Species: *Draba pterosperma* Payson, winged-seed draba

Photo source: CalPhotos 2020

Photo Credits: Top left and right: Dana York; bottom left: Matt Berger (with permission).

Status

Table 1 summarizes the current status of this species or subspecies/variety 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 CA³</td>
<td>G3, S3</td>
<td>G3: Vulnerable — At moderate risk of extinction or elimination due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.</td>
</tr>
</tbody>
</table>
Species Account: *Draba pterosperma*

**S3: Vulnerable** — Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the nation or state/province.

California Rare Plant Rank$^b$

4.3

4: Plants of limited distribution — a watch list.

0.3: Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known). This taxon was added to the *CNPS Inventory of Rare and Endangered Plants of California* in 1974, was moved to List 4 in 1984, and has undergone no recent changes (CNPS 2020).

<table>
<thead>
<tr>
<th>California State Listing$^c$</th>
<th>Not listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDA Forest Service$^d$</td>
<td>Not listed</td>
</tr>
<tr>
<td>USDI FWS$^e$</td>
<td>Not listed</td>
</tr>
<tr>
<td>USDI BLM$^f$</td>
<td>Not listed</td>
</tr>
<tr>
<td>NatureServe OR$^g$</td>
<td>Not present</td>
</tr>
<tr>
<td>Oregon State Listing$^h$</td>
<td>Not present</td>
</tr>
<tr>
<td>NatureServe NV$^i$</td>
<td>Not present</td>
</tr>
<tr>
<td>Nevada State Listing$^j$</td>
<td>Not present</td>
</tr>
</tbody>
</table>

$^a$ California Natural Diversity Database, California Dept. of Fish & Wildlife [CNDDB 2020, 2020a]

$^b$ California Native Plant Society [CNPS 2020]

$^c$ California Department of Fish and Wildlife [CDFW 2020]

$^d$ US Forest Service Region 5 Forester’s List [USDA 2013] and Pacific NW Survey and Manage [USDA & BLM 2014]

$^e$ US Department of Interior Fish and Wildlife Service [USFWS 2020]

$^f$ US Department of Interior Bureau of Land Management [BLM 2020]

$^g$ Oregon Biodiversity Information Center [ORBIC 2019]

$^h$ Oregon Department of Agriculture [ODA 2018]

$^i$ Nevada Natural Heritage Program [NNHP 2020]

$^j$ Nevada Division of Forestry [NDF 2012]

Note: Individual State Heritage Programs (CNDDB, ORBIC, NNHP) represent NatureServe and contain more up-to-date ranks for their state than NatureServe Explorer.

### Distribution, abundance, and population trend on the planning unit$^1$

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 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.

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$^1$ 1909.12 Chapter 10, Section 12.53, components 2, 3, and 4.
Table 2. Known Occurrence Frequency of winged-seed draba within the Planning Area (NRIS, CNDDDB, 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>Klamath:</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9</td>
<td>0</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>23-Jul-2019</td>
<td>9</td>
</tr>
<tr>
<td>Totals:</td>
<td>N/A</td>
<td>0</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>N/A</td>
<td>9</td>
</tr>
</tbody>
</table>
Sources: Distribution: Calflora 2020, CCH1 2020, CCH2 2020. Baselayers: 2013 National Geographic Society, i-cubed, Esri, Garmin, NOAA, NPS, USGS.
Endemic to California, winged-seed draba is known from the Salmon, Marble, and Scott Mountains in Siskiyou County in the Klamath Ranges (KR) bioregion. The total number of occurrences for winged-seed draba were estimated using GIS tools and methods described by Green and Sims (2018). All of the nine occurrence records are found on Klamath National Forest land, and eight of those are in Wilderness Area. Six of the locations have not been visited in over 20 years; one location (Record #2) was discovered in the past five years. Census data are mostly lacking for this species; one observation, made on Marble Mountain in 2018, reports two to 10 plants. However, according to botanists familiar with this species, winged-seed draba is very common in the Marble Mountains (Lonergan et al. 2018 pers. comm), and the species may be in more locations than estimated here. Winged-seed draba has been observed and collected in the Marble Mountains for over 100 years.

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

Winged-seed draba is a perennial herb to 11 cm high that grows from a branched caudex, producing many sterile rosettes as well as flowering stems with yellow flowers; it blooms from June to September. It grows on rock outcrops and in crevices, as well as on gravelly or talus substrates (marble or limestone), in upper montane coniferous forest from 1500–2500 m (FNA 1993+, CNPS 2020, JEPS 2020). Associates include *Abies magnifica*, *Pinus balfouriana* subsp. *balfouriana*, *Holodiscus discolor*, *Polystichum lonchitis*, *Achillea millefolium*, *Anemone multifida*, *Monardella odoratissima*, and *Ivesia* spp. (CCH2 2020).

*Draba* is a large genus of over 370 species in the mustard family (Jordon-Thaden et al. 2010). It occurs primarily in the Northern Hemisphere (but also in South America), and is most common in subarctic to arctic regions and alpine or mountainous portions of the temperate region (Koch and Al-Shehbaz 2002). About 121 species occur in North America (FNA 1993+), and *Draba pterosperma* has affinities with *Draba hitchcockii*, a morphologically similar, white-flowered species that grows on limestone outcrops in Idaho (Koch and Al-Shehbaz 2002).

