

SPECIES: Scientific [common]	<i>Antennaria monocephala ssp. angustata</i> [Single-headed pussytoes]
Forest:	Bridger-Teton National Forest
Forest Reviewer:	R.Lehman
Date of Review:	5/6/20; 10/13/2020
Forest concurrence (or recommendation if new) for inclusion of species on list of potential SCC: (Enter Yes or No)	No

FOREST REVIEW RESULTS:

1. The Forest concurs or recommends the species for inclusion on the list of potential SCC:
Yes___ No_X__
2. Rationale for not concurring is based on (check all that apply):
Species is not native to the plan area _____
Species is not known to occur in the plan area _____
Species persistence in the plan area is not of substantial concern _____

FOREST REVIEW INFORMATION:

1. Is the Species Native to the Plan Area? Yes_X__ No___

If no, provide explanation and stop assessment.
2. Is the Species Known to Occur within the Planning Area? Yes__X__ No___

If no, stop assessment.

Table 1. All Known Occurrences, Years, and Frequency within the Planning Area

Year Observed	Number of Individuals	Location of Observations (USFS District, Town, River, Road Intersection, HUC etc.)	Habitat	Source of Information¹
8/20/1988	Unknown	Wyoming: On BTNF boundary ; Shale Mountain; 321297.880475, 465479.338603	Southwest-facing snowbeds and mixed talus.	Robin Jones; EO #2 (WYNDD GIS 2019)
8/17/1988	Unknown	Wyoming: On BTNF boundary ; Flat area east of Downs Mountain [ca 3.5 miles east of Bear Lake, ca 16 miles south of Dubois]	Flat area in alpine zone. Past fruiting.	Robin Jones; EO #5 (WYNDD GIS 2019)
8/17/1991	Unknown	Wyoming, Sublette County: Wind River Mountains: Continental Divide NE of Green River Lakes and N of upper Dads Lake drainage, ca	Large flat area of sparsely vegetated soils and gneiss derived from igneous rocks. Ca 0.15 mile south-southeast of Burro	Hollis Marriott, #11408, EO # 2 (Rocky Mountain Herbarium 2020; SEINet 2020, WYNDD 2019)

		0.15 air mi SSE of Burro Peak. 43.3778° N, 109.8221° W	Peak. Phenology: flowering. Elev. 12300 ft.	
7/31/1996	Unknown	Teton County: Teton Range East Slope. Just outside (0.05 mi) BTNF boundary: Rendezvous Mountain: ridge between Granite Canyon and Jackson Hole, ca 1 mi SW of Apres Vous Peak, ca 1.5 air mi NW of Teton Village, ca 8 air mi NW of Jackson. Elev. 9500-9800 ft. 43.6052° N, 110.8553° W	Limestone cliffs and ridges with sparse, forb-dominated vegetation.	Stuart Markow, #11375. (Rocky Mountain Herbarium 2020; SEINet 2020)
7/21/2005	Unknown	Wyoming, Fremont County. On BTNF boundary: East Slope Wind River Range and Vicinity: Shale Mountain and notherly slope, ca 10 air mi SSW of Dubois. 43.3743° N, 109.7088° W to 43.3566° N, 109.6579° W; GPS Reading	Alpine meadow amongst talus. Phenology: fruiting. Elev. 12010-12430 ft.	Rob Massatti, #2831. EO #2 (Rocky Mountain Herbarium 2020; SEINet 2020)
7/28/2006	Unknown	U.S.A., Wyoming, Fremont County: East Slope Wind River Range and Vicinity: Knife Point Glacier, Indian Pass, and vicinity, ca 4 mi SE of Gannett Peak. 43.1253° N, 109.5736° W to 43.1108° N, 109.5878° W; GPS Reading	Knife Point Glacier, Indian Pass, and vicinity. Alpine turf. Elev. 10780-12080 ft.	Rob Massatti and Aaron Wells 8457, EO #10 (Rocky Mounting Herbarium 2020, WYNDD 2019)
8/3/2006	Unknown	U.S.A., Wyoming, Fremont County: Outside BTNF East Slope Wind River Range and Vicinity: Union Peak, Union Lake, and South Fork Warm Spring Creek. Northeast slopes of Union Peak. 43.4777° N, 109.8466° W to 43.4552° N, 109.7877° W to 43.4639° N, 109.7689° W to 43.4921° N, 109.859° W; GPS Reading	Knife Point Glacier, Indian Pass, and vicinity. Alpine turf. Elev. 10780-12080 ft.	Rob Massatti 8550, EO #9 (Rocky Mpuntain Herbarium 2020, WYNDD 2019)

