of the tree identified for relocation with a water-based tree marking paint or other CDFW-approved means in a place that will not be impacted or obscured during relocation operations (e.g., a small paint mark on the trunk 12 inches above ground level or ribbon tape tied to one of the branches on the north side of the tree). When setting a salvage tree in a recipient site, best efforts should be made to place the tree in its original orientation; however, this may be not be possible based on the terrain of the recipient site.

Other Pre-Relocation Precautions

- Relocation operations should adhere to the American National Standards Institute Z133 Safety Requirements for Arboricultural Operations.
- Permittees should obtain all information necessary to avoid existing underground infrastructure at salvage and recipient sites prior to relocation (see Underground Service Alert of Southern California (DigAlert)).
- To prevent the spread of invasive species and pathogens, digging equipment should be clean and free from dirt and debris and sanitized with a 10% bleach solution prior to arriving at the site where trees will be salvaged.
- Depending on the method used, tree limbs may need to be trimmed to facilitate relocation. Limbs should only be trimmed as necessary to facilitate relocation.

Relocation

Digging/Tree Removal

If trees are in close proximity to each other (less than 18 inches apart at the bases of their trunks), all efforts should be attempted to relocate the trees together to avoid separation of trees that are connected through rhizomes below ground.

Bare root removal by hand – Relocations using only hand tools should only be done for trees that are less than 1 meter in height. The root ball and surrounding soil should be salvaged in a way that keeps the root ball as intact as possible. This can be accomplished by excavating a circular trench 10-12 inches deep, 1-2 feet from the base of the trunk. Once the trench is complete, hand tools should be used to undercut the root ball and sever the roots below. Only apply

as much lateral pressure to the tree as necessary to expose roots for severing with hand tools. The cut surfaces on roots should be kept small to minimize root dieback and exposure to soil-borne pathogens.

Bare root removal by (non-tree spade) heavy equipment/excavator – As with bare root removal by hand, the root ball and surrounding soil should be salvaged in a way that keeps the root ball as intact as possible. There are different ways to accomplish this using an excavator, depending on the tree's size, soil conditions, and other factors. For trees that are less than 1 meter in height, an excavator with a bucket attachment at least 24 inches in width can be used to extract the tree and root ball in one scooping motion. The equipment operator should minimize incidental damage to the aboveground portion of the tree to the greatest extent possible. Root balls should be handled with care when they are unloaded from the bucket. For trees that are 1 meter or greater in height, a trench 18-24 inches deep should be excavated 2 feet from the base of the trunk. If the soil around the root ball stays intact and does not show signs of fracturing, the tree should be firmly rigged to the rounded exterior of the bucket using nylon straps at least 4 inches in width (Figure 1). Additional cloth padding may be placed around the straps to prevent damage to the periderm. Straps should be rigged at multiple points along the main trunk of the tree to prevent excessive swinging once freed from the soil. Once firmly rigged, the root ball should be undercut using hand tools as safely as possible until all or most of the roots are severed. Snapping roots should be minimized, as much as possible.

If the soil around the root ball does not hold together and shows signs of fracturing and instability when excavating the trench, as is common in sandy soils, the excavator should be used to undercut the root ball as much as possible without causing the tree to fall freely to the ground.

The tree should then be rigged to the bucket attachment using the methods described above and gentle but increasing lateral pressure should be applied to the tree to dislodge the root ball and lay the tree down. Once the tree is resting on the ground, the straps may need to be adjusted in order for the tree to be picked up by the excavator.

Trees removed from the ground using the bare root method should be replanted or containerized within 24 hours of removal.

Figure 1 – Bare Root Removal: Removing soil around the root ball of a salvage tree using hand tools (left). Salvage tree being removed from the ground by an excavator (right). (Photo credit: National Park Service)

Tree spade relocation – Tree spades come in different sizes based on the width of the soil surface that they can encapsulate (Figure 2). Tree spades can be used to relocate trees of most sizes. However, they are not recommended for trees over 7 meters in height due to stabilization issues during high-speed wind events after relocation.

The following steps must be carried out sequentially, in a timely manner, and thoughtfully. Each western Joshua tree and corresponding recipient site should be evaluated for tree spade acceptability prior to digging. The desert native plant specialist should evaluate soil conditions to assess whether large rocks or boulders may prevent tree spade blades from fully encapsulating the root ball. This may be apparent by scanning the surface of the surrounding area or reviewing existing soil maps (see "Shallow Excavation Ratings" on NRCS Web Soil Survey: https://websoilsurvey.nrcs.usda.gov/app). Tree limbs may be trimmed only where necessary to allow the tree spade blades to fully close around the tree. The tree spade size should be selected to ensure the blades do not come within 18 inches of the base of the trunk at ground level. Recipient sites should be dug immediately before, or no more than 4 hours prior to, tree extraction to prevent the soil from drying out and collapsing. Excavated recipient site dirt should be used to backfill the tree removal site where available. Open pits should be flagged with stakes and high-visibility ribbon tape and temporary fencing should be installed around any unattended open pits to prevent people or animals from falling in.

