

SPECIES: Scientific [common]	<i>Ipomopsis crebrifolia</i> [compact gilia] Other names: <i>Ipomopsis congesta</i> ssp. <i>crebrifolia</i> [ballhead Ipomopsis]
Forest:	Bridger-Teton National Forest
Forest Reviewer:	Jessica Irwin; Rose Lehman
Date of Review:	12/30/20
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 Description	Source of Information ¹
1978	Unknown	Coal Creek and South Piney Creek, 1 mile southwest of North Mountain.	Loose shaley, west-facing slopes.	WYNDD EO 7 Collector Leila Shultz (WYNDD 2019)
1979	Unknown	Wyoming, Sublette County: Coal Creek.	Elevation 7900 ft. Loose shaley soil on slope with <i>Artemisia</i> and <i>Eriogonum</i> . Corolla white.	WYNDD EO 7 Collector Robert D. Dorn #3281 (Rocky Mountain

				Herbarium 2019, WYNDD 2019)
1990	Unknown	Wyoming, Teton County: West Slope Wind River Range: Fish Creek/ Moccasin Basin Area, Open Fork Creek Trail from Squaw Creek Road to mouth of Packsaddle Creek.	Elevation 7800-8500 ft. Sagebrush grassland with scattered lodgepole pine.	Collector Ronald L. Hartman #27068 (Rocky Mountain Herbarium 2019)
1992	Unknown	Wyoming Range: Coal Creek and South Piney Creek; 21 air mi W of Big Piney.	Elevation 7960-8480 ft. Shaley open slopes bordering on Douglas fir, lodgepole pine, and aspen woodland and streamside and adjacent moist slopes; open slope with seeps.	WYNDD EO 7 Collector Ronald L. Hartman #33094 (Rocky Mountain Herbarium 2019, WYNDD 2019)
1992	Unknown	Wyoming Range: south end of Triple Peak from South Cottonwood Creek; 27 air mi SW of Daniel Junction.	Elevation 8400-10000 ft. Douglas fir wooded slopes, limestone hogback, barren slopes, and meadows; limestone hogback.	Collector Ronald L. Hartman #35580. (Rocky Mountain Herbarium 2019)
1995	Unknown	Wyoming, Teton County: Gros Ventre River Drainage: north side of Purdy Creek, 3/4 mi N of confluence with South Fork Fish Creek.	Elevation 8100 ft. South-facing whitish clay slopes in vicinity of sandstone outcrops; cushion plant and bunchgrass community in openings in <i>Artemisia tridentata</i> grassland.	Collector Walter Fertig #16294 (Rocky Mountain Herbarium 2019, WYNDD 2019)

¹The Consortium of Pacific Northwest Herbaria (Consortium of Pacific Northwest Herbaria 2019) and the SEINet data portal (SEINet 2019) were also searched, and no additional occurrences on the Bridger-Teton National Forest were found.

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 X 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?

