# **Attachment 1-A**

# **California Department of Fish and Wildlife Western Joshua Tree Conservation Lands Assessment**

(September 1, 2023)

## **Background**

The purpose of this attachment is to provide biological guidance for land acquisitions or other mitigation opportunities supported by the Western Joshua Tree Conservation Fund (WJT Fund) or any successor fund. These considerations frame minimum habitat standards, identify standards for surveys/censuses/habitat evaluations, and propose 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. Recommendations for surveys/censuses/habitat evaluations submitted with proposals are also provided.

### **Occupied area**

Properties with larger areas occupied by western Joshua may have higher conservation value. For example, a 200-hectare property with 50 hectares occupied by western Joshua tree would rank lower than a 100-hectare property with 75 hectares occupied by western Joshua tree. A standard buffer of **100 meters from adult trees** is recommended to calculate occupied area at all properties. Non-suitable habitat, such as hardscapes, should not be included. We will need to see which properties are available before applying areas to the large/medium/small criteria below.

* Large area (67-100%) occupied by WJT (5 points)
* Medium area (34-66%) occupied by WJT (3 Points)
* Small area (0-33%) occupied by WJT (1 point)

### **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 used 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](https://downloads.regulations.gov/FWS-R8-ES-2022-0165-0005/content.pdf), and these density categories can be adjusted for this assessment, if needed.

* High density: greater than 20 adult trees/ac (greater that 50 trees/ha) (5 Points)
* Moderate density: between 10 and 20 adult trees/ac (25 to 50 trees/ha) (3 Points)
* Low density: fewer than 10 adult trees/ac (25 trees/ha) (1 Point)

### **Recruitment**

The number of juvenile trees in a population indicates the level of recent recruitment in that population. Since tree age is correlated with tree height, 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](https://downloads.regulations.gov/FWS-R8-ES-2022-0165-0005/content.pdf), and these density categories can be adjusted, as needed.

* High Recruitment: Greater than 15 percent of the number of trees attributable to juveniles (trees less than 3.3 ft (1 m)) (5 points)
* Moderate Recruitment: 8–15 percent of the number of trees attributable to juveniles (trees less than 3.3 ft (1 m)) (3 Points)
* Low Recruitment: less than 8 percent of the number of trees attributable to juveniles (trees less than 3.3 ft (1 m)) (1 Point)

### **Within predicted climate refugia**

There are many models to choose from, but some useful predictions of climate refugia for western Joshua tree are in Appendix G of the [2023 US Fish and Wildlife species status assessment report for Joshua trees](https://downloads.regulations.gov/FWS-R8-ES-2022-0165-0005/content.pdf). Higher elevations and more northerly locations are also generally predicted to be more likely climate refugia. Marginal cases may be difficult to assess, but this is still an important assessment.

* Yes, within refugia (5 points)
* Maybe within refugia (3 Points)
* No, not within refugia (1 Point)

### **Land Use**

Conservation value is highly dependent on the condition of habitat and 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 wildfire 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 (examples: adjacent to preserved wilderness, far from high-traffic roads and trails, low invasive species cover) (5 points)
* Moderate risk from current and adjacent land use (3 points)
* High risk from current and adjacent land use (adjacent to development or unprotected habitat, off-highway-vehicle use, high invasive species cover) (1 point)

### **Disease/Pest/Mortality Health Assessment**

The current health of trees is an indicator of whether the population is currently stressed. An assessment of the health of individual trees would contribute to assessing the health of the entire population on the property.

* Population in generally good health, 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, some signs of damage but most trees likely to persist or rebound (3 points)
* Population in poor health, 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 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 is acceptable. A standard buffer of **100 meters from adult trees** 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., are there 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 and Mitigation Lands Assessments Scoring Sheet**

**Name of Assessment Scorer:**

**Name of Property:**

|  |  |  |
| --- | --- | --- |
| **Criterion** | **Point Score (1-5)** | **Notes** |
| Occupied area |  |  |
| Density of individual adult (reproductive) trees |  |  |
| Recruitment |  |  |
| Within predicted climate refugia |  |  |
| Adjacent Land Use |  |  |
| Disease/Pest/Mortality Health Assessment |  |  |