Figure 2. A salvage tree being removed from the ground using a tree spade (Photo credit: National Park Service).

Transporting Trees

If salvage trees are not going to be transported to recipient sites by hand or by the equipment used to extract the tree (e.g., by truck or trailer), precautions must be taken to avoid damage to the tree and root ball. Root balls should be loosely wrapped in burlap and kept moist during transport. Salvage trees should be supported at all times and not dropped or thrown. Salvage trees should be securely transported upright or at a slight angle. Salvage trees may touch other salvage trees during transport, but they should not be stacked or otherwise fully supported by other salvage trees. Salvage trees should be positioned in transport vehicles in a way that minimizes branch entanglement.

Planting Methods

Bare root relocations - The width of each recipient site hole should be approximately 12 inches greater than the width of the root ball. Root balls should fit snugly within their recipient holes to avoid stabilization issues. The depth of recipient sites holes should be 2-4 inches less than the height of the root ball to account for settling. If recipient site holes are dug too deep, they should be backfilled and compacted by foot or using hand tools. Salvage trees should be placed as close to their original orientation as the terrain will allow. Salvage trees

should be supported when lowered into holes. Holes should be simultaneously backfilled with soil and water to eliminate air pockets and voids. Soil should be lightly compacted by foot or using hand tools.

Tree spade relocations - The salvage trees should be placed as close to their original orientation as the terrain will allow. If needed, soil should be backfilled and lightly compacted by foot or using hand tools to meet the grade of the surrounding soil surface.

Storage

If salvage trees need to be stored for later replanting, in-ground storage is preferred over containerizing. In-ground storage procedures should follow the pre-relocation water berm, planting, post-relocation water berm, and stabilization methods described herein. Salvage trees stored in-ground should be flagged for avoidance and/or fenced off.

If in-ground storage is not possible, each salvage tree should be placed in a container that is at least twice the size of the unrestricted root ball and includes drainage holes. The containers should be sanitized with a 10% bleach solution. The container should be filled using soil from the removal site if the salvage tree is being stored for less than 6 months or with a soil mix ratio of 100 parts organic potting soil to 160 parts course perlite to 200 parts washed concrete sand to 1 part "13-13-13" fertilizer (Goodwin 2024) if the salvage tree is being stored for longer than 6 months. The bottom one third of the container should be filled with soil mixture before placing the root ball into the container. Once the root ball is placed into the container, the remaining volume of the container should be filled with soil and water simultaneously to eliminate air pockets and voids. Salvage trees should not be stored in containers for longer than 2 years unless approved by CDFW. Containerized salvage trees should be stored either upright or at a slight angle to improve drainage and prevent root rot. If weather forecasts predict wind gusts over 60 mph, containerized trees should be closely grouped and tied together 24 hours in advance for added stability. If containerized salvage trees are pushed over, they should be promptly righted and stabilized using the methods described below for the duration of the storage period. Containerized salvage trees should be maintained and monitored following the methods described below. If trees show signs of drought stress, watering frequency may need to be increased. Containerized soil should always be allowed to thoroughly dry out before rewatering. Containerizing a salvage tree that has been removed from the ground using the tree spade method in a container would eliminate the benefits from this relocation method;

therefore, salvage trees removed from the ground using the tree spade method should always be stored in the ground.

Post-Relocation

Water Basins

An earthen berm at least 4 inches in height should be created around each salvage tree following relocation. The top of the berm should be level. For bare root relocations, the perimeter of the berm should be no less than 24 inches from the base of the trunk. For tree spade relocations, the perimeter of the berm should be the width of the tree spade.

Stabilization

Stabilization material should be installed for salvage trees that are greater than 3 meters in height and for trees that are less than 3 meters in height with a tree height to canopy width ratio that exceeds 2:1. For example, a 2-meter-tall tree with a canopy width greater than 1 meter should have stabilization material installed. Non-abrasive guying materials, such as Arbor Ties, should be attached to three equidistant lateral ground-point anchors outside of the water basin. Guys should be taut but allow for some movement so they do not cause friction in light to moderate wind conditions.

Identification

Each salvage tree should be clearly flagged with tape ribbon or a metal tree tag, and labeled with a unique identifier (e.g., #1, #2, #3) and the relocation date (or the date when first removed from the ground for containerized salvage trees) in the following format: MM/DD/YYYY. Each tree tag should be loosely secured to the main trunk of the tree, rather than nailed directly into hard growth, and should be visible from the south. Each western Joshua tree stem or trunk arising from the ground shall be considered an individual tree requiring flagging, regardless of its proximity to any other western Joshua tree stem or trunk.

Recordation

A GPS unit should be used to record the location of each salvage tree's recipient site. The relocation method (bare root – hand, bare root – excavator, or tree spade) should also be recorded, along with a color photo of each tree

taken from the south of the tree facing north. The picture should include the entire tree.

Maintenance and Monitoring

Where relocation is required under a WJTCA ITP, it is the permittee's responsibility to ensure the maintenance and monitoring measures set forth below are implemented and as required in the permittee's WJTCA ITP.

