

Plant Species Evaluation Form

Mertensia longiflora Greene

LONG BLUEBELLS

Family: Boraginaceae
(CNPS 2017)

PLANTS Symbol: MELO4
(USDA 2017)

Calif. Endemic: No
(CNPS 2017)

Synonyms/Other Names: *Mertensia longiflora* Greene was originally described in 1898. No other taxonomic synonyms are known to have been applied to this taxon (Tropicos 2017; CNPS 2017).

Identification Issues: Hybridization among *Mertensia* taxa is common. Identification can be difficult, particularly in the Modoc Plateau region. A number of *Mertensia* taxa in addition to *M. longiflora* occur in the Warner Mountains (*M. ciliata* var. *ciliata*, *M. ciliata* var. *stomatechoides*, *M. cusickii*, *M. oblongifolia* var. *amoena*, *M. oblongifolia* var. *oblongifolia*, and *M. oblongifolia* var. *nevadensis* – CCH 2017). *Mertensia longiflora* is distinguished from co-occurring congeners by foliage that is often glabrous to +/- strigose, a general lack of basal leaves when flowering, and the production of only 1-2 stems per plant. All varieties of *Mertensia oblongifolia* produce many stems and have well developed basal leaves. *Mertensia ciliata* has leaves with obvious lateral veins that are absent in *M. longiflora* (Kelley and Joyal 2017).

Taxonomy:

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Species In Genus: +- 50 species: North America, temperate Eurasia. Etymology: (F.C. Mertens, German botanist, plant collector, 1764--1831). Note: Hybrids common; identification sometimes difficult, especially in MP.

Genus Description Habit: Perennial herb, generally from taprooted, branched caudex; glabrous to spreading-hairy. Stem: +- erect. Leaf: cauline and generally basal, alternate, generally petioled, upper generally sessile. Inflorescence: generally panicle- or raceme-like cymes; bracts 0. Flower: calyx generally deep-lobed; corolla often +- cylindric or bell-shaped, blue, generally pink in bud, tube generally well developed, exceeding calyx, abruptly expanded at throat, with or without ring of inner hairs, appendages present or not; filaments often +- flat, generally attached +- below appendages, anthers included. Fruit: nutlets generally wrinkled, attached near or below middle.

Species Description Habit: Plant generally < 4 dm from tuber-like root, glabrous to +- strigose. Stem: generally 1--2, easily detached. Leaf: basal rare on flowering plants; cauline few, generally sessile, generally 1.5--4 × longer than wide, lateral veins obscure. Inflorescence: +- panicle-like, dense. Flower: calyx 3--6 mm; corolla 15--25 mm, limb 0.3--0.5(0.6) × tube, tube >> calyx, glabrous inside, appendaged; filaments wide, > anthers; style +- included. eFlora Treatment Author: Ronald B. Kelley & Elaine Joyal.

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Status:

