Species: *Erythronium klamathense* Applegate, Klamath fawn lily

**Photo Source:** CalPhotos 2020

**Photo Credits:** Left: Julie Kierstead; center: John Game; right: Jessica O’Brien, Sierra Pacific Industries (with permission)

**Status**

Table 1 summarizes the current status of this species or subspeciesvariety by various ranking entities and defines the meaning of the status.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Status</th>
<th>Status Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>NatureServe CA²</td>
<td>G4, S2</td>
<td>G4: Apparently Secure — Uncommon but not rare; some cause for long-term concern due to declines or other factors.</td>
</tr>
</tbody>
</table>
Species Account: *Erythronium klamathense*

| California Rare Plant Rank<sup>b</sup> | 2B.2 | 2B: Rare and endangered in California, more common elsewhere. 0.2: Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat). This taxon was added to the CNPS Inventory of Rare and Endangered Plants of California in 1974 and was moved to List 2.2 in 2006 (Lazar and Bittman 2006). |
| California State Listing<sup>c</sup> | Not listed |
| USDA Forest Service<sup>d</sup> | Not listed |
| USDI FWS<sup>e</sup> | Not listed |
| USDI BLM<sup>f</sup> | Not listed |
| NatureServe OR<sup>g</sup> | Not listed |
| Oregon State Listing<sup>h</sup> | Not listed |
| NatureServe NV<sup>i</sup> | Not present |
| Nevada State Listing<sup>j</sup> | Not present |

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**Distribution, abundance, and population trend on the planning unit<sup>1</sup>**

Table 2 summarizes the distribution and frequency of this species or subspecies/variety within National Forest System Lands in California. Table 4 in Appendix 1 lists all known occurrences of this species or subspecies/variety within California. Individual occurrences are defined as sites

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<sup>1</sup> 1909.12 Chapter 10, Section 12.53, components 2, 3, and 4.
that contain an individual, population, or groups of populations of the plant that are located more than 1/4 (0.25) of a mile apart from each other as defined by the CNDDB.

Table 2. Known Occurrence Frequency of Klamath fawn lily within the Planning Area (NRIS, CNDDB, Calflora/CCH databases)

<table>
<thead>
<tr>
<th>National Forest System (NFS) lands in California</th>
<th>Record #s (from Table 4)</th>
<th>CNDDB EOs</th>
<th>Non-CNDDB Records</th>
<th>Recent (seen in past 20 years)</th>
<th>Historical (not seen in past 20 years)</th>
<th>Most Recent Obs. Date</th>
<th>Total Records on NFS lands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shasta-Trinity: 1, 5, 6, 15</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>30-Jul-2019</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Totals:</td>
<td>N/A</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>N/A</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Sources: Distribution: Calflora 2020, CNDDDB 2020, Green 2020 pers. comm. Baselayers: 2013 National Geographic Society, i-cubed, Esri, Garmin, NOAA, NPS, USGS.
Klamath fawn lily was last updated in the CNDDDB on March 15 2010 (CNDDDB 2020), and therefore all Calflora, CCH, and/or NRIS records prior to this date are assumed to have already been reviewed and entered into the CNDDDB for this plant. Accordingly, only records from Calflora, CCH, and/or NRIS reported after this date have been reviewed for potential new or updated occurrence information and are included in Table 4 in Appendix 1 as applicable.

In California, Klamath fawn lily is known from Shasta and Siskiyou counties. It is found in the vicinity of Castle Lake in the Trinity Mountains in the Klamath Ranges (KR) bioregion, as well as the mountains to the northeast of Shasta Lake on the border of the Klamath and High Cascade Ranges (CaRH) bioregions. It is also documented by 48 herbarium collections from the mountains of Lane, Douglas, Jackson, Josephine, and Klamath counties in Oregon (CPNWH 2020). Four of the 17 records in California are found on National Forest land, all on the Shasta-Trinity National Forest. None of the occurrences are located in Wilderness Area. Fourteen of the 17 records have been observed in the past 20 years, and thirteen of those locations were first discovered during that time. Twelve of the records have been censused, seven have been visited more than once, and three have been censused over time. Population numbers range from 12 to 12,950, with five populations having more than 1000 individuals. Census data and repeated observations suggest that the populations are stable.

**Brief description of natural history and key ecological functions**

Klamath fawn lily is a perennial, bulbiferous herb with just two large basal leaves that blooms from April to July. It often appears just after snow melt on sandy or gravelly, volcanic or granitic substrates at the edges of wet meadows or drainages and within seasonally moist openings with little other herbaceous plant cover; it grows in lower montane coniferous forest at 1200–1985 m in elevation (CNPS 2020, CNDDDB 2020, Green 2020 pers. comm., JEPS 2020). Associates include *Abies concolor*, *A. magnifica*, *Pinus ponderosa*, *Pseudotsuga menziesii*, *Calocedrus decurrens*, *Acer* spp., *Quercus vacciniifolia*, *Ceanothus prostratus*, *Arctostaphylos* spp., *Symphoricarpos mollis*, and *Ribes* spp. (CNDDDB 2020, Green 2020 pers. comm.). Field observations have found that the plant prefers partial shade, rather than deep shade or open sun. It is more common where soil litter and/or part of the canopy has been removed (Lenz 2020 pers. comm.).

