Species: *Penstemon tracyi* D.D. Keck, Tracy’s beardtongue

**Photo source:** CalPhotos and used with permission.
**Photo credits:** Aaron E. Sims and CNPS (left); Dana York (right)

**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 CA</td>
<td>G2, S2</td>
<td>G2: Imperiled — At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors. S2: Imperiled — Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.</td>
</tr>
<tr>
<td>California Rare Plant Rank</td>
<td>1B.3</td>
<td>1B: Rare or endangered in California and elsewhere. 0.3: Not very endangered in California. There have been no recent changes in status for this species.</td>
</tr>
<tr>
<td>California State Listing</td>
<td>Not listed</td>
<td></td>
</tr>
<tr>
<td>USDA Forest Service</td>
<td>S</td>
<td>Sensitive.</td>
</tr>
</tbody>
</table>
Species Account: *Penstemon tracyi*

<table>
<thead>
<tr>
<th>Source</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDI FWS</td>
<td>Not listed</td>
</tr>
<tr>
<td>USDI BLM</td>
<td>Not listed</td>
</tr>
<tr>
<td>NatureServe OR</td>
<td>Not present</td>
</tr>
<tr>
<td>Oregon State Listing</td>
<td>Not present</td>
</tr>
<tr>
<td>NatureServe NV</td>
<td>Not present</td>
</tr>
<tr>
<td>Nevada State Listing</td>
<td>Not present</td>
</tr>
</tbody>
</table>

---

* California Natural Diversity Database, California Dept. of Fish & Wildlife [CNDDB 2020]
* California Native Plant Society [CNPS 2020]
* California Department of Fish and Wildlife [CDFW 2020]
* US Forest Service Region 5 Forester’s List [USDA] and Pacific NW Survey and Manage [USDA & BLM 2014]
* US Department of Interior Fish and Wildlife Service [USFWS 2020]
* US Department of Interior Bureau of Land Management [BLM 2015]
* Oregon Biological Information Center [ORBIC 2019]
* Oregon Department of Agriculture [ODA 2018]
* Nevada Natural Heritage Program [NNHP 2020]
* 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

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.

Table 2. Known Occurrence Frequency of Tracy’s beardtongue within the Planning Area (NRIS, CNDDB, Calflora/CCH databases)

<table>
<thead>
<tr>
<th>National Forest System (NFS) lands</th>
<th>Record #s (from Locations table below)</th>
<th>CNDDB EOs</th>
<th>Non-CNDDB Records</th>
<th>Recent (seen in past 20 years)</th>
<th>Historic (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>(7)</td>
<td>(1)</td>
<td>(0)</td>
<td>(1)</td>
<td>(0)</td>
<td>15-Jul-2005</td>
<td>(1)</td>
</tr>
<tr>
<td>Shasta-Trinity:</td>
<td>1, 2, 3, 4, 5, 6, (7), 8, 9</td>
<td>7</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>8-Jul-2020</td>
<td>9</td>
</tr>
<tr>
<td>Totals:</td>
<td>N/A</td>
<td>7</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>N/A</td>
<td>9</td>
</tr>
</tbody>
</table>

1 1909.12 Chapter 10, Section 12.53, components 2, 3, and 4.
Species Account: *Penstemon tracyi*  

Tracy’s beardtongue was last updated in the CNDDB on December 31, 2014 (CNDDB 2020), and therefore all Calflora, CCH, and/or NRIS records prior to this date are presumed to have already been reviewed and entered into the CNDDB 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 below as applicable.

This species is endemic to remote mountain ridges and peaks in the Klamath Ranges (KR) bioregion in Trinity and Siskiyou counties, California. It has been encountered in the Salmon Mountains, the Salmon Trinity Alps, and the Trinity Alps. Of the nine occurrences, eight occur on the Shasta-Trinity National Forest and one is on the border of the Shasta-Trinity and Klamath National Forests (as well as on the border of Trinity and Siskiyou counties); all the occurrences are located in or on the border of Wilderness Area. Just three of the occurrences are historical; however, due to the difficulty of accessing the occurrences, only four of the locations have been visited more than once, and just two of the occurrences have population counts over time. Population estimates for the occurrences range from one to four individuals (records #3, #9) to 100-400 plants (records #1, #2). The most recent observations (records #4, #8) recorded approximately 50-60 plants. The only population that has had populations counts over five decades (record #2) has seen a decreased number of individuals recorded (from 300 plants in 1982 to 100 plants in 2012). Given the sparse knowledge of the population sizes for this species, it is difficult to say if the populations are stable or not; however, the populations that have been revisited have been relocated.