Winged-seed draba has yellow flowers with stamens of two different lengths (two short and four long) with the long stamens producing pollen at the same height as the stigmatic surface. Little is known about the reproductive biology of this species. Some *Draba* species are self-compatible, self-pollinating inbreds, which may be an evolutionary response to the short growing season in the high-elevation or high-latitude habitats where they are found (especially when inhabiting rock ledges with little soil moisture) (Mulligan and Findlay 1970, Molau 1993). However, other *Draba* species are visited by pollinators, including bees, butterflies, and flies (CPC 2020). There is also speculation that in some species a mixture of insect- and self-pollination may occur, depending on whether the flower petals are open or closed (Kay and Harrison 1970). The fruit of winged-seed draba is a two-chambered, dehiscent capsule (a silicle) with 8–12 small, flattened, winged seeds (JEPS 2020). Winged seeds are unusual in the genus *Draba*, only being found in two other species (*D. carnulosa* and *D. asterophora*); these two species are not otherwise close morphologically to winged-seed draba (Rollins 1982). The winged seeds may have some ability to travel away from the parent plant via wind currents, which may be aided by explosive dehiscence of the capsule, as seen in other *Draba* species (Kay and Harrison 1970). Given the

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2 Basis for other 1909.12 Chapter 10, Section 12.53 components.
habitat where winged-seed draba occurs, it most likely needs barren substrate with few competitors to establish successfully.

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

This species grows in remote, rocky, high-elevation habitat in the Salmon, Marble, and Scott Mountains in Siskiyou County. It is known from nine estimated occurrence records, all on Klamath National Forest land and all but one in Wilderness Area. Due to its narrow habitat requirements (found on marble and limestone substrates at high elevations), this species has limited ability to migrate to new habitat. It is not currently tracked by the CNDDB, and therefore, none of the occurrence records have site rankings or threat information. In the Marble Mountains, some of the occurrences are near the Pacific Crest Trail and have been observed repeatedly over the past 100 years. Therefore, the populations are most likely stable and may be more numerous (or more continuous) than reported here (Lonergan et al. 2018 pers. comm.). The most likely long-term threat to this species is climate change which is predicted to have negative effects on high-elevation species through changes in the timing of flowering, pollination, and seed germination (Hülber et al. 2010, Mondoni et al. 2012, Gremer et al. 2020). Since winged-seed draba is a perennial plant, it may be able to survive changes in reproduction for a number of years, but the plants themselves may be negatively impacted by increased summer temperatures or decreased snowpack. Seed collection for *ex situ* conservation of winged-seed draba has not yet been carried out (CPC 2020).

**Taxonomy**\(^4\)

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>CNDDB and CNPS</td>
<td><em>Draba pterosperma</em> Pays.</td>
</tr>
<tr>
<td>Jepson eFlora</td>
<td><em>Draba pterosperma</em> Payson</td>
</tr>
<tr>
<td>Flora of North America</td>
<td><em>Draba pterosperma</em> Payson</td>
</tr>
<tr>
<td>USDA NRCS(^a) PLANTS</td>
<td><em>Draba pterosperma</em> Payson</td>
</tr>
</tbody>
</table>

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

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


**Type locality:** California. Siskiyou County: Marble Mountain (*Butler 1716, RM*) (Payson 1917).

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\(^3\) 1909.12 Chapter 10, Section 12.53, components 7, 9, 10, 11 and 12, as appropriate.

\(^4\) 1909.12, Chapter 10, Section 12.53, component 1.
Key literature


Literature cited


Species Account: *Draba pterosperma*


Species Account: Draba pterosperma


Persons Contacted

Author(s) and Date:
Ellen A. Dean, California Native Plant Society, Assistant Rare Plant Botanist, 28 October 2020; revised 6 October 2021.

Reviewer(s) and Date:
Aaron E. Sims, California Native Plant Society, Rare Plant Program Director, 27 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 winged-seed draba within California (NRIS, CNDDB, Calflora/CCH databases).

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.

<table>
<thead>
<tr>
<th>Rec. #</th>
<th>Locality</th>
<th>County</th>
<th>Quad</th>
<th>Ref. (Source)</th>
<th>Date Last Obs’d</th>
<th>Population Info</th>
<th>Threats</th>
<th>Land Mgr.</th>
<th>Elev. (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Top of Craggy Peak.</td>
<td>Siskiyou</td>
<td>Callahan (4112237)</td>
<td>CCH1, Oct 2020 (DS68244)</td>
<td>24 Aug 1899</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Rock crevices on ridgeline above Big Duck Lake.</td>
<td>Siskiyou</td>
<td>Eaton Peak (4112238)</td>
<td>Calflora, Oct 2020 (mg68464)</td>
<td>7-Jul-2018</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>7431</td>
</tr>
<tr>
<td>4</td>
<td>Marble Valley (crevices of Marble rocks)</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (UC165379)</td>
<td>8-Aug-1908</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>On the Marble. [Duplicate says Marble Valley]. Red Fir forest.</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH2, Oct 2020 (KNFY)</td>
<td>4-Aug-1966</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Marble Mountains, Marble Valley</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (RSA183729)</td>
<td>4-Aug-1965</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td></td>
</tr>
</tbody>
</table>
**Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.**