The Consortium of Pacific Northwest Herbaria was also searched, and no additional occurrences were found (Consortium of Pacific Northwest Herbaria 2020).

a. Are all Species Occurrences Only Accidental or Transient?

Yes___ No X

If yes, document source for determination and stop assessment.

- b. For species with known occurrences on the Forest since 1990, based on the number of observations and/or year of last observation, can the species be presumed to be established or becoming established in the plan area?

Yes No

If no, provide explanation and stop assessment

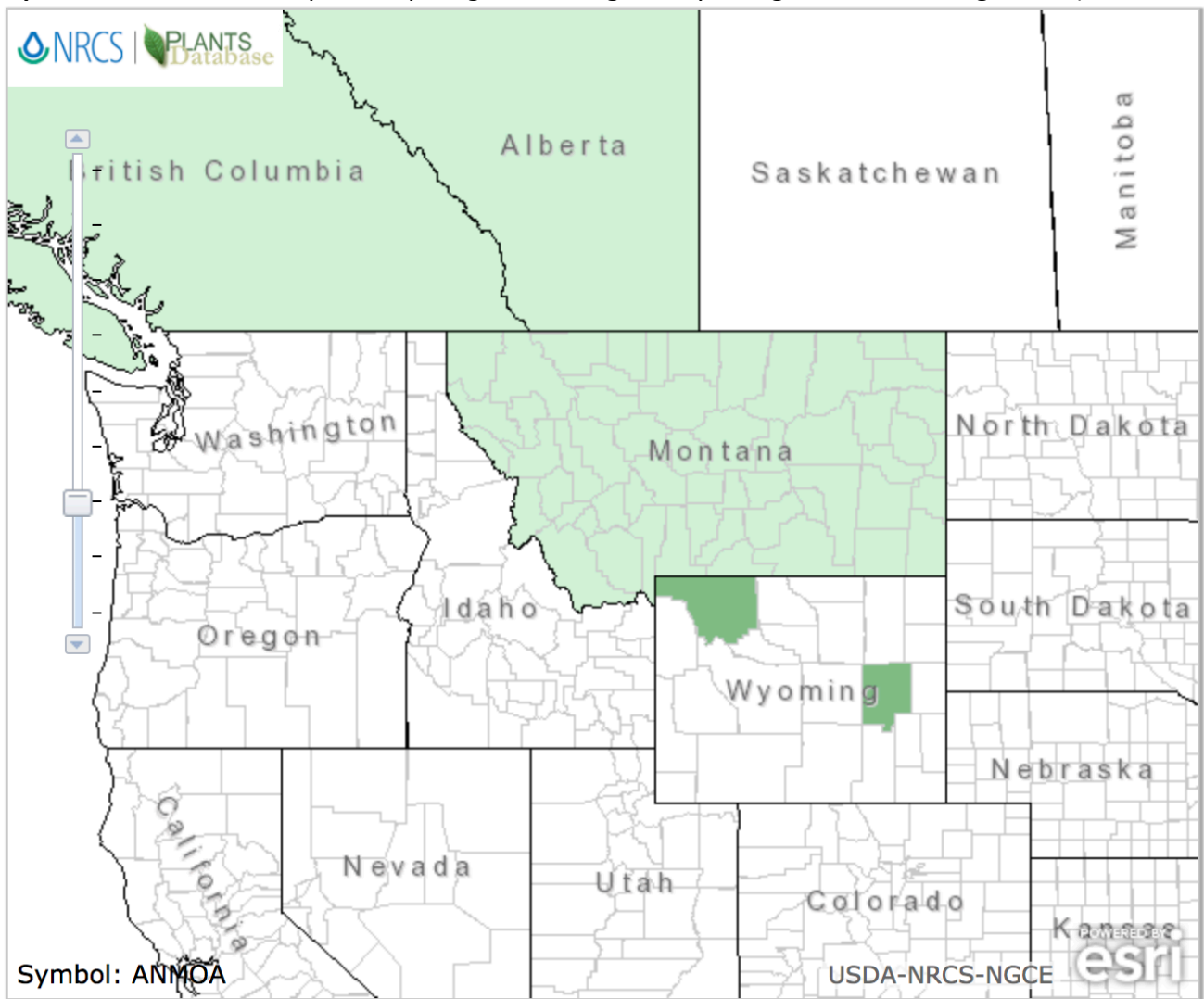
- c. For species with known occurrences on the Forest predating 1990, does the weight of evidence suggest the species still occurs in the plan area?