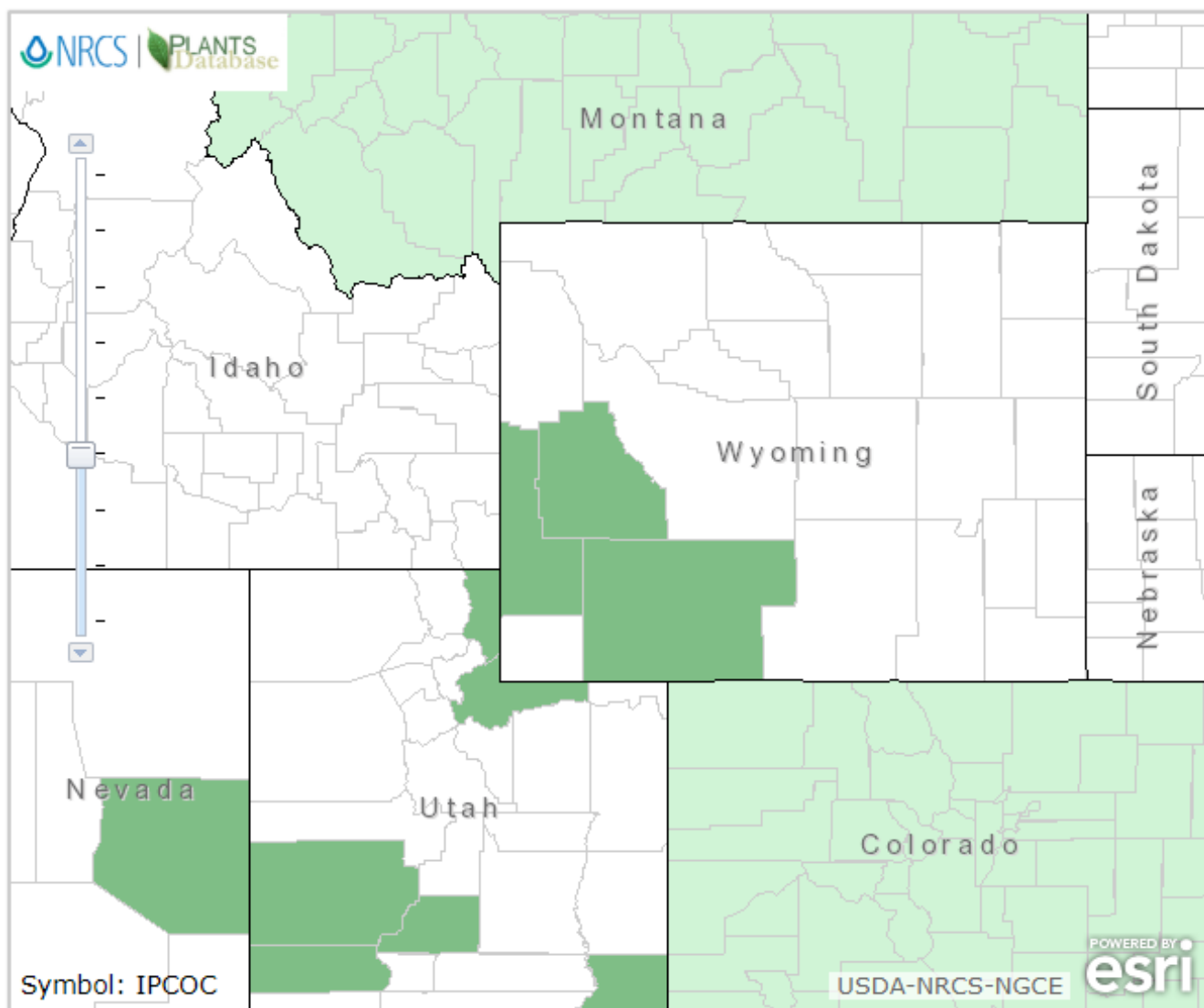
Yes ___ No ___

Provide explanation for determination

N/A-Occurrences have been documented since 1990

If determination is no, stop assessment

- d. **Map 1**, *Ipomopsis crebrifolia* range in Wyoming and surrounding states (NRCS 2019).