Site Visits

Site visits should be conducted by a technician with relevant experience in assessing the signs of western Joshua tree health to determine maintenance needs for relocated trees according to the following schedule:

Year 1

- Months 0-3, once every two weeks.
- Months 4-12, once per month.

Year 2

- Months 13-24, every other month.

Year 3

- Months 25-36, every other month only for trees showing signs of declining health. At the end of the 3-year maintenance period, all trees should receive a final site visit and be assessed according to the Completion Report section below.

During site visits, technicians should assess and record maintenance needs for each salvage tree. They should also have a site map showing the locations of all salvage trees, a GPS device to confirm salvage tree locations, and notes and photos from previous visits, and they should be prepared to address maintenance needs during site visit or shortly thereafter.

Watering

During the months of May to September, salvage trees should only be watered during site visits if the total rainfall (or snowfall equivalent) for the region within which the recipient site is located is less than 0.4 inches within the previous 7 days. During the months of October to April, salvage trees should only be watered during site visits if the total rainfall (or snowfall equivalent) for the region

within which the recipient site is located is less than 0.3 inches within the previous 7 days. Regional precipitation models may be used in determining rainfall amounts; however, rain gauges within, or adjacent to, relocation areas provide the best indicator of precipitation totals. Water basins should be filled to the top of the berm, but not allowed to overtop the berm. A technician with relevant experience in assessing the signs of western Joshua tree health is not needed to water salvaged trees.

Tree Health

Tree health should be assessed by a technician and recorded for each salvage tree during site visits. Tree health should consider signs of new leaf growth, branch loss, signs of flowering/fruiting, signs of pest/human-caused damage, leaf discoloration, restricted hard growth, overall vigor, and other indicators worth noting. If salvage trees are showing signs of increasing health after two years of maintenance, they do not need to be visited during the third year (see reporting requirements below), except for the final site visit.

Invasive Plant Removal

Invasive plants should be controlled and removed within the water basin. Removal should occur before invasive plant seeds reach maturity. Invasive plants should be removed through mechanical methods and hand pulling or with hand tools, rather than by chemical means, and appropriately disposed of. In removing invasive plants, care should be taken to not damage salvage tree roots. A list of common invasive plant species can be found on the California Invasive Plant Council Invasive Plant Inventory (Cal IPC Inventory) website at: https://www.cal-ipc.org/plants/inventory/. Native plants should be retained where possible.

Maintenance of Berms, Stabilization Supports, and Identification Markers

During site visits, berms should be checked for height and any breaks that would allow water to escape from the water basin. Stabilization supports should be checked for damage and tightness. If relocated trees are showing signs of leaning, stabilization supports should be added or adjusted. Identification markers should also be checked for intactness, legibility, and maintenance needs.

Completion Activities

During the final site visit at the end of the 3-year maintenance period, berms, stabilization supports, and identification markers must be removed from the relocation area.

Reporting

Where relocation is required under a WJTCA ITP, it is the permittee's responsibility to ensure the reporting measures set forth below are implemented. Where relocation is voluntary, CDFW requests that the permittee provides the same reporting information to CDFW to better inform updates to these guidelines and relocation protocols.

Post-Relocation Reporting

When a WJTCA ITP requires relocation of western Joshua trees, the permittee must submit a post-relocation report to CDFW no more than 30 days after relocations are completed. The post-relocation report should include the following:

- The date range when relocation operations occurred; and
- For each salvage tree:
    - The unique identifier and recipient site coordinates;
    - The final recipient site, including GPS coordinates (latitude/longitude in decimal degrees);
    - The relocation method used;
    - The height and diameter of the post-relocation water basin constructed;
    - Any stabilization supports installed;
    - Any major damage, including any necessary limb trimming, that occurred during relocation;
    - Any deviation from the tree's original orientation;
    - Any root stimulant additives used in pre- or post-relocation irrigations; and
    - A photo of the tree facing north, with the unique identifier in each file name.

Maintenance Reports

When a WJTCA ITP requires relocation of western Joshua trees, the permittee must submit annual reports detailing the 1-year and 2-year maintenance periods, as appropriate, to CDFW. Maintenance reports should include the following information:

- The date(s) when site visit(s) occurred;
- The contact information and relevant experience of the technician(s) performing tree assessments; and
- Information for each salvage tree regarding the following:
    - The unique identifier and recipient site coordinates;
    - Whether the tree is alive or dead;
    - Dates of supplemental waterings;
    - Identity and estimated number of invasive plants observed/controlled and the methods used;
    - Any signs of pest/human damage;
    - Any signs of declining tree health;
    - Any maintenance conducted to repair, replace, add, or adjust berm, stabilization supports, and/or identification markers;
    - A photo of the tree facing north, with the unique identifier in each file name; and
    - At the end of the 2-year period, the reasons for discontinuing maintenance on trees showing stable or increasing health, such as new leaf growth, flowering/fruiting, good leaf color, no signs of pest/human damage, and/or unrestricted hard growth.