<table>
<thead>
<tr>
<th>Rec. #</th>
<th>Locality</th>
<th>County</th>
<th>Quad</th>
<th>Ref. (Source)</th>
<th>Date Last Obs'd</th>
<th>Population Info</th>
<th>Threats</th>
<th>Land Mgr.</th>
<th>Elev. (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>King's Castle. [Georeferencing places this specimen along Pacific Crest Trail below King's Castle at 6000 ft]</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (DS272858)</td>
<td>9-Jul-1939</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>6000</td>
</tr>
<tr>
<td>6</td>
<td>Marble Mountain Wilderness. Klamath National Forest, Marble Mountain Elev. given as 6800 ft (location is along the Pacific Crest Trail at the north end of Marble Mtn.)</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (CAS1127338)</td>
<td>12-Aug-2011</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>6808</td>
</tr>
<tr>
<td>6</td>
<td>Marble Mountain</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>Calflora, Oct 2020 (wb1883-120)</td>
<td>15-Jul-2017</td>
<td></td>
<td></td>
<td></td>
<td>6804</td>
</tr>
<tr>
<td>6</td>
<td>North Coast Ranges. Marble Mountain. [Georeferenced along Pacific Crest Trail on Marble Mountain at ca. 7000 ft]</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (DS41883)</td>
<td>30-Jun-1901</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>8000</td>
</tr>
<tr>
<td>6</td>
<td>Marble Mountain.</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (DS41912)</td>
<td>10-Jul-1910</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>5500</td>
</tr>
</tbody>
</table>
Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.

<table>
<thead>
<tr>
<th>Rec. #</th>
<th>Locality</th>
<th>County</th>
<th>Quad</th>
<th>Ref. (Source)</th>
<th>Date Last Obs'd</th>
<th>Population Info</th>
<th>Threats</th>
<th>Land Mgr.</th>
<th>Elev. (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Siskiyou County: Southwestern ridge of Black Mountain (Black Marble Mountain), Marble Mountain Wilderness Area</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (UCD1155 50)</td>
<td>18-Aug-1963</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>7000</td>
</tr>
<tr>
<td>6</td>
<td>Siskiyou County: NE-face of Marble Mountain, Marble Mountains</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (UCD1155 49)</td>
<td>4-Sep-1966</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>7000</td>
</tr>
<tr>
<td>6</td>
<td>Marble Mountains</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (RSA1863 35)</td>
<td>19-Oct-1966</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>6142</td>
</tr>
<tr>
<td>6</td>
<td>Marble Mountain Wilderness Area</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (CAS9988 72)</td>
<td>25-Jun-1976</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>6800</td>
</tr>
<tr>
<td>7</td>
<td>Boulder Peak. Subalpine forest.</td>
<td>Siskiyou</td>
<td>Boulder Peak (4112351)</td>
<td>CCH1, Oct 2020 (CAS6921 74)</td>
<td>6-Aug-1969</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>8299</td>
</tr>
</tbody>
</table>
Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.

<table>
<thead>
<tr>
<th>Rec. #</th>
<th>Locality</th>
<th>County</th>
<th>Quad</th>
<th>Ref. (Source)</th>
<th>Date Last Obs'd</th>
<th>Population Info</th>
<th>Threats</th>
<th>Land Mgr.</th>
<th>Elev. (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Marble Mountains - Black Marble Mt (elevation is 7400 ft not 8241)</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>Calflora, Oct 2020 (jgr6614)</td>
<td>10-Jul-2004</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>8241</td>
</tr>
<tr>
<td>8</td>
<td>Marble Mountains. Black Mountain [Black Marble Mtn.].</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (CAS271712)</td>
<td>8-Aug-1939</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Marble Mountains. Marble Rim.</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (CAS271713)</td>
<td>4-Aug-1939</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>6200</td>
</tr>
<tr>
<td>9</td>
<td>Marble Mountains. Marble Rim.</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (DS371497)</td>
<td>4-Aug-1939</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Siskiyou, Marble Rim; Klamath National Forest.</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH2, Oct 2020 (KNFY)</td>
<td>13-Jun-1990</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>6640</td>
</tr>
<tr>
<td>9</td>
<td>North side of Black Mountain [Black Marble Mtn.] near Marble Mountain (King's Castle).</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (DS272860)</td>
<td>9-Jul-1939</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>6800</td>
</tr>
<tr>
<td>9</td>
<td>Marble Mtn Wilderness Area, ridge top just north of Black Mt. [Black Marble Mtn.]</td>
<td>Siskiyou</td>
<td>Marble Mountain (4112352)</td>
<td>CCH1, Oct 2020 (CAS1009089)</td>
<td>30-Jul-1976</td>
<td></td>
<td></td>
<td>Klamath NF</td>
<td>6900</td>
</tr>
</tbody>
</table>
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. Scarce or 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.>