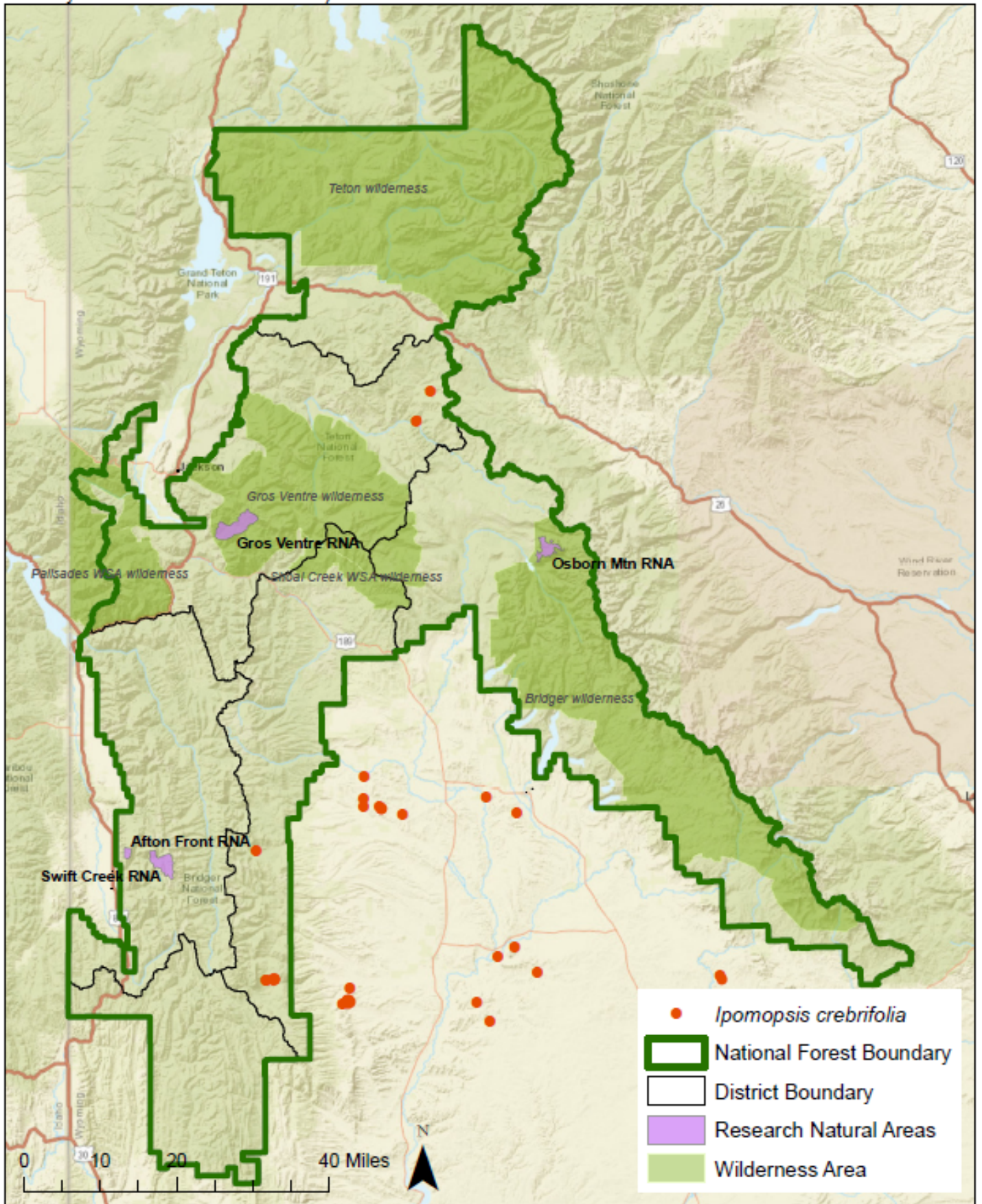


- | | | | |
|---|---|---|--|
| <input checked="" type="checkbox"/> Native | <input type="checkbox"/> Introduced | <input type="checkbox"/> Both | <input type="checkbox"/> Absent/Unreported |
| <input type="checkbox"/> Native, No County Data | <input type="checkbox"/> Introduced, No County Data | <input type="checkbox"/> Both, No County Data | |

Native Status:

- L48
 AK
 HI
 PR
 VI
 NAV
 CAN
 GL
 SPM
 NA

Map 2. *I. crebrifolia* occurrences in Bridger-Teton National Forest vicinity (WYNDD 2019; Rocky Mountain Herbarium 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	G5T3T4 – Subspecies between Vulnerable and Apparently Secure <i>At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors (vulnerable), or uncommon but not rare; some cause for long-term concern due to declines or other factors (apparently secure).</i>
NatureServe State Status	S3 – Vulnerable <i>At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.</i>
State of Wyoming	Not listed
WYNDD	Species of Potential Concern G3G4/S3 <i>Species that appear to be secure at present, but because they have limited distribution as regional or state endemics they could become vulnerable under large-scale changes. Species with this status warrant periodic checks.</i>
USDA Forest Service	Not listed in R4
USDOI FWS	Not Listed
USDOI BLM	Not Listed
IUCN	Not Listed