Completion Report

A completion report must be submitted to CDFW no more than 30 days after the end of the 3-year maintenance period. The completion report must contain the following:

- The date when the final site visit occurred;
- The date when berm/stabilization materials/identification markers were removed;
- The contact information and qualifications of the technician(s) performing the final assessment; and
- Information for each salvage tree regarding the following:
    - Whether the tree is alive or dead;
    - Any damage that occurred during or after relocation;

- Any signs of declining health;
- Any signs of pest damage; and
- A photo of the tree facing north, after berm, stabilization materials, and identification markers are removed, with the tree's unique identifier in each file name; and
- Any recommendations that may help to improve tree relocation methods.

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Appendix F.

Conservation Lands Prioritization Assessment

CONSERVATION LANDS PRIORITIZATION ASSESSMENT

Background

The purpose of this appendix to the Western Joshua Tree Conservation Plan is to provide biological guidance for land acquisitions or other mitigation opportunities supported by the Western Joshua Tree Conservation Fund (Conservation Fund) or any successor fund. The guidance frames minimum habitat standards, identifies standards for surveys/censuses/habitat evaluations, and proposes an evaluation framework for potential acquisitions or mitigation opportunities.

Conservation and Mitigation opportunities with the highest conservation value should:

- have large areas occupied by western Joshua tree,
- have a high density of reproductive adult individuals,
- have high recruitment (indicating presence of small mammals, nurse plants, and pollinating moths),
- be within predicted climate refugia,
- have low risk from current and adjacent land use, and
- have good overall tree health.

To maximize the conservation value of each acquisition or mitigation opportunity, a point scoring system is provided to help identify properties with the highest conservation value. Criteria below have been weighted based on expected value for Joshua tree conservation over the long term. Recommendations for surveys/censuses/habitat evaluations submitted with proposals are also provided.

Conservation Criteria

Occupied Area

Properties with larger areas occupied by western Joshua may have higher conservation value. For example, a property with 50 hectares (123.6 acres) occupied by western Joshua tree would rank lower than property with 300 hectares (741.3 acres) occupied by western Joshua tree. A standard assessment area of **100 meters (328.1 feet) from adult trees** is recommended to calculate occupied area at all properties. Non-suitable habitat, such as hardscapes, should not be included. CDFW will need to see which properties are available before applying areas to the large/medium/small criteria below.

- Large area occupied by western Joshua tree (30 Points)
- Medium area occupied by western Joshua tree (18 Points)
- Small area occupied by western Joshua tree (6 Points)

Density of Individual Adult (Reproductive) Trees

Properties with a high density of individual reproductive adult trees should be prioritized. Density is area dependent, and therefore all density calculations should be based on the "occupied area" value determined above (density = number of individual reproductive adult trees/occupied area). For this calculation, trees with multiple clonal stems should be considered as one individual tree. Values are adapted from the condition categories in the 2023 US Fish and Wildlife species status assessment report for Joshua trees, and these density categories can be adjusted for this assessment, if needed.

- High density: greater than 50 trees/hectare (20 adult trees/acre) (5 Points)
- Moderate density: between 25 to 50 trees/hectare (10 and 20 adult trees/acre) (3 Points)
- Low density: fewer than 25 trees/hectare (10 adult trees/acre) (1 Point)

Recruitment

The number of juvenile trees in a population indicates the level of recent recruitment in that population. Tree age is correlated with tree height; therefore, tree height values can be used to assess the amount of recent recruitment. Values are adapted from the condition categories in the 2023 US Fish and Wildlife species status assessment report for Joshua trees, and these recruitment categories can be adjusted, as needed.

- High Recruitment: greater than 15 percent of the number of trees attributable to juveniles (trees less than 1 meter [3.3 feet]) (5 Points)
- Moderate Recruitment: 8–15 percent of the number of trees attributable to juveniles (trees less than 1 meter [3.3 feet]) (3 Points)
- Low Recruitment: less than 8 percent of the number of trees attributable to juveniles (trees less than 1 meter [3.3 feet]) (1 Point)

Within Predicted Climate Refugia

Predicted models for climate refugia for western Joshua tree are provided by Shryock et al. (2025). Higher elevations and more northerly locations are generally predicted to be more

likely climate refugia. Marginal cases may be difficult to assess, but this is still an important assessment. Is the property within the predicted climate refugia category?

- Yes, within high emissions modeling scenario (SSP 5-8.5) of the predicted climate refugia category (40 Points)
- Yes, within moderate emissions modeling scenario (SSP 3-7.0) of the predicted climate refugia (24 Points)
- Yes, within low emission modeling scenario (SSP 2-4.5) of the predicted climate refugia (12 Points)
- No, but within the buffered climate refugia category, modeled as climate refugia, and currently unoccupied by western Joshua tree (6 Points)
- No, but within the buffered climate refugia category, not modeled as climate refugia, and currently occupied by western Joshua tree (6 Points)
- No, but within the buffered climate refugia category, not modeled as climate refugia, and currently unoccupied by western Joshua tree (3 Points)
- No, not within the predicted climate refugia category or buffered climate refugia category (0 Points)

Land Use

Conservation value is highly dependent on the habitat condition, risks of impact from land use on the property being evaluated, and on adjacent and nearby properties. Low quality habitat is less likely to support the species that western Joshua trees depend on, including pollinating moths and rodents. High risk from wildland fire ignition, land ownership and use, plant community composition, and proximity to roads and trails all affect the current and future biological value of a property, whether they are present on the property being evaluated, or on adjacent and nearby properties.