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

Tracy’s beardtongue is a subshrub or perennial herb to 12 cm tall that blooms from June to August. It grows on steep rocky or gravelly ridges, ledges, and cliffs in sparse upper montane coniferous forest on metamorphic substrates (schist or amphibolite) or on volcanic substrates (granite) at 1,980-2,250 m in elevation (CNDDB 2020, CNPS 2020, CalFlora 2020). Associates of Tracy’s beardtongue that have been recorded are Abies magnifica, Pinus balfouriana, P. jeffreyi, Tsuga mertensiana, Phyllocladus empetriformis, Arctostaphylos patula, Penstemon newberryi, Penstemon deustus, Lewisia leeana, Sedum obtusatum ssp. retusum, Eriogonum spp., Lomatium spp., and Delphinium nuttallianum (CNDDB 2020, Nakamura and Nelson 2001). Its patchy distribution where found results in the plants occupying less habitat than might be available (Kierstead 2020 pers. comm.).

Keck (1940) placed Tracy’s beardtongue in *Penstemon* subsection *Deusti* with one other species, *Penstemon deustus*, a widespread species of arid environments and rock outcrops in sky islands in the western United States (NRCS 2020, Kramer et al. 2011). Both species have light pink to white corollas and stems that are woody at the base, among other similarities. Keck considered these two species very closely related; that hypothesis has yet to be tested, because recent phylogenies of *Penstemon* only include *P. deustus* and not Tracy’s beardtongue (Wolfe et al. 2006). Very little is known about the natural history of Tracy’s beardtongue. Keck (1940) hypothesized that *P. deustus* is pollinated by moths (most likely because of the white corollas); however, field studies have shown that *P. deustus* is pollinated by bees in the genera *Osmia*, *Anthophora*, and *Bombus* (Wilson et al. 2004). The long narrow tubes of the flowers of Tracy’s beardtongue are camouflaged in a way that makes them difficult to see, which may be why moths and bees are the only pollinators known for this species.

---

2 Basis for other 1909.12 Chapter 10, Section 12.53 components.

Commented [KJ-F1]: https://www.calflora.org/cgi-bin/viewphoto.cgi?arg=/app/up/entry/189/56968.jpg
I wonder about hummingbird pollination, given the super long narrow tube and the pink color.
beardtongue also suggest hummingbird pollination (Kierstead 2020 pers. comm.). The seeds of Tracy’s beardtongue are produced in capsules, and as the seeds lack wings or other features to aid in seed dispersal, it is likely that most seeds fall close to the parent plant and further dispersal may be aided by strong winds, rain events, or adhering to animals. Seed dispersal by gravity and wind has been seen in *P. deustus* (Kramer et al. 2011). Some *Penstemon* species from colder areas with snowfall have seeds that require chilling and then warming to break dormancy, and it is common for a certain percentage of seeds to not germinate and stay in the seed bank; in addition, species with narrow geographic distributions have less variability in seed germination requirements than those with broad distributions (Meyer et al. 1995). Given the microhabitat requirements of this species, it is likely that the seedlings are most successful on barren, rocky soil with sparse vegetation.

**Overview of ecological conditions for recovery, conservation, and viability**

This species is known from nine occurrences on National Forest land within a small area of the Klamath Range subregion; all of the occurrences are located in or on the border of Wilderness Area. Two of the occurrences (both observed once in 1991) are ranked in the CNDDB database and are ranked as good; the other occurrences are unranked. The only occurrence with threats listed is one of the 1991 observations that mentions possible future damage due to trampling by hikers. Due to the remote locations of occurrences on bare rocky outcrops in or near Wilderness Area, this species will most likely not be disturbed by common threats, and given that Tracy’s beardtongue is a perennial of unknown lifespan, its populations would normally persist for decades, even without continual replacement of individuals. The most likely threat to this species is climate change, which is predicted to negatively affect high elevation species at the upper limits of their range, through changes in the timing of flowering, pollination, and seed germination (Brown et al. 2016, Gremer et al. 2020, et al. Hülber et al. 2010, Mondoni et al. 2012). In addition, as detailed above, Tracy’s beardtongue most likely has limited dispersal capability and has a restricted distribution, which may mean that it has low variability in seed germination requirements. To mitigate these threats, seeds were collected in 2009 at one population (record #2) and are deposited at the USDA Agricultural Research Service seed bank facility in Colorado (Kierstead 2020 pers. comm.).