Sources: WYNDD 2019; Heidel 2018; USDA Forest Service Regions 2 and 4 Sensitive Species Lists; NatureServe 2019

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

Criteria	Rationale
Distribution on the Bridger-Teton National Forest	There are four documented occurrences of <i>I. crebrifolia</i> on the Bridger-Teton National Forest, primarily in the mid–lower portion of the Forest within or near sagebrush, grasslands, and spruce-pine woodlands (Table 1 and Map 2). Only four occurrences have been documented post-1990, with the most recent in 1995. The scarcity of occurrences suggests the species may be sparsely distributed on the Bridger-Teton National Forest, but further surveying effort would help to more accurately define the distribution.
Distribution outside the Bridger-Teton National Forest	<i>Ipomopsis crebrifolia</i> is a regional endemic of southwestern Montana, western Wyoming, western Utah, and northern New Mexico (NatureServe 2019). It is known from 23 extant records in Wyoming, 20 of which have been discovered or relocated since 1990 (Jones et al. 2001). These records are from the Great Divide and Green River basins, and the foothills of the Wind River and Wyoming ranges in Fremont, Lincoln, Sublette, Sweetwater, and Teton counties (Jones et al. 2001). This subspecies occurs on lands managed by the BLM Kemmerer, Pinedale, and Rock Springs Field Offices.
Abundance on the Bridger-Teton National Forest	<p><i>Ipomopsis crebrifolia</i> is rare but locally abundant in Wyoming (NatureServe 2019). It may also be locally abundant on the Bridger-Teton National Forest; however, confidence is low due to lack of species-specific surveys and because occurrence records do not indicate population size (Table 1).</p> <p>Although the entirety of Bridger-Teton National Forest has not been floristically inventoried, some areas within and adjacent to Bridger-Teton National Forest have been surveyed over the years. This species was not documented during these survey efforts:</p> <ul style="list-style-type: none"> • Afton Front Research Natural Area Bridger-Teton National Forest (Fertig and Jones 1994) • Horse Creek Research Natural Area Bridger-Teton National Forest (Fertig and Jones 1994) • Swift Creek Research Natural Area Bridger-Teton National Forest (Fertig and Jones 1994) • Sensitive plant surveys and status of rare plant species on Bridger-Teton National Forest, 1997-1998 (Fertig 1999)

Criteria	Rationale
	<ul style="list-style-type: none"> • Rare Species and Riparian Vegetation of the Snake River Basin in Wyoming (Jones et al. 2001) • Survey for <i>Stephanomeria fluminea</i> on the Bridger-Teton National Forest (Markow 2004) • Wyoming Plant Species of Concern on Caribou-Targhee National Forest: 2007 Survey Results Teton and Lincoln counties, Wyoming (Mancuso and Heidel 2008) • A Floristic Inventory of Grand Teton National Park, Pinyon Peak Highlands, and Vicinity, Wyoming U.S.A (Kesonie and Hartman 2011) • Blackrock Creek Wild and Scenic River Botany Survey (Johnson 2011) • Sensitive and rare plant species inventory in the Salt River and Wyoming Ranges, Bridger-Teton National Forest (Heidel 2012) • Teton to Snake Fuels Management Project Botany Report and Biological Evaluation (Englebert 2013) • Botany inventories in select fens of the Caribou-Targhee and Bridger-Teton National Forests (Heidel 2019).
Population Trend on the Bridger-Teton National Forest	Population trends for this species are unknown throughout its range, including on the Bridger-Teton National Forest (NatureServe 2019, Jones et al. 2001).
Habitat Trend on the Bridger-Teton National Forest	<p><i>Ipomopsis crebrifolia</i> occurs on open, calcareous, clay, or sandy slopes (NatureServe 2019). Occurrences on the Bridger-Teton National Forest were primarily found within sagebrush or grassland vegetation communities, sometimes bordering spruce-fir forest and woodland (Table 1). Vegetation mapping on the Bridger-Teton National Forest show that 11 percent of the Forest area is classified as the Inter-Mountain Basins Montane Sagebrush Steppe biophysical setting (BpS), indicating that habitat in which <i>I. crebrifolia</i> occurs is somewhat plentiful on the Forest (Helmbrecht et al. 2012). Mapping also indicates that this habitat may be subject to high-severity fires (Helmbrecht et al. 2012).</p> <p>In general, nonforest ecosystems of the Intermountain West have been affected by agriculture, livestock grazing, and invasive species (Halofsky et al. 2018). Rangelands form a major component of ecosystems in the Bridger-Teton National Forest, and there are open rangelands throughout the Forest, which likely overlap habitat for the species (USFS 2017). Grazing may have impacted habitat to some extent by compacting sediment, trampling</p>