- Low risk from current and adjacent land use (e.g., adjacent to preserved wilderness, far from high-traffic roads and trails, low invasive species cover) (15 Points)
- Moderate risk from current and adjacent land use (e.g., adjacent to high-traffic roads and trails, moderate invasive species cover) (9 Points)
- High risk from current and adjacent land use (e.g., adjacent to development or unprotected habitat, off-highway-vehicle use, high invasive species cover) (3 Points)

Disease/Pest/Mortality Health Assessment

Tree health is an indicator of whether the population is currently stressed. Health assessments of individual trees would contribute to assessing the health of the entire population on the property.

- Population in generally good health (e.g., few signs of damage, pests, or health problems, trees generally upright, limbs generally upright, few exposed roots at the bases of trees, nurse plants are present for recruitment) (5 Points)
- Population in average health (e.g., some signs of damage but most trees likely to persist or rebound) (3 Points)
- Population in poor health (e.g., broken/hanging limbs, yellowing or brown leaves, visible signs of damage [fire damage, bark stripping, boring (weevils, beetles)], excessive leaning of trees, fallen trees, few nurse plants for recruitment) (1 Point)

Proposal Survey Standards

- To calculate occupied area, a complete tree census with a Global Positioning System (GPS) point for each tree within the property boundary would be required. For large properties, results of remote sensing techniques via satellite imagery or other technology are acceptable. A standard assessment area of **100 meters from adult trees** (**328.1 feet)** is recommended to calculate occupied area at all properties. The resulting buffered area should then be clipped to within the property boundary.
- The tree census should include height for each tree to the nearest tenth of a meter. Height for clonal trees should be measured based on height of the tallest tree in the clonal group.
- The tree census should indicate whether each tree has clonal growth or not, and if so, the number of stems.
- The tree census should indicate whether or not each tree is a reproductive adult (i.e., there are branches or other evidence of recent flowering).
- The tree census should assess the health of each living tree as either good, average, or poor.

Conservation Lands Prioritization Assessment Scoring Sheet

Name of Assessment Scorer:

Date of Assessment:

Name and Location of Property:

Criteria	Point Score	Notes
Occupied Area		
Density of Individual Adult (Reproductive) Trees		
Recruitment		
Within Predicted Climate Refugia Category		
Land use		
Disease/Pest/Mortality Health Assessment		

References

Shryock, D. F., T. C. Esque, G. A. Berry, and L. A. DeFalco. 2025. Models of future suitable habitat for Joshua trees (*Yucca brevifolia*, *Yucca jaegeriana*) in the Mojave and Sonoran Deserts based on high resolution distribution data: U.S. Geological Survey data release. https://doi.org/10.5066/P1I6UGOB.

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Appendix G.

Foundational Commitments by CDFW for Developing Western Joshua Tree Conservation Plan Co-Management Principles with California Native American Tribes

FOUNDATIONAL COMMITMENTS BY CDFW FOR DEVELOPING WESTERN JOSHUA TREE CONSERVATION PLAN CO-MANAGEMENT PRINCIPLES BETWEEN CALIFORNIA NATIVE AMERICAN TRIBES AND CALIFORNIA AGENCIES

Foundational commitments by California agencies are important for underpinning and guiding development of co-management principles with California Native American tribes for implementing joint activities to conserve western Joshua tree. The following CDFW commitments were adapted from the Advisory Council on Historic Preservation (ACHP) 2004 Policy Statement on Indigenous Knowledge and Historic Preservation, and represent the collaborative, co-equal character of the activities state agencies will carry out in developing and implementing the co-management principles of the Western Joshua Tree Conservation Plan.

1. **Respect and Relationship Building**. Tribal knowledge, including Traditional Ecological Knowledge, will be treated with respect in all circumstances. This knowledge is frequently revered by the individual, family, clan, or community associated with it, and it may have an active role in ongoing cultural practices and ways of understanding. Disrespect, misuse, or abuse could violate cultural and ethical protocols, or may impact a Tribe in other ways, including socially, politically, or economically. Developing and maintaining a positive and mutually beneficial relationship with Tribes will help facilitate an increased understanding of what constitutes respect and how those actions lead to the proper integration of Traditional Ecological Knowledge into western Joshua tree conservation.
2. **Valid and Self-Supporting Knowledge**. The Traditional Ecological Knowledge held by a Tribe is a valid, sound, and self-supporting source of information and is an aspect of the best available science. It does not require verification by any other knowledge system to inform state decision making in western Joshua tree conservation. Designated representatives of Tribes are, and will be recognized as, subject matter experts regarding the application of their Traditional Ecological Knowledge.
3. **Cultural and Religious Significance of Traditional Ecological Knowledge**. Conservation actions affect resources and properties that may be of religious and cultural significance to Tribes. The development and implementation of conservation management actions will be guided and informed by Traditional Ecological Knowledge, where Tribes consent to share that knowledge with state agencies. For purposes of state environmental laws relevant to western Joshua tree conservation, the term "Traditional Ecological Knowledge" includes, but is not limited to, the experiences, insights, and knowledge held by Tribes that can assist state agencies in identifying, evaluating, assessing, and resolving adverse effects to resources and properties that may be of religious and cultural significance to the Tribes.

