Plant Species Evaluation Form

Erythronium howellii Wats.

HOWELL'S FAWN LILY

**Family:** Liliaceae
**PLANTS Symbol:** ERHO10
**Calif. Endemic:** No

**Synonyms/Other Names:** Both *Erythronium citrinum* and *E. howellii* were originally described by S. Watson (1887), from contemporary collections by T. Howell (Tropicos 2018). Only the absence of auricles on the inner tepals of *E. howellii* reliably differentiates the two taxa, a trait known to vary within other species in the genus (Allen, G. pers. comm. 2012). Accordingly, both the *Flora of North America* (Allen and Robertson 2002) and the *Jepson eFlora* (Allen 2012) regard *E. howellii* as an invalid synonym for the accepted taxon, *E. citrinum* var. *citrinum*. But while *E. howellii* is only marginally distinct from *E. citrinum* with respect to morphology, a recent phylogenetic analysis supports separating these two species (Clennett et al. 2012). The California Native Plant Society regards these as distinct entities (Slakey et al. 2012; CNPS 2018).

**Identification Issues:** *Erythronium howellii* is almost morphologically indistinguishable from *E. citrinum*, differing only by the absence of auricles on the inner tepals of *E. howellii* (Allen, G. pers. comm. 2012). The *E. citrinum* / *E. howellii* complex is separable from its most similar taxon, *E. helenae*, on the basis of anther color: those of *E. helenae* are yellow, while those of *E. citrinum* and *E. howellii* are white to cream colored (Allen 2012).

**Taxonomy:**
Unless otherwise cited, the following description is used with permission from the Jepson Herbarium. Jepson Flora Project (eds.) 2018. *Jepson eFlora*, http://ucjeps.berkeley.edu/eflora/, accessed in 2018. Copyright © Regents of the University of California.

Species In Genus: +- 27 species: especially temperate North America. Etymology: (Greek: red, from flowers of some). Note: Leaf, flower markings to be noted when fresh, because of fading in pressed specimens.

Description *Erythronium citrinum* var. *citrinum* – Habit: Bulb 40--50 mm, slender. Leaf: 9--15 cm, lanceolate to narrowly ovate, +- wavy-marginated, mottled brown or white. Inflorescence: peduncle 12--35 cm, green or tinged red; flowers 1--3. Flower: perianth parts 25--45 mm, lanceolate to narrowly elliptic, white with yellow base, +- pink in age, inner +- with small sac-like folds at base; stamens generally 11--17 mm, filaments slender, white, anthers white to cream; style 6--10 mm, white, stigma entire or lobes < 1 mm. eFlora Treatment Author: Geraldine A. Allen.


**Status:**
Erythronium howellii Wats.

Note: Federally recognized Endangered, Threatened, Proposed, or Candidate species under the Endangered Species Act are omitted as they do not meet the definition of a Species of Conservation Concern (FSH 1909.12 § 12.52).

<table>
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<th>State Listing</th>
<th>G-rank</th>
<th>S-rank</th>
<th>CRPR</th>
<th>R5 FSS</th>
<th>NFP SM</th>
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Expanded abbreviations and citations: State Listing=California Endangered Species Act Listing (CDFW 2018b), Nevada Division of Forestry Fully Protected Plant Species (NAC 527) (NDF 2012), Oregon Department of Agriculture Listed Plants (ODA 2014); G-rank=Global Conservation Status (CDFW 2018a; NatureServe 2018); S-rank=Subnational (state or province-level) Conservation Status (CDFW 2018a; NatureServe 2018; NNHP 2017; ORBIC 2016); CRPR=California Rare Plant Rank (CNPS 2018); R5 FSS=USDA Forest Service Region 5 Regional Forester Sensitive Plant Species List (USDA 2013); NFP SM=Forest Service and Bureau of Land Management Northwest Forest Plan Survey and Manage Species (USDA 2001); CA BLM=California Bureau of Land Management Designated Sensitive Species (BLM 2010); SWAP=California State Wildlife Action Plan Status (CDFW 2015); NNHP= Nevada Natural Heritage Program Status (NNHP 2017); NNPS=Nevada Native Plant Society Status (NNHP 2017); ORBIC=Oregon Biological Information Center Status (ORBIC 2016); OCS=Oregon Conservation Strategy Species (ODFW 2016); IUCN=International Union for Conservation of Nature Red List Status (IUCN 2017).

Erythronium howellii was included in the first edition of the CNPS Inventory (Powell 1974). Its Inventory status was reviewed in 2012 based on its treatment as a synonym of E. citrinum var. citrinum in the Jepson eFlora (Allen 2012), and after further evaluation it was retained in the Inventory as a California Rare Plant Rank 1B.3 species (Slakey et al. 2012).

Distribution: Erythronium howellii is found in southwestern Oregon and northwestern California; within California, it is recorded only from Del Norte County. National Forest System lands on which this species has been documented include Klamath and Six Rivers National Forests (CNDDB 2017).
Erythronium howellii Wats.