Yes No

N/A—occurrences have been documented since 1990.

If determination is no, stop assessment

Map 1, *Antennaria monocephala* ssp. *angustata* range in Wyoming and surrounding states (NRCS 2020).

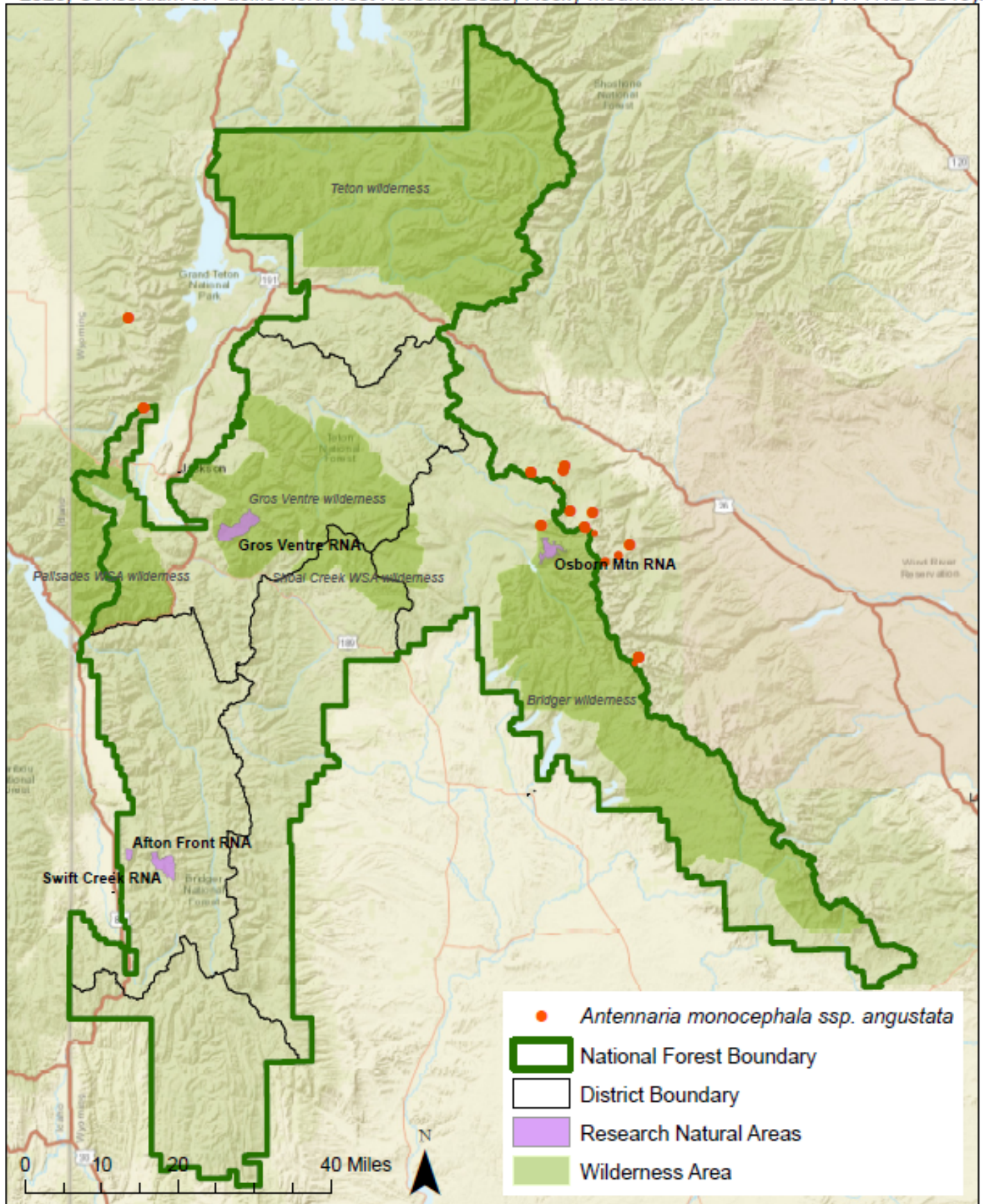


- | | | | |
|--|--|--|---|
| Native | Introduced | Both | Absent/Unreported |
| Native, No County Data | Introduced, No County Data | Both, No County Data | |

Native Status:

- | | | | | | | | | | |
|--------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------------------|--------------------------|---------------------------|--------------------------|
| <input checked="" type="radio"/> L48 | <input checked="" type="radio"/> AK | <input type="radio"/> HI | <input type="radio"/> PR | <input type="radio"/> VI | <input type="radio"/> NAV | <input checked="" type="radio"/> CAN | <input type="radio"/> GL | <input type="radio"/> SPM | <input type="radio"/> NA |
|--------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------------------|--------------------------|---------------------------|--------------------------|

Map 2. *A. monocephala ssp. angustata* occurrences in Bridger-Teton National Forest vicinity (SEINet 2020; Consortium of Pacific Northwest Herbaria 2020; Rocky Mountain Herbarium 2020, WYNDD 2019).



3. Is There Substantial Concern for the Species' Capability to persist Over the Long-term in the Plan Area Based on Best Available Scientific Information?