While state law directs state agencies to make the final decisions in environmental review, the WJTCA also directs agencies to consult with Tribes in carrying out conservation activities. Deference will be provided to the expertise of designated tribal representatives where Traditional Ecological Knowledge is provided to inform decision making. State agencies recognize and defer to tribal interpretation of the resource's or property's religious or cultural significance and integrity. Efforts taken to avoid or minimize adverse effects to western Joshua tree on tribal land should reflect the Traditional Ecological Knowledge and other input provided by the Tribe, recognizing they are uniquely suited to inform those decisions and can provide information to help define what may be or may not be appropriate. Efforts to reach consensus on management actions should prioritize and recognize the preferences of Tribes on tribal land including consideration of religious and cultural significance important to them.

4. **Fair Compensation**. If a state agency requests a Tribe to provide Traditional Ecological Knowledge via research, survey, monitoring, or other efforts, the Tribe should be fairly reimbursed or compensated. Traditional Ecological Knowledge is a distinct form of expertise that cannot be supplanted through other forms of knowing. Designated representatives of Tribes are the appropriate subject matter experts with the experience and qualifications to inform state agency decision making in the conservation of western Joshua tree on tribal lands. In many cases, identifying, vetting, and deciding whether and how to share Traditional Ecological Knowledge requires research, work, or additional action on the part of the Tribe.

5. **Records Reflect Tribal Involvement**. The importance of Tribal Ecological Knowledge will be documented in conservation project records. Any determination, finding, or agreement that relates to the western Joshua tree conservation on tribal lands or other properties that may be of religious and cultural significance to a Tribe will include sufficient documentation to enable any reviewing party to identify when and how consultation efforts facilitated opportunities for Traditional Ecological Knowledge to inform decision making. These records should reflect if Traditional Ecological Knowledge was incorporated into final decisions, or include detailed justifications as to why not, being cognizant to protect or withhold confidential and sensitive information, as deemed by Tribes.

6. **Consultation Timelines**. Timelines will reflect the complexity and nature of the undertaking and recognize and attempt to accommodate decision-making processes of associated Tribes. When seeking information from a Tribe regarding conservation management actions on tribal land or properties that may be of religious and cultural significance to them, the agency will initiate consultation early enough in the planning process for effective consultation. State agencies should provide as much advanced notice of consultation meetings as possible and should extend review timelines accordingly, where needed to result in effective consultation and sharing of Traditional Ecological Knowledge.

7. **Professional Qualifications of Tribal Representatives**. The State recognizes that representatives of Tribes have professional qualifications. As sovereign Nations, Tribes retain the right to determine who has the expertise and qualifications to represent them and their Traditional Ecological Knowledge in the implementation of the Conservation Plan. Consistent with state government procedures, state agencies will identify designated representatives of Tribes as subject matter experts who meet the professional standards needed to inform findings and determinations relevant to conservation management actions on tribal Lands or properties that may be of religious or cultural importance to them.

8. **Managing and Protecting Sensitive Tribal Information**. The State will prevent or limit to the maximum extent feasible any inappropriate disclosure of confidential or sensitive information through all available mechanisms. Traditional Ecological Knowledge frequently includes information that is confidential, sensitive, sacred, and/or internal to a Tribe. To the maximum extent feasible, state agencies will clearly inform Tribes of any limitations on the agencies' ability to keep Traditional Ecological Knowledge confidential before discussing Traditional Ecological Knowledge. When seeking or integrating Traditional Ecological Knowledge, state agencies will consider not only how it would influence decision making, but also how it would account for any cultural, governmental, legal, or ethical protocols the Tribe may have that dictate its application and use. If Traditional Ecological Knowledge is provided, maximum effort will be taken to live up to the state government's trust commitments to protect confidential or sensitive tribal information.

Appendix H.

Enhancement and Restoration Prioritization Assessment

ENHANCEMENT AND RESTORATION PROJECT PRIORITIZATION ASSESSMENT

Background

The purpose of this appendix to the Western Joshua Tree Conservation Plan is to provide guidance on how enhancement and restoration projects supported by the Western Joshua Tree Conservation Fund (Conservation Fund) will be evaluated and prioritized. Projects with an overall goal of reducing threats or restoring western Joshua tree habitat would be considered for funding. Important components of western Joshua tree habitat include, but are not limited to, reproducing adult individuals, non-reproducing juvenile individuals, seeds/seed bank, native nurse plants, suitable soils, pollinating moths, seed dispersers, and western Joshua trees with advantageous genetic traits/adaptations. Threats to western Joshua tree habitat that may be reduced by enhancement and restoration projects include but are not limited to invasive plants, wildland fire, erosion, vehicle impacts, grazing impacts (e.g., herbivory, trampling, soil compaction), and other pests or diseases (e.g., weevils, beetles).