**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

---

1 1909.12 Chapter 10, Section 12.53, components 7, 9, 10, 11 and 12, as 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.

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.

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.

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 historic 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, 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.

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>CNNDDB and CNPS</td>
<td>Penstemon tracyi Keck</td>
</tr>
<tr>
<td>Jepson eFlora</td>
<td>Penstemon tracyi D.D. Keck</td>
</tr>
<tr>
<td>Flora of North America</td>
<td>Not yet published.</td>
</tr>
<tr>
<td>USDA NRCS PLANTS</td>
<td>Penstemon tracyi D.D. Keck</td>
</tr>
</tbody>
</table>

* Natural Resources Conservation Service [NRCS]

Synonymy: There are no listed synonyms for Penstemon tracyi (Tropicos 2020).

Jepson eFlora link: [https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=37113](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=37113)

Type locality: “California, Trinity County, at head of White's Creek, Devil's Canyon Mts.,” (Tracy 14567, UC) (Keck 1940).

Key literature


4 1909.12, Chapter 10, Section 12.53, component 1.
Species Account: *Penstemon tracyi*

**Literature cited**


Nakamura, G. and J. K. Nelson, eds. 2001. *Illustrated Field Guide to Selected Rare Plants of Northern California*. University of California Agriculture and Natural Resources Publication 3395, Davis CA.


**Persons Contacted**

Lazar, Kristi. 2020. Rare Plant Botanist, California Department of Fish and Wildlife. Email correspondence regarding recently submitted survey forms for *Penstemon tracyi*. Personal communication 22 July 2020.

Sims, Aaron. 2020. Rare Plant Botanist, California Native Plant Society. Email correspondence regarding recent visits to populations of *Penstemon tracyi*. Personal communication 21 July 2020.

**Author(s) and Date:**
Jonathon C. Holguin, Ellen A. Dean, and Aaron E. Sims, California Native Plant Society, 2 November 2020

**Reviewer(s) and Date:**
Aaron E. Sims, CNPS, 3 September 2020; David L. Magney, CNPS, 3 September 2020; Julie A. Kierstead, USDA Forest Service Region 5, 14 September 2020

**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 Tracy’s beardtongue within California (NRIS, CNDDB, Calflora/CCH databases).