Criteria	Rationale
	<p>herbaceous vegetation, increasing bare ground, and facilitating noxious weed expansion, but adherence to rangeland management plans has likely limited impacts. In general, the open slopes areas where <i>I. crebrifolia</i> occurs are likely stable with low potential to change from forest management activities.</p>
<p>Threats to the Species and its Habitat on the Bridger-Teton National Forest</p>	<p>Threats to <i>I. crebrifolia</i> are generally low. Road construction or other disturbances associated with mineral development could be a threat (Jones et al. 2001), but threat levels are low at present and as projected for 2030 (Heidel et al. 2014). This species may be affected by uranium mining as its distribution overlaps uranium sources (Heidel et al. 2014).</p> <p>Climate change is projected to impact nonforest ecosystems of the Intermountain West. Projections for the Intermountain Adaptation Partnership region estimate that average annual minimum and maximum temperatures are likely to increase by 5 to 12 deg F, mean annual precipitation will remain the same or increase slightly, extreme events (e.g., drought and extreme precipitation events) will occur more frequently and be more severe, and greenhouse gas concentrations will continue to increase through the end of the 21st century. Increased minimum daily temperatures have resulted in longer frost-free periods. Projections vary by subregion, but even where precipitation is projected to increase slightly, higher temperatures are likely to increase effective drought and soil water deficit (Halofsky et al. 2018).</p> <p>To analyze trends in occupied 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 were assessed at each occurrence on the Forest (USFS GIS 2019, Google Earth Pro 2019). Note, the 1978 occurrence is not included in this analysis due to lack of GIS data.</p> <p>None of the mapped occurrences occur within Wilderness Areas or Research Natural Areas, and thus habitat is not receiving protections from anthropogenic activities otherwise afforded by these designations.</p> <p>Two large (approximately 56 and 127 acre) invasions of the non-native plants Canadian thistle (<i>Cirsium arvense</i>) and nodding plumeless thistle (<i>Carduus nutans</i>) are within the vicinity (1 mi) of Collections #33094 and #3281. Both these invasive species grow under a wide range of environmental conditions (Zouhar 2001, 2002), and may thus compete for habitat with <i>I. crebrifolia</i>. Given the large size of these invasions and proximity to the</p>

Criteria	Rationale
	<p>occurrences, they have likely compromised habitat conditions.</p> <p>All occurrences occur in the vicinity (within 1 mi) of roads and/or trails. Of note, a gravel, level 4 road overlaps occurrence polygon for Collection #33094 and a gravel, level 2 road is within 0.15 mi of Collection #3281. Road use may have facilitated human presence into the species' habitat, which could cause habitat degradation and damage to individuals (e.g., through trampling).</p> <p>Within the exception of Collection #16294, which is within a vacant RMU, all occurrences are within active RMUs. It is likely that habitat has been impacted by grazing.</p> <p>Several large wildfires have occurred within the vicinity of occurrences since the time they have been documented. Collection #16294 (1995) is within the perimeter of the 2006, 20037-acre Purdy fire; Collection #33580 (1992) is within 1 mile of the 2005, 498-acre Triple fire; Collections #33094 and #3281 are within the perimeter of the 2012, 64220-acre Fontenelle fire. It is likely that wildfires have contributed to habitat alterations and potentially loss of individuals or populations.</p> <p>The above analysis suggests that habitat for <i>I. crebrifolia</i> has likely experienced moderate to high effects from natural and anthropogenic disturbances.</p>
Life history and demographic characteristics of the species	There is