The genus *Erythronium* consists of approximately 33 species of spring-ephemeral, bulbiferous herbs with rapid early-season growth followed by rapid senescence of above-ground structures; there are three centers of diversity across the Northern Hemisphere: Eurasia, eastern North America, and western North America (Allen et al. 2003, Clennett et al. 2012, POWO 2020). Phylogenetic analyses of the genus show that the western North American species form a moderately well-supported group with Klamath fawn lily at the base (Allen et al. 2003, Clennett et al. 2012). This group of species appears to have undergone rapid molecular and morphological diversification following separation from the other species of *Erythronium*, and the species often lack clear-cut reproductive barriers between the species; for example, Klamath fawn lily can hybridize with *E. hendersonii*, another species distributed in northern California and Oregon (Allen et al. 2003).

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2 Basis for other 1909.12 Chapter 10, Section 12.53 components.
Klamath fawn lily produces one to several large white flowers with yellow markings at the base of each tepal (JEPS 2020). The pollination biology of Klamath fawn lily has not been studied, but other species of Erythronium are pollinated by bees, with several different kinds being reported as confirmed pollinators, including bumble bees (Bombus), carpenter bees (Xylocopa), and mining bees (Andrena); other documented floral visitors include cuckoo bees (Nomada), honey bees (Apis mellifera), leaf-cutting bees (Osmia), sweat bees (Augochlora, Augochlorella, Lasioglossum), and bee flies (Bombylius) (Thomson 1986, CPC 2020).

The fruit of Klamath fawn lily is a capsule that dehisces upon maturity (JEPS 2020). Dispersal of the seeds is by catapult action whereby the dry capsules are shaken by wind or a passing animal (Guppy 2006). The seeds of western species lack the elaiosomes (external oil bodies) associated with ant-mediated dispersal that eastern North American and Eurasian species share (Guppy 2006, Clennett et al. 2012). Therefore, it is likely that the seeds of Klamath fawn lily are dispersed close to the parent plant. Many Erythronium species are also able to reproduce asexually by bulb offsets (buds arising from the basal plate of the bulb that grow into additional bulbs) (Applegate 1935). Whether this is common in Klamath fawn lily is not known, but field observations indicate that it may reproduce more often from seed than by bulb offsets (Lenz 2020 pers. comm.). It probably does not respond well to deep soil disturbance or high intensity fire (Lenz 2020 pers. comm.).

Overview of ecological conditions for recovery, conservation, and viability\(^3\) including Threats and Risk Factors

This species is known from the Klamath Ranges and High Cascade Ranges bioregions of Shasta and Siskiyou counties in California, as well as five counties in Oregon. In California, the known locations for this species have recently increased in number, with 13 of the 17 California records first discovered since 2000. Eight of the locations have a site quality assessment: four are rated Excellent, and four are rated Good (CNDDB 2020, Green 2020 pers. comm.). Thirteen of the known locations are on private lands, with 12 owned by timber companies. Threats reported for this species are road construction/maintenance, timber harvest activities (including skid trails), recreational trail use, and soil erosion (Lonergan et al. 2018 pers. comm., CNDDB 2020, Green 2020 pers. comm.). Although the places where this species occurs on the Shasta-Trinity National Forest are no longer being managed for timber harvesting (Lonergan et al. 2018 pers. comm.), concern about the effects of private timber harvest activities on this species was one of the reasons for changing its conservation status from CRPR 4 to CRPR 2 in 2006 (Lazar and Bittman 2006). To further aid in conservation of this species, seeds of Klamath fawn lily have been collected and placed in the seedbank at the University of California, Santa Cruz (CNDDB 2020).

The long-term threat of climate change on this species is difficult to predict. Decreased or unpredictable rainfall due to climate change has already been shown to be correlated with higher seedling mortality (Harrison 2015); however, as this species is a perennial herb, it may be able to persist despite reproductive failure. Climatic effects are also expected to increase the frequency

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\(^3\) 1909.12 Chapter 10, Section 12.53, components 7, 9, 10, 11 and 12, as appropriate.
and severity of wildfires in northern California (Fried et al. 2004). Because Klamath fawn lily grows from an underground stem (bulb), this plant likely can survive late-season, low-intensity fires which would burn the senescent above-ground plant and seeds. Post-fire monitoring of Erythronium shastense, which also grows in Shasta County, documented abundant resprouting and flowering one-year post-fire (Kierstead 2020 pers. comm.). This would most likely be the case for Klamath fawn lily. On the other hand, early-season fires, including prescribed fires during its growing season (January to June), would kill the current year’s leaves and reproductive structures, and probably would kill shallow-rooted seedlings. Prescribed fire is a common method of fuels reduction by the Forest Service within the range of this species (Kierstead 2020 pers. comm.).