Table 2. Status summary based on existing conservation assessments

Entity	Status/Rank (include definition)
NatureServe Global Status	G5T5—Secure Subspecies <i>At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.</i>
NatureServe State Status	S2—Imperiled <i>At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.</i>
WYNDD	Plant Species of Concern G5T5/S2 <i>Species vulnerable to extirpation at the global or state level due to:</i> <i>a. their rarity (e.g., restricted distribution, small population size, low population density)</i> <i>b. inherent vulnerability (e.g., specialized habitat requirements, restrictive life history)</i> <i>c. threats (e.g., significant loss of habitat, sensitivity to disturbances)</i> (Wyoming Natural Diversity Database - Species of Concern)
USDA Forest Service	Not listed
USDOI FWS	Not listed
USDOI BLM	Not listed
IUCN	Not listed

Heidel 2018, NatureServe 2020, WYNDD 2020a

Table 3. Status summary based on best available scientific information.

Criteria	Rationale
Distribution on the Bridger-Teton National Forest	<i>Antennaria monocephala</i> ssp. <i>Angustata</i> is known from possibly three occurrences on the Bridger-Teton National Forest. Marriott #11408 and Massatti #2831 are on the Forest; Jones EO #2 appears to be on or near the Forest boundary. Markow #11375 is just outside the forest boundary and is not considered further in this analysis. Marriott #11408 and Massatti #2831 were discovered since 1990; Jones EO #2 is from 1988. These