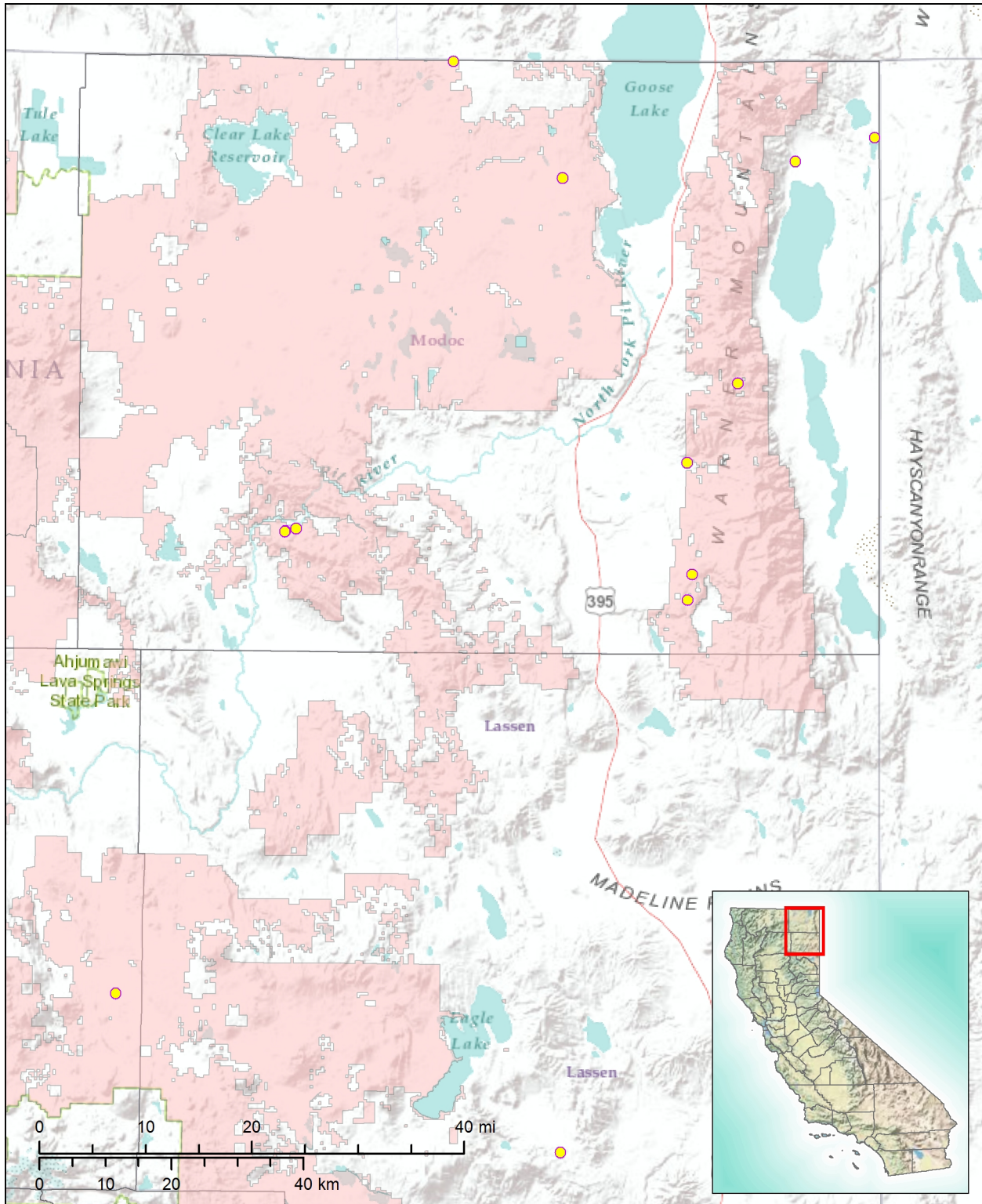
Note: Federally recognized Endangered, Threatened, Proposed, or Candidate species under the Endangered Species Act are omitted as they do not meet the definition of a Species of Conservation Concern (FSH 1909.12 § 12.52).

| State Listing | G-rank | S-rank | CRPR | R5 FSS | NFP SM | CA BLM |
|--|-----------------------|-------------------------------------|----------------------|--------------------|---------------------|------------|
| CA: Not listed NV: Not listed OR: Not listed | G4? | CA: S2 NV: SNR OR: Not listed | 2B.2 | Not listed | Not listed | Not listed |
| SWAP: Not listed | NNHP: Do not track | NNPS: Not listed | ORBIC: Not listed | OCS: Not listed | IUCN: Not listed | |

Expanded abbreviations and citations: State Listing=California Endangered Species Act Listing (CDFW 2017b), 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 2017a; NatureServe 2017); S-rank=Subnational (state or province-level) Conservation Status (CDFW 2017a; NatureServe 2017; NNHP 2017; ORBIC 2016); CRPR=California Rare Plant Rank (CNPS 2017); 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).