<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>APPROXIMATELY 1.3 AIR MILES SSE OF PONY MOUNTAIN SUMMIT, AT HEAD OF WHITES CREEK, DEVILS CANYON MOUNTAINS.</td>
<td>Trinity</td>
<td>Thurston Peaks (4012382)</td>
<td>CNDDB, Jul 2020 (EO 1)</td>
<td>1-Aug-1979</td>
<td>200-400 PLANTS OVER A 250 BY 100 YARD AREA IN 1979.</td>
<td></td>
<td>Shasta-Trinity NF</td>
<td>6550</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.
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>2</td>
<td>Packers Peak trail, 1 mi W of trailhead off of Coffee Creek Rd. 50 ft uphill on N side of trail. About 250 ft below narrow spur ridgeline.</td>
<td>Trinity</td>
<td>Caribou Lake (4112218)</td>
<td>Shasta-Trinity NF sensitive plant population survey form (J. Nelson Kierstead pers. comm.)</td>
<td>27-Aug-2009</td>
<td>192 plants observed.</td>
<td>Lightening strike fire.</td>
<td>Shasta-Trinity NF</td>
<td>6801</td>
</tr>
<tr>
<td>2</td>
<td>West of old lookout remains.</td>
<td>Trinity</td>
<td>Caribou Lake (4112218)</td>
<td>Recent CNDDB survey form (K. Lazar pers. comm.)</td>
<td>14-Jul-2012</td>
<td>About 100 plants observed.</td>
<td>Lightening strike fire.</td>
<td>Shasta-Trinity NF</td>
<td>7700</td>
</tr>
<tr>
<td>3</td>
<td>ALONG TRAIL ABOUT 0.15 AIR MILE WEST OF EAST WEAVER LAKE, WEAVER BALLY.</td>
<td>Trinity</td>
<td>Rush Creek Lakes (4012278)</td>
<td>CNDDB, Jul 2020 (EO 4)</td>
<td>8-Jul-1991</td>
<td>1 PLANT OBSERVED IN 1991; FURTHER EXPLORATIONS IN THIS AREA SHOULD YIELD MORE INDIVIDUALS.</td>
<td>Lightening strike fire.</td>
<td>Shasta-Trinity NF</td>
<td>6900</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>4</td>
<td>NORTH OF EAST WEAVER LAKE TRAILHEAD, APPROXIMATELY 0.8 AIR MILE SW OF EAST WEAVER LAKE, WEAVER BALLY.</td>
<td>Trinity</td>
<td>Rush Creek Lakes (4012278)</td>
<td>CNDDB, Jul 2020 (EO 5)</td>
<td>8-Jul-1991</td>
<td>1 PLANT OBSERVED IN 1991; FURTHER EXPLORATIONS IN THIS AREA SHOULD YIELD MORE INDIVIDUALS.</td>
<td>POSSIBILITY OF DECREASING HABITAT IF HIKERS USE THE OLD FIREBREAK AS A ROUTE THROUGH THE OUTCROPPING TO GET TO TRAIL.</td>
<td>Shasta-Trinity NF</td>
<td>6900</td>
</tr>
<tr>
<td>5</td>
<td>NEAR FIRE LOOKOUT ON WEAVER BALLY MOUNTAIN.</td>
<td>Trinity</td>
<td>Dedrick (4012371)</td>
<td>CNDDB, Jul 2020 (EO 6)</td>
<td>11-Jun-1992</td>
<td>ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1992 TAYLOR COLLECTION.</td>
<td></td>
<td>Shasta-Trinity NF</td>
<td>6750</td>
</tr>
<tr>
<td>5</td>
<td>Kristi says there is an update in NRIS for EO6</td>
<td>Trinity</td>
<td>Dedrick (4012371)</td>
<td>NRIS, March 2020</td>
<td>XX-2018</td>
<td></td>
<td></td>
<td>Shasta-Trinity NF</td>
<td>6750</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>NEAR PONY CAMP JUST BELOW LIMESTONE RIDGE, SHASTA-TRINITY NATIONAL FOREST.</td>
<td>Trinity</td>
<td>Thurston Peaks (4012382)</td>
<td>CNDDDB, Jul 2020 (EO 7)</td>
<td>3-Jul-2009</td>
<td>PROBABLE TYPE LOCALITY. SITE BASED ON 1935 GREGORY COLLECTION FROM &quot;AT HEAD OF WHITES CRK, ROCKS NEAR SUMMIT, 7400 FT&quot; &amp; 2009 YORK COLLECTION FROM &quot;NEAR PONY CAMP...6915 FT.&quot; A 1935 TRACY COLLECTION IS ATTRIBUTED HERE. NEED MAP DETAIL.</td>
<td>Shasta-Trinity NF</td>
<td>7200</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>ALONG THE YELLOW ROSE MINE TRAIL TOWARDS PREACHERS PEAK ABOVE SOUTH FORK SALMON RIVER, [SALMON] TRINITY ALPS.</td>
<td>Siskiyou</td>
<td>Caribou Lake (4112218)</td>
<td>CNDDDB, Jul 2020 (EO 8)</td>
<td>15-Jul-2005</td>
<td>ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 2005 WENK COLLECTION.</td>
<td>Shasta-Trinity NF / Klamath NF</td>
<td>7000</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>NE of Grizzly Lake, Trinity Alps</td>
<td>Trinity</td>
<td>Thompson Peak (4112311)</td>
<td>CalFlora 2020 (mu6230 and 6231)</td>
<td>8-Jul-2020</td>
<td>Two colonies of 11-50 plants</td>
<td>Shasta-Trinity NF</td>
<td>7375</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Canyon Creek, Trinity Alps</td>
<td>Trinity</td>
<td>Mt. Hilton (4012381)</td>
<td>NRIS, Apr 2017 (PETRO51 40003)</td>
<td>1-Jun-1989</td>
<td>4 individuals</td>
<td>Shasta-Trinity NF</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>