Minimum Qualifications

- Project will be conducted by the owner or the property or their agent, unless otherwise approved by CDFW.
- Project area has been degraded by impacts that may be reduced by the project.
- The project proposal is clearly written and includes objectives, methods, and goals.
- The project proponent has committed to maintain and monitor the project for 2 years and to report the results to CDFW.
- The project includes consultation with a desert restoration expert with 5 years of desert restoration experience. The resume of desert restoration experts will be submitted to CDFW for approval.

Evaluation Criteria

Projects will be evaluated based on the provided point scoring system.

- **Enhancement/ Restoration Design (1–15 Points):** The design of a project will be evaluated based on its completeness and clarity of objectives, methods, goals, and a plan to maintain and monitor the site. Proposals should be reviewed and approved by a specialist with desert restoration experience.

- Excellent (15 Points) – All aspects of enhancement/restoration design are clear and well-defined. Goals and objectives are specific, measurable, and realistic. The proposal includes detailed methods that outline all aspects of the project from start to finish and includes timelines for implementation. Project is "shovel ready" meaning that all necessary agreements and/or compliance (if applicable) are complete.
- Fair (9 Points) – All or most aspects of the enhancement/ restoration design are included but some are unclear. Some additional steps are required before the project can be implemented. Goals are qualitative.
- Poor (3 Points) – Elements of the enhancement/ restoration design are included but some are missing important details. There is no clear path or timeline towards implementation.

- **Urgency and Severity of Threat (1–15 Points):** The project should alleviate one or more threats to western Joshua tree and its habitat such as low population size, lack of important resources, invasive plants, wildland fire, erosion, vehicle impacts, grazing impacts, or other pests or diseases. Projects that alleviate more urgent and severe threats will be ranked higher than projects that alleviate less urgent and severe threats.
  - Severe and urgent threats alleviated (15 Points) – Threat requires immediate action. Effects are substantial and irreversible with permanent consequences such as extirpation of a population or local genotype.
  - Moderate and semi-urgent threats alleviated (9 Points) – Threats are increasing in size and magnitude and are likely to have severe consequences in the next few years, such as significant reductions in population viability. Threats are reversible but only with extensive external input.
  - Minimal and non-urgent threats alleviated (3 Points) – Threats have been ongoing and are not likely to cause any significant impacts to the resource in the immediate future. Consequences of the threat may be a minor or seasonal reduction in population viability. Effects are easily reversible with little to no lasting effects.
- **Problem Resolution (1–15 Points):** Projects that alleviate threats over longer time periods will be ranked higher than projects that alleviate threats over shorter time periods.
  - Excellent (15 Points) – Project will implement specific actions that will result in resolution of the issue(s) or threat(s) for long periods of time (decades or longer). There is a high likelihood that project goals will be achieved. Actions are performed on a one-time basis (although the duration of implementation may be long, such as a five-year planting project with five additional years of monitoring and supplemental watering). The project benefits are expected to be self-sustaining for a decade or more after completion of the project.

- Fair (9 Points) – Project contributes to the resolution of the problem(s) but will not fully resolve the issue(s). Some cyclic ongoing maintenance will be required to achieve project goals. The project benefits are expected to be self-sustaining for one to several years after completion of the project.
- Poor (3 Points) – Project will contribute basic information about the problem(s) but does not directly lead to resolution of the issue(s). The project benefits are not expected to be sustainable after the completion of the project.

- **Maintenance and Monitoring Plan (1–15 Points):** Regular maintenance and monitoring of the site and local conditions are needed to ensure ecological processes are heading in the intended direction, and that adjustments are made accordingly. The frequency of maintenance visits will vary based on project activities and timeframes. For example, nursery plants may need regular watering in the years after initial installation but require less frequent watering in later years after they become established. The site characteristics that are monitored, and their frequencies, will also vary based on the project activities; however, more points will be given to projects that consider a full range of factors that contribute to the success of the enhancement or restoration project. For example, monitoring invasive grasses may help detect when fuel reduction treatments are necessary. Annual reporting to CDFW and National Fish and Wildlife Foundation (NFWF) will be required for a minimum of 2 years, and projects with longer commitments will receive more points.
  - (15 Points) – Project includes a detailed schedule for regular maintenance and monitoring for 10+ years. The rationale for the frequency of maintenance visits is clearly explained and cost effective. The monitoring plan considers a wide range of ecological aspects that may affect the success of the project. Quantitative trigger points for adjustments to management actions are incorporated into the plan.
  - (9 Points) – Project includes a detailed schedule for regular maintenance and monitoring for 5 years. The rationale for the frequency of maintenance visits is explained but some aspects are unclear or not cost effective. The monitoring plan considers some important ecological aspects that may affect the success of the project.
  - (3 Points) – Project includes minimal maintenance and monitoring for 2 years. The rationale for the frequency of maintenance visits is unclear and not cost effective. Monitoring of one ecological aspect will occur annually.
- **Collaborative Engagement (1–10 Points):** Projects that have been endorsed or supported by a diverse group of collaborators and that will be implemented by many partners will rank higher than projects that were developed by and will be implemented by few individuals.