Distribution: Western North America, from California and Nevada at the south, to British Columbia and Alberta in the north (NatureServe 2017). California occurrences are restricted to northeastern regions of the state within Modoc, Lassen, and Shasta counties. Exactly eight of twelve (8/12; ~67%) of occurrences are within the boundaries of the Modoc NF. A single occurrence (1/12; ~8%) is found on the Lassen NF, for a total of nine of twelve (9/12; 75%) occurrences being found on NFS lands (CNDDDB 2017; CCH 2017; NRIS 2017; CNPS 2017).

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Basemap Sources: Main map: Esri, DeLorme, USGS, NOAA, NPS. California inset map: ©2013 National Geographic Society, i-cubed.

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Locations within California:

(Note: 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) definition of Element Occurrences in California). Official Element Occurrence (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 in meters from source were 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) column unless additional citation is given.)

| Rec. # | Locality | County | Quad | Reference (Source) | Date Last Observed | Population Info | Threats | Land Manager | Elev. (ft.) |
|--------|--|--------|-------------------------|--------------------------|--------------------|--|---------|--------------|-------------|
| 1 | NEAR FORT BIDWELL. | Modoc | Fort Bidwell (4112072) | CNDDDB, May 2017 (EO 1) | Unknown | ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN UNDATED COLLECTION BY GILMAN. NEEDS FIELDWORK. | | Unknown | 5000 |
| 1 | near Fort Bidwell | Modoc | Fort Bidwell (4112072) | CCH, Jan 2017 (UC190688) | 22-Mar-1940 | | | | 5000 |
| 2 | ALONG PARKER CREEK ROAD, 0.3 MILE W OF WEST WARNER ROAD, W SIDE OF THE WARNER MOUNTAINS. | Modoc | Shields Creek (4112043) | CNDDDB, May 2017 (EO 2) | 28-Apr-1989 | MAIN SOURCES OF INFORMATION FOR THIS SITE ARE A 1988 BARTHOLOMEW COLLECTION AND 1989 RIGGINS COLLECTION. 1932 PAYNE COLLECTION FROM "PARKER CREEK, MEADOW, 5200 FT ELEV" IS ALSO ATTRIBUTED HERE. NEEDS FIELDWORK. | | Modoc NF | 5200 |

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| Rec. # | Locality | County | Quad | Reference (Source) | Date Last Observed | Population Info | Threats | Land Manager | Elev. (ft.) |
|--------|--|--------|-------------------------|---------------------------|--------------------|--|---------|--------------|-------------|
| 2 | Parker Creek. | Modoc | Shields Creek (4112043) | CCH, Jan 2017 (CAS293779) | 27-May-1932 | | | Modoc NF | 5200 |
| 2 | 0.3 mi W of West Warner Rd. on Parker Creek Rd., W side of Warner Mtns. | Modoc | Soup Creek (4112033) | CCH, Jan 2017 (OBI48152) | 28-Apr-1989 | | | Modoc NF | 4800 |
| 2 | Along Parker Creek Road, 0.5 km W of West Warner Road on Parker Creek Road, W side of the Warner Mts.. | Modoc | Shields Creek (4112043) | CCH, Jan 2017 (CAS771637) | 13-May-1988 | | | Modoc NF | 5413 |
| 3 | 12 MILES NE OF SUSANVILLE ON LAS CO RD 216 OFF LAS CO RD 215, ON BANK OF WILLOW CREEK. | Lassen | Tunnison Mtn. (4012055) | CNDDDB, May 2017 (EO 3) | 03-May-1969 | ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1969 WISE COLLECTION. NEEDS FIELDWORK. | | Unknown | 5100 |
| 3 | 12 mi. NE of Susanville on Lass. Co. Rd. 216 off Las. Co. Rd. 215. On bank of Willow Creek | Lassen | Johnstonville (4012045) | CCH, Jan 2017 (CHSC7717) | 03-May-1969 | | | BLM | 5098 |