Criteria	Rationale
	three occurrences are in the central-east portion of the Forest (Table 1, Map 2). The information suggests the distribution on the Bridger-Teton National Forest is sparse.
Distribution outside the Bridger-Teton National Forest	<i>Antennaria monocephala</i> ssp. <i>Angustata</i> occurs from Alaska to Labrador, and south in the Rocky Mountains from British Columbia and Alberta to northern Wyoming. In Wyoming, it is known from 10 occurrences from the Absaroka, Big Horn, Teton and Wind River Ranges (Fremont, Johnson, Park, Sublette, and Teton counties) (WYNDD 2020b). Several of these occurrences are near the Bridger-Teton National Forest boundary.
Abundance on the Bridger-Teton National Forest	Little population data are available, but known occurrences tend to be limited in area and probably contain very few individuals (WYNDD 2020b). Abundance on the Bridger-Teton National Forest is unknown due to lack of data.
Population Trend on the Bridger-Teton National Forest	Overall, this subspecies is secure within its primary range (NatureServe 2020). Population trends in Wyoming are not known but are probably stable (WYNDD 2020b). Trends on the Bridger-Teton National Forest cannot be assessed due to lack of data.
Habitat Trend on the Bridger-Teton National Forest	<p>Habitat for this subspecies is moist tundra, solifluction lobes, and unstable, gravelly slopes at elevations of 0–2900 m (FNA 2020). Wyoming populations are on exposed, open slopes, ridges, fellfields and tundra, often dominated by forbs and bunchgrass with patches of whitebark pine and Engelmann spruce (WYNDD 2020b).</p> <p>To analyze trends in habitat, aerial imagery and a USFS GIS database of existing grazing allotments, invasive plant populations, historical wildfires, trails, roads, Wilderness Areas, and Research Natural Areas (RNAs) was assessed at each occurrence (USFS GIS 2019, Google Earth Pro 2019).</p> <p>All occurrences are located within the Bridger wilderness area, indicating that effects from anthropogenic activities area likely minimal. Additionally, no roads exist near these occurrences, which further confirms the low potential for human effects. Proximity (within approximately 1 mile) of the Marriot #11408 occurrence to non-motorized hiking trails may slightly increase potential for human presence and trampling impacts, but because occurrences are in remote, rugged locations, they likely seldom see human visitors.</p> <p>None of the occurrences are within active grazing management units, indicating habitat and populations are protected from impacts associated with livestock grazing. Additionally, no occurrences are within perimeters of major fire events or in close proximity to non-native species’ invasions.</p> <p>Because alpine vegetation and barren rock mainly occur in designated wilderness, roadless, or remote areas where human interference disturbance is minimal, alpine communities are considered to be relatively stable.</p> <p>However, alpine communities are possibly the ecosystems in the region that are most at risk from the effects of climate change because of their shrinking habitat. According to Intermountain Adaptation Partnership</p>

Criteria	Rationale
	<p>assessments, alpine communities have a high sensitivity to climate change, a low adaptive capacity, and very high vulnerability to climate change (Halofsky, et al. 2018). Climate change is expected to cause increasingly warmer and wetter conditions, with worsening summer drought, and alpine areas may transition from snow-dominated to rain-dominated. An extended growing season is projected to occur in the alpine which can result in interspecific competition for resources, changes in plant community composition and displacement of rare plant populations where they currently occupy specific niches (Halofsky et al. 2018).</p> <p>Alpine systems are dependent on snowfields and gradual snowmelt to maintain moisture for vegetation. Warming temperatures, increased drought, and changes in the depth and persistence of snowpack, surface water flow, and timing of peak runoff are projected to greatly affect alpine habitat in the Intermountain Region (Halofsky et al. 2018). The composition and distribution of alpine ecosystems will be affected by decreasing snowpack. For high-elevation vegetation, climate change may affect seed germination and survival by modifying moisture availability and therefore result in reduced plant success. Specific effects will depend on vulnerability thresholds of the characteristic species and the rate and magnitude of changes over time. Reduced snowpack with warming is likely to cause major changes in alpine plant communities (Halofsky, et al. 2018).</p> <p>Some loss of alpine vegetation communities, especially mesic meadows, attributed to upslope migration of trees and shrubs may occur (Halofsky et al. 2018). Some, subalpine communities may have potential to migrate higher in elevation as a response to changing conditions, but this may be limited by underdeveloped soils at higher altitudes. Furthermore, the rate of climatic change in alpine communities may outpace the ability of species to shift their distribution (Ash et al. 2016; Dirnbock et al. 2011). Other communities may already exist at the highest elevations in the BTNF and, therefore, may have limited upward migration potential.</p> <p>Rare plant populations that may be small, isolated, tied to snowpack abundance and distribution timing changes of spring thaw and fall frost cycles, and/or have limited dispersal capacity, are highly vulnerable to impacts from environmental change including reductions in pollination. Changes in temperature and precipitation may also lead to greater variability in forb flowering, which could create an asynchronistic effect with native pollinator emergence (Halofsky et al. 2018; Miller-Struttman et al. 2015), leading to decreased reproduction in native plants. As pollinators are critical for successful reproduction and seed set for approximately 85% of flowering species globally (Hatfield et al. 2012), this asynchronistic effect may have profound implications.</p> <p>The above analysis suggests that habitat for <i>A. monocephala</i> ssp. <i>Angustata</i> has likely experienced low effects from natural and anthropogenic disturbances and trends are likely stable on the forest. However, climate change effects could lead to declining conditions, as described above.</p>