Locations within California:
Record numbers indicate sites that contain an individual, population, or groups of populations located within ¼ mile of each other, per the California Natural Diversity Database (CNDDDB 2017) definition of Element Occurrences (EOs) in California. Official EO numbers for plants in California are determined solely by the CNDDDB and are included within the Reference (Source) column for CNDDDB data. Duplicate records from the same site are given the same record number and included in red. The Population Info column includes total number of individuals and total number and size of populations/sub-populations when provided. Elevations provided in meters from source have been converted to feet. If not provided in original source, Land Manager information was obtained using the California Protected Areas Database (CPAD 2016) and Quad information was obtained using 24K Quads, SDE Feature Class (CDFG 2013). All other information is directly from the Reference (Source) unless additional citation is given.

Redacted for conservation purposes.
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**Distribution on National Forest System (NFS) Lands:**
(Please see Reference column of Locations table above for references pertaining to Record Numbers indicated on NFS lands.)

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<th>Non-CNDDB Records</th>
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<th>Historic (not seen in past 20 yrs.)</th>
<th>Most Recent Obs.</th>
<th>EOs/Recs. (5 mile buffer)</th>
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**Demographic and Population Trends:** Very little is known about population dynamics and viability in this species. Of eleven records, only three have any information on population size: one has less than 1,000 individuals on a site 0.04 Ha in size, another lists 300 individuals, and the last has 50 individuals. Only the latter was observed within the last 20 years (CNDDDB 2017).

**Life History:** *Erythronium howellii* is a perennial bulbiferous herb that blooms in April through May (CNPS 2018). Closely related members of the genus are pollinated by bumblebees (Thomson 1986), and ant-mediated seed dispersal is the rule throughout the genus (Guitian et al. 2003). It appears to tolerate ultramafic substrates (CNPS 2018).
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**Diversity:** The genus *Erythronium* consists of about 27 species (Allen 2012), which range from southern Europe and temperate Asia to both the east and west coasts of North America (Shevock et al. 1990). The genus comprises three principal clades, representing regional diversification in Eurasia, eastern North America, and western North America. Rates of diversification appear to be highest in the western North American group (Allen et al. 2003). Of eighteen species recorded for North America, thirteen are found in California, with the bulk of that diversity centered on the northwest portion of the California Floristic Province (Applegate 1935).

**Habitat:** *Erythronium howellii* is found at elevations between 200 and 1,145 meters within North Coast coniferous forests and lower montane coniferous forests, sometimes in marginal areas characterized as chaparral. It grows on a variety of substrates, including gravelly colluvium and serpentine-derived soils (CNPS 2018). Frequent associates include *Sequoia sempervirens*, *Pinus ponderosa*, *Pseudotsuga menziesii*, *Calocedrus decurrens*, *Arctostaphylos* spp., *Quercus vaccinifolia*, *Vaccinium* spp., and *Gaultheria* spp. (CNDDB 2017).

**Habitat Status or Trend:** The Klamath region is one of six globally important temperate forest biodiversity hotspots, having served as a refugium during the Pleistocene. More than a century of land use (including logging, mining, grazing, and modification of fire regimes) has significantly altered much of the region. Only 28% of the old-growth forest remains, and ongoing human impacts continue to degrade wild communities, especially in mesic lowland and mid-elevation areas (Olson et al. 2012).

**Capacity for the Species to Disperse:** The seeds of *Erythronium* are known to exhibit morphophysiological dormancy, requiring multi-week stratification to begin germination (Baskin et al. 1995). This serves to buffer against harsh environmental conditions by ensuring emergence within an optimal seasonal window, and also provides an extended period for aleatory dispersal. The principal mode of dispersal in congeners is via ants. While myrmecochory provides access to nutrients and protection from seed predators (Guitian et al. 2003), average dispersal distances are fairly short; averaging less than 2 m, and rarely exceeding 70 m (Gómez and Espadaler 1998).

**Threats:** This species is threatened by ongoing logging and mining operations, as well as road use and maintenance (CNDDB 2017; CNPS 2018). The introduction of non-native ant species may represent an additional threat: small-bodied invasive ants are ineffective seed dispersers, leaving a larger fraction of total seed-set vulnerable to predation by mammals (Ness et al. 2004).

**Literature Cited**

Erythronium howellii Wats.


[CDFG] California Department of Fish and Game. 2013. 24K Quads, SDE Feature Class. Index for 1:24,000-scale (24K), 7.5-minute by 7.5-minute, paper U.S. Geological Survey maps in California.


[CDF] California Department of Forestry and Fire Protection. 2009. 1:24,000 County Boundaries (cnty24k09_1_poly) [shapefile]. California Department of Forestry and Fire Protection, California Department of Fish and Game. Berkeley Library Geodata. Available at: https://geodata.lib.berkeley.edu/catalog/ark28722-s73w23 [10 December 2017].


Erythronium howellii Wats.


Erythronium howellii Wats.


Persons Contacted:
Erythronium howellii Wats.


Author(s) and Date:
Seth Kauppinen, Assistant Rare Plant Botanist, California Native Plant Society, (916) 447-2677 x212, skauppinen@cnps.org;


Reviewer(s) and Date:
David Magney, Rare Plant Program Manager, California Native Plant Society, (916) 447-2677 ext. 205, dmagney@cnps.org. June 23, 2018.

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.

Additional Considerations at the Forest Level: Habitat amount and juxtaposition of both the species and habitat locations.