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| Rec. # | Locality | County | Quad | Reference (Source) | Date Last Observed | Population Info | Threats | Land Manager | Elev. (ft.) |
|--------|--|--------|----------------------|----------------------------|--------------------|--|---------|--------------|-------------|
| 4 | FLOURNOY SWALE. | Modoc | Soup Creek (4112033) | CNDDDB, May 2017 (EO 5) | 20-Apr-1916 | ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1916 DOUTHITT COLLECTION. NEEDS FIELDWORK. | | Modoc NF | 6000 |
| 4 | Flournoy Swale. | Modoc | Soup Creek (4112033) | CCH, Jan 2017 (CAS7058 04) | 20-Apr-1916 | | | Modoc NF | 6001 |
| 5 | HENDERSON MEADOW ALLOTMENT, SOUTH WARNER MOUNTAINS. | Modoc | Soup Creek (4112033) | CNDDDB, May 2017 (EO 6) | 01-May-1919 | ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1919 SMITH COLLECTION. NEEDS FIELDWORK. | | Modoc NF | 6000 |
| 5 | Henderson Meadow Allotment. | Modoc | Soup Creek (4112033) | CCH, Jan 2017 (CAS7058 05) | 01-May-1919 | | | Modoc NF | 6001 |
| 5 | Modoc Nat'l Forest, Warner Mts., "South Warners" | Modoc | Eagle Peak (4112032) | CCH, Jan 2017 (JEPS7077 5) | 01-May-1919 | | | Modoc NF | 6001 |
| 6 | 1 MILE E OF SUMMIT OF CEDARVILLE ROAD, WARNER MOUNTAINS. | Modoc | Payne Peak (4112053) | CNDDDB, May 2017 (EO 7) | 25-Jun-1926 | ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1926 PEIRSON COLLECTION. NEEDS FIELDWORK. | | Modoc NF | 6000 |

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| Rec. # | Locality | County | Quad | Reference (Source) | Date Last Observed | Population Info | Threats | Land Manager | Elev. (ft.) |
|--------|--|--------|-----------------------------|----------------------------|--------------------|---|---------|--------------|-------------|
| 6 | 1 mile E of summit of Cedarville Road, Warner Mountains | Modoc | Payne Peak (4112053) | CCH, Jan 2017 (RSA7758 9) | 25-Jun-1926 | | | Modoc NF | |
| 7 | 3.2 KM S OF ROAD BETWEEN GOOSE LAKE AND CROWDER FLAT ROAD ON ROAD TO RIMROCK VALLEY. | Modoc | McGinty Reservoir (4112075) | CNDDDB, May 2017 (EO 8) | 25-May-1991 | ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1991 BARTHOLOMEW COLLECTION. NEEDS FIELDWORK. | | Modoc NF | 5400 |
| 7 | 3.2 km S of road between Goose Lake and Crowder Flat road on road to Rimrock Valley. | Modoc | Mcginty Reservoir (4112075) | CCH, Jan 2017 (CAS8464 50) | 25-May-1991 | | | Modoc NF | 5400 |
| 8 | AT THE NEVADA BORDER ON BARREL SPRING ROAD, NEAR N SIDE OF BIG MUD LAKE, N END OF SURPRISE VALLEY. | Modoc | Lake Annie (4112081) | CNDDDB, May 2017 (EO 9) | 10-May-1993 | SITE IS BASED ON 1991 AND 1993 BARTHOLOMEW COLLECTIONS. | | BLM | 5500 |
| 8 | Near N side of Big Mud Lake at the Nevada State boundary. | Modoc | Lake Annie (4112081) | CCH, Jan 2017 (CAS8468 65) | 24-May-1991 | | | BLM | 5512 |