**Taxonomy**

Table 3 summarizes this species or subspecies/variety’s name status in key literature.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Name Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNDDDB and CNPS</td>
<td>Erythronium klamathense Appleg.</td>
</tr>
<tr>
<td>Jepson eFlora</td>
<td>Erythronium klamathense Applegate</td>
</tr>
<tr>
<td>Flora of North America</td>
<td>Erythronium klamathense Applegate</td>
</tr>
<tr>
<td>USDA NRCS(^a) PLANTS</td>
<td>Erythronium klamathense Applegate</td>
</tr>
</tbody>
</table>

\(^a\) Natural Resources Conservation Service [NRCS 2020]

**Synonymy:** No synonyms are listed for this species (Tropicos 2020).

**Jepson eFlora link (JEPS 2020):** [https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=25181](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=25181)

**Type locality:** Oregon. Klamath County: at the south end of Four Mile Lake, near the east base of Mt. Pitt (Applegate 4676, CAS) (Applegate 1935, JSTOR 2020).

**Key literature**


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4 1909.12, Chapter 10, Section 12.53, component 1.

**Literature cited**


[CCH2] Consortium of California Herbaria Portal 2. 2020. Data provided by the participants of the Consortium of California Herbaria and the California Phenology Thematic Collections
Species Account: *Erythronium klamathense*


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2021-10-08


**Persons Contacted**

Green, Kaitlyn. 2020. Contractor, California Department of Fish and Wildlife. Email correspondence regarding additional survey forms for *Erythronium klamathense*. Personal communication 18 November 2020.


**Author(s) and Date:**

Ellen A. Dean, California Native Plant Society, Assistant Rare Plant Botanist, 19 November 2020; revised 8 October 2021.

**Reviewer(s) and Date:**

Aaron E. Sims, California Native Plant Society, Rare Plant Program Director, 26 April 2021; Julie Ann Kierstead, USDA Forest Service Region 5, Ecosystem Planning, 13 September 2021.

**Formatting:** Form is set up as 508 compliant. Please use the “styles” if further formatting is necessary.

**Purpose:** This is to maintain the best available science on a species that could be used by the Forest Service in a variety of functions. Specifically, there would be additional steps and evaluations to determine whether or not this species would be considered a Species of Conservation Concern under the 2012 Planning Rule or a Sensitive Species under the 1982 Planning Rule.
Appendix 1: Known Occurrences

Table 4. Known Occurrences of Klamath fawn lily within California (NRIS, CNDDDB, Calflora/CCH databases).

REDACTED FOR CONSERVATION PURPOSES
Appendix 2: Additional Considerations at the Forest Level

<This section, including the next 5 subheadings, would be filled out by Forest Service botanists.>

<Forest Name>

Geographic distribution within the Forest
A. Scarcely isolated
B. Patchy or gaps
C. Contiguous

<Select a geographic distribution rank and provide references or cite ‘specialist expertise, <name>’ where appropriate.>

Abundance of the species on the Forest
A. Rare – current abundance is low enough that stochastic and other factors could lead to potential imperilment.
B. Uncommon – current abundance is large enough that demographic stochasticity is not likely to lead to rapid local extinction, but, in combination with highly variable environmental factors, could pose a threat.
C. Common – current abundance is large enough that species persistence is not threatened by demographic stochasticity in combination with environmental variation.
D. Insufficient information to draw inferences about criterion.

<Select a species abundance rank and provide references or cite ‘specialist expertise, <name>’ where appropriate.>

Population trend on the Forest
A. Significant downward or suspected downward population trend.
B. Stable population.
C. Upward population trend.
D. Insufficient information to draw inferences about criterion.

<Select a population trend rank and provide references or cite ‘specialist expertise, <name>’ where appropriate.>

Habitat trend on the Forest
A. Decline in habitat quality or quantity.
B. Stable amounts of suitable or potential habitat, relatively unchanged habitat quality.
C. Improving habitat quality or increasing amounts of suitable or potential habitat.
D. Insufficient information to draw inferences about criterion.

<Select a habitat trend rank and provide references or cite ‘specialist expertise, <name>’ where appropriate.>
Vulnerability of habitat on the Forest

A. Substantial modification of habitat has occurred or is anticipated with conditions departing from expectations based on NRV, and/or habitat is impacted by modern stressors such as drought, climate change, high intensity wildfire and wildfire suppression disturbances, loss of natural openings due to historical wildfire suppression, nonnative invasive species, water impoundments and diversions, and recreation, etc.

B. Habitat modification is likely to result in ecological patterns similar to the range of historical conditions, but is being impacted by modern stressors.

C. Habitat resilient, changes are similar in frequency and intensity to those expected from NRV, and modern stressors not significant.

D. Insufficient information to draw inferences about criterion.

<Select a habitat vulnerability rank and provide references or cite ‘specialist expertise, <name>’ where appropriate.>

Additional Forest specific information related to the SCC determination

<This section is provided for Forest botanists to add additional Forest specific information that is not captured in the section above, if necessary. Provide a narrative description here of the additional relevant information. State “No additional information” if this section is not used.>