- High (10 Points) – Project demonstrates co-management with multiple Tribes, and collaboration with multiple local/regional partners including, but not limited to, other governmental agencies, diverse interested organizations, educational groups, and local communities.
- Moderate (6 Points) – Project demonstrates co-management with a specified Tribe and/or collaboration with a local/regional partner.
- Low (2 Points) – Project has potential for co-management with a Tribe and/or collaboration with other agencies, but entities are not specifically identified.

- **Cost Effectiveness (1–10 Points):** Projects that will supplement funds from the Conservation Fund with other funds and resources to implement the proposed project will rank higher than projects that rely heavily or entirely on the Conservation Fund.
  - High (10 Points) – Conservation Funds represent less than 25 percent of the total project cost.
  - Moderate (6 Points) – Conservation Funds represent 25–75 percent of the total project cost.
  - Low (2 Points) – Conservation Funds represent greater than 75 percent of the total project cost.
- **Conservation Lands Prioritization Assessment Score (1–10 Points):** (see Appendix F, "Conservation Lands Prioritization")
  - 81–100 Score (10 Points)
  - 61–80 Score (8 Points)
  - 41–60 Score (6 Points)
  - 21–40 Score (4 Points)
  - 0–20 Score (2 Points)
- **Land Conservation Status - (1-10 Points)**
  - High conservation status (10 Points) – Primary use is land conservation. These include conservation easements, conservancy lands, preserves, parks, sovereign lands devoted to conservation practices.
  - Some conservation status (6 Points) – Areas with one or more uses including federal land with alternative uses (e.g., Bureau of Land Management, US Forest Service, US Bureau of Reclamation, US Department of Energy, US Department of Defense), sovereign lands with one or more uses other than conservation.
  - No conservation status (2 Points) – No official conservation status; however, an agreement may be in place with private/residential landowner.

Enhancement and Restoration Project Assessments Scoring Sheet

Name of Assessment Scorer:

Date of Assessment:

Name of Project:

Location of Project:

Criterion	Point Score	Notes
Enhancement/ Restoration Design (1–15 Points)		
Urgency and Severity of Threat (1–15 Points)		
Problem Resolution (1–15 Points)		
Maintenance and Monitoring Plan (1–15 Points)		
Collaborative Engagement (1–10 Points)		
Cost Effectiveness (1–10 Points)		
Conservation Lands Prioritization Assessment Score (1–10 Points)		
Land Conservation Status (1–10 Points)		
TOTAL (Out of 100 Points)		

Appendix I.

Land Acquisition Flow Chart

Western Joshua Tree RPF Land Acquisition Flowchart

***This is the typical workflow; however, these steps may occur out of order in some situations**

STAGE 1

Property Eligibility
Preliminary review for biological suitability and title issues

- Consultant locates mitigation opportunity, evaluates it using the Conservation Lands Assessment (Appendix F), and provides mitigation lands assessment scoring sheet to CDFW Region for biological suitability review
- CDFW Region reviews information provided by Consultant and conducts site visit. If Region agrees property meets assessment criteria in Appendix F, gives Consultant approval to proceed.
- Consultant gathers/prepares Stage 1 property documents, reviews documents for potential issues. If Consultant recommends property, they provide package and recommendations to CDFW
- CDFW Region, Right of Way Agent, and Land Surveyor performs desk review Stage 1 documents
- CDFW provides Consultant written approval or denial for "Property Eligibility." Approval signals Stage 2 can begin
- Consultant may facilitate option with willing seller as Stage 2 review begins

STAGE 2

Property Acceptance
Full land package review if property found eligible by CDFW in Stage 1

- Consultant gathers Stage 2 property documents, reviews documents for potential issues. If Consultant recommends property, they provide package and recommendations to CDFW
- CDFW Region, Right of Way Agent, and Land Surveyor performs desk review of Stage 2 documents (engage legal if necessary)
- Consultant facilitates any negotiations with entities involved in property acquisition or protection
- CDFW provides Consultant written approval or denial for "Property Approval." Approval signals Consultant can complete property acquisition and protection
- Consultant requests CDFW to direct NFWF to fund the approved fee title and/or conservation easement acquisition

STAGE 3

Property Protection and Closing Documentation
Closing and Recording of Documents

If CDFW is Third Party Beneficiary

- Consultant sends the grant deed and/or conservation easement to title company for recording and completes escrow
- Consultant provides CDFW with Digital Closing Package
- Consultant requests CDFW to direct National Fish and Wildlife Foundation (NFWF) to fund long term management and conservation easement monitoring endowments

If CDFW is conservation easement Grantee or acquiring land in fee title,

- CDFW Right of Way Agent submits land package to the Wildlife Conservation Board (WCB)
- WCB Reviews package and Executive Director signs certificate of acceptance. WCB sends Conservation Easement/Grant Deed to title company for recording
- Title Company/Consultant provides WCB and CDFW with Digital Closing Package
- Consultant requests CDFW to direct NFWF to fund long term management and conservation easement monitoring endowments