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| Rec. # | Locality | County | Quad | Reference (Source) | Date Last Observed | Population Info | Threats | Land Manager | Elev. (ft.) |
|--------|---|--------|--------------------------|---------------------------------------|--------------------|---|---------------------------------|--------------|-------------|
| 8 | Near N side of Big Mud Lake at the Nevada State boundary | Modoc | Lake Annie (4112081) | CCH, Jan 2017 (NY10845 56) | 24-May-1991 | | | BLM | 5512 |
| 8 | At the Nevada border on Barrel Spring Road, N end of Surprise Valley. | Modoc | Barrel Springs (4111988) | CCH, Jan 2017 (CAS8893 43) | 10-May-1993 | | | BLM | 5512 |
| 9 | EDGE OF JIM'S FLAT ALONG OREGON BORDER. | Modoc | Weed Valley (4112087) | CNDDDB, May 2017 (EO 10) | 11-May-1993 | SITE IS BASED ON A 1993 BARTHOLOMEW COLLECTION. | | Modoc NF | 5740 |
| 9 | Edge of Jim's Flat along Oregon border. | Modoc | Weed Valley (4112087) | CCH, Jan 2017 (CAS8905 57) | 11-May-1993 | | | Modoc NF | 5741 |
| 10 | ALONG USFS ROADS 41N23 AND 40N37, S OF PIT RIVER, ABOUT 3 MILES W OF STONE COAL VALLEY. | Modoc | Halls Canyon (4112131) | CNDDDB, May 2017 (EO 11) | 15-May-2003 | ABOUT 3,500 PLANTS OBSERVED IN 2003. | THREATENED BY TIMBER & GRAZING. | Modoc NF | 4600 |
| 10 | Modoc NF | Modoc | Halls Canyon (4112131) | NRIS, Dec 2016 (050900E_MELO400 2_54) | 15-May-2003 | 3500 individuals | | Modoc NF | |

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| Rec. # | Locality | County | Quad | Reference (Source) | Date Last Observed | Population Info | Threats | Land Manager | Elev. (ft.) |
|--------|---|--------|------------------------|--------------------------------------|--------------------|------------------------------|-------------------------------------|--------------|-------------|
| 11 | AT END OF USFS ROAD 41N48 IN POTHOLE GULCH, S OF PIT RIVER. | Modoc | Halls Canyon (4112131) | CNDDDB, May 2017 (EO 12) | 16-May-2003 | 300 PLANTS OBSERVED IN 2003. | TIMBER; PLANTS PREFER SHADY CANOPY. | Modoc NF | 4360 |
| 11 | Modoc NF | Modoc | Halls Canyon (4112131) | NRIS, Dec 2016 (050900E_MELO4001_54) | 16-May-2003 | 300 individuals | | Modoc NF | |
| 12 | Wheel Fuelbreak Lassen National Forest; Highway 89, 44 btwn Viola & Old Station., W on S16 to Bunchgrass Vly. | Shasta | Swains Hole (4012163) | Calflora, May 2017 (gr12367) | 01-Jan-1996 | 1+ individuals | | Lassen NF | 4984 |

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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.)

| National Forest System (NFS) lands | Record #s (from Locations table above) | CNDDDB EOs | Non-CNDDDB Records | Recent (seen in past 20 yrs.) | Historic (not seen in past 20 yrs.) | Most Recent Obs. | EOs/ Recs. (5 mile buffer) | Total Records on NFS lands |
|------------------------------------|--|------------|--------------------|-------------------------------|-------------------------------------|------------------|----------------------------|----------------------------|
| Angeles: | - | - | - | - | - | - | - | 0 |
| Cleveland: | - | - | - | - | - | - | - | 0 |
| Eldorado: | - | - | - | - | - | - | - | 0 |
| Inyo: | - | - | - | - | - | - | - | 0 |
| Klamath: | - | - | - | - | - | - | - | 0 |
| Lake Tahoe Basin MU: | - | - | - | - | - | - | - | 0 |
| Lassen: | 12 | 0 | 1 | 0 | 1 | 01-Jan-1996 | 0 | 1 |
| Los Padres: | - | - | - | - | - | - | - | 0 |
| Mendocino: | - | - | - | - | - | - | - | 0 |
| Modoc: | 2,4,5,6,7,9,10,11 | 8 | 0 | 2 | 6 | 16-May-2003 | 1 | 8 |
| Plumas: | - | - | - | - | - | - | - | 0 |
| San Bernardino: | - | - | - | - | - | - | - | 0 |
| Sequoia: | - | - | - | - | - | - | - | 0 |
| Shasta-Trinity: | - | - | - | - | - | - | - | 0 |
| Sierra: | - | - | - | - | - | - | - | 0 |
| Six Rivers: | - | - | - | - | - | - | - | 0 |
| Stanislaus: | - | - | - | - | - | - | - | 0 |
| Tahoe: | - | - | - | - | - | - | - | 0 |
| Totals: | N/A | 8 | 1 | 2 | 7 | N/A | 1 | 9 |