Criteria	Rationale
Threats to the Species and its Habitat on the Bridger-Teton National Forest	<p>Immediate threats are inferred to be low in the ruggedness and inaccessibility of species' alpine habitat (WYNDD 2020b). Alpine communities on the BTNF may be affected by climate change effects as described above. Warming effects may change the distribution and establishment of alpine species such as <i>A. monocephala ssp. angustata</i>.</p> <p>Population size appears to be very small, making the species vulnerable to chance disturbances. Otherwise, the habitat is highly protected and receives little use (Fertig 2000) as all occurrences on the Forest are found within the Bridger Wilderness Area. The high-altitude habitat where <i>A. monocephala ssp. Angustata</i> occurs receives minimal disturbance from forest management activities including recreation, motorized vehicle travel, and vegetation treatments.</p>
Life history and demographic characteristics of the species	<p><i>Antennaria monocephala ssp. angustata</i> is a dwarf, mat forming perennial herb with leafy stems 5-13 cm tall that conspicuously exceed the basal rosette. The green basal leaves are 1 cm long, thinly woolly-tomentose, and linear to narrowly spoon-shaped, while the upper leaves have thin, blackish to brownish-green membranous tips. The heads are always solitary on each stem and have 4 mm long involucre bracts with thin blackish or brownish-green pointed tips. The achenes are glabrous or papillose. Flowering is from late June to August (Aiken et al. 2007; WYNDD 2020b).</p>
Date: 3/19/20 Reviewer: L. Chipman	

Summary and Recommendations

Summary and Recommendations

Species (Scientific and Common Name): *Ipomopsis crebrifolia* (ballhead Ipomopsis)

Antennaria monocephala ssp angustata is listed as S2 (Imperiled) and G5T5 (apparently secure) globally. General habitat in Wyoming is exposed, open slopes, ridges, fellfields and tundra, often dominated by forbs and bunchgrass with patches of whitebark pine and Engelmann spruce (WYNDD 2020b). The subspecies occurs from Alaska to Labrador, and south in the Rocky Mountains from British Columbia and Alberta to northern Wyoming.

The subspecies is known from possibly three occurrences on the Bridger-Teton National Forest. These three occurrences are in the central-east portion of the Forest (Table 1, Map 2). The information suggests the distribution on the Bridger-Teton National Forest is sparse. Population counts and trend monitoring has not occurred and known occurrences tend to be limited in area and probably contain very few individuals (WYNDD 2020b); however, all occurrences are located within the Bridger wilderness area, indicating that effects from anthropogenic activities are likely minimal and review (aerial imagery and a USFS GIS database) didn't detect potential threats.

In spite of potential vulnerabilities of *Antennaria monocephala ssp angustata* to climate related impacts, known occurrences are removed from most forest management and anthropogenic activity. Recreational disturbance is likely minimal and isolated in frequency. It is therefore recommended that this taxon not be added as a SCC.

Evaluator: Rose Lehman Date: 10/13/2020

References

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