Demographic and Population Trends: Exactly three of twelve (3/12; 25%) occurrence records include demographic information. These three records indicate that a total of roughly 3,800 plants have been observed among their respective records. A single element occurrence (EO 11) from the Modoc NF accounts for 3,500 of the total number of observed plants. The most recent documentation of this taxon within the boundaries of NFS lands is from May of 2003, at the site of element occurrence eleven (EO 11) at the time when 3,500 plants were reported.

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Observations from nine of twelve (9/12; 75%) occurrences were last documented more than 20 years ago (CNDDDB 2017; NRIS 2017; CCH 2017; Calflora 2017).

Life History: *Mertensia longiflora* is a perennial herb that blooms from April until June (CNPS 2017). Plants are generally <40 cm tall and develop from a tuberous rootstock (Kelley and Joyal 2017). *Mertensia paniculata* is a more common and related species that also has a Pacific Northwest distribution. It has a similar growth form and also occurs in mesic habitats. *Mertensia paniculata* produces a caudex and is known to resprout after fire. It is also known to establish in burned soils from seed. Either from seed or resprouting, *M. paniculata* responds well after burn events. *Mertensia* taxa are reported to be pollinated by bees (Forrest et al. 2011; Reeves 2006; Macior 1978; Pelton 1961).

One study documented that *Mertensia ciliata* was visited by multiple members of Hymenoptera (*Apis*, *Bombus Psithyrus*, *Colletes*, and *Osmia*) and a number of different members of Diptera (*Systoechus*, *Hylemya*, and *Paregle*). Nectar robbing was also observed by *Colletes* and *Osmia* bees. In addition, this study reported that lower elevation plants exhibited low seed production, despite abundant flowering. Insect damage and drought were cited as probable stressors and causes of low seed output in observed populations of *M. ciliata*. In addition, individual *M. ciliata* plants have emerged from rhizomes that were buried by alluvium during flooding events (Pelton 1961).

Another study highlighted that the Rocky Mountain species *Mertensia fusiformis* produces seeds with elaiosomes (lipid-protein bodies) that may be dispersed by ants. More data are needed to determine if *M. fusiformis* is a strict myrmecophyte (Turnbull et al. 1983). Obvious dispersal mechanisms for *Mertensia* taxa are lacking. Wrinkled nutlets may occasionally attach to mammals. Seeds are lightweight and produced at a height that is conducive to short dispersal by wind (Pelton 1961).

Diversity: *Mertensia longiflora* is a member of the Boraginaceae and is nested within a clade that is defined by the Cynoglossoideae (48 genera / 1,070 species; *Cynoglossum*, hound's tongue) (Stevens 2001). *Mertensia* represents +/- 50 species of the 1,070 species known in the group (Kelley and Joyal 2017; Stevens 2001). The genus *Mertensia* is widely distributed in North America, Beringia, Asia, and circumboreal regions. Phylogeographic studies indicate origins in eastern Asia, and subsequent expansion by dispersal into North America through the Bering land bridge during the late Tertiary. Taxa are known to occur in alpine, montane, boreal, and mesic forested habitats. *Mertensia* exhibits considerable phylogeographic structure, with major clades corresponding to broad geographic territories - Asia, Beringia, Pacific Northwest, Rocky Mountains, respectively. Major clades within *Mertensia* represent geographically clustered radiations, and, in some cases, subsequent dispersal into adjacent regions.

Biogeographic reconstructions of *Mertensia* indicate that North American taxa diversified from a widespread lineage that was distributed across Beringia and the Pacific Northwest during the late Miocene to early Pliocene. This radiation yielded groups of taxa in the central and southern Rocky Mountains, Great Basin-Columbia Plateau, Colorado Plateau, and Pacific Northwest. *Mertensia longiflora* is a member of the southern Rocky Mountain clade, and is among a lineage that underwent a westward migration after its arrival in the southern Rockies. In addition,

divergence times associated with several North American clades coincide with Pleistocene glaciation activity. Glaciation activity likely influenced speciation rates in these lineages (Nazaire et al. 2014). Today, *M. longiflora* occurs in the southern Columbia Plateau and northern Great Basin regions, extending into British Columbia in the north, and northeastern California in the south where it is found in the Warner Mountains in sympatry with six additional *Mertensia* taxa (CCH 2017; Kelley and Joyal 2017; Nazaire et al. 2014).

Habitat: *Mertensia longiflora* grows in Great Basin scrub and lower montane coniferous forests (CNPS 2017). It is also known to occur in open sites that are vernal moist, and drying places of plains, foothills, sagebrush, or sparse ponderosa pine forest (Kelley and Joyal 2017). Reports also indicate that *M. longifolia* grows along streams, rocky flats, and shaded north facing slopes (CNDDDB 2017). Within California, reports indicate that *Mertensia longifolia* grows alongside *Lithophragma* sp., *Senecio* sp., *Ranunculus* sp., *Delphinium nudicaule*, *Poa* sp., *Primula* sp., *Stellaria* sp. (CNDDDB 2017). Reports from outside California indicate that it often grows with *Populus tremuloides*, *Artemisia tridentata*, *Pseudotsuga menziesii*, *Acer glabrum*, *Viola trinervata*, *Purshia tridentata*, *Pinus monticola*, *Larix occidentalis*, *Abies grandis*, *Cercocarpus* sp., *Holodiscus* sp., *Pinus ponderosa*, *Balsamorhiza sagittata*, *Pinus contorta*, *Olsynium douglasii*, and *Erythronium grandiflorum* (CPNWH 2017). It is worth noting that six additional *Mertensia* taxa occur in the Warner Mountains (*M. ciliata* var. *ciliata*, *M. ciliata* var. *stomatechoides*, *M. cusickii*, *M. oblongifolia* var. *oblongifolia*, *M. oblongifolia* var. *amoena*, and *M. oblongifolia* var. *nevadensis*) that may be found growing alongside *M. longiflora* (CCH 2017).

Habitat Status or Trend: *Mertensia longiflora* is represented by 11 occurrence records in California, many of which have not been seen or documented in many years. The most recently documented occurrence was last observed in 2003. Three records exist from the early 20th century, all of which represent plants that have not been seen since the original observation. California populations represent the fringe of its distribution. Most occurrences are in or near the Warner Mountains, where it co-occurs with other *Mertensia* taxa (CNDDDB 2017; CCH 2017). Species of *Mertensia* are herbaceous and grow in regions of California known for grazing activity (CNPS 2017; CNDDDB 2017).

Capacity for the Species to Disperse: Information on the dispersal capacity of *Mertensia longiflora* is lacking. A related species, *Mertensia fusiformis*, produces seeds with elaiosomes, and is possibly dispersed by ants (Turnbull et al. 1983). Wrinkled nutlets may occasionally attach to mammals. Seeds are lightweight and produced at a height that is conducive to short dispersal by wind (Pelton 1961).

Threats: *Mertensia longiflora* is documented to be threatened by grazing activity (CNPS 2017).

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January 16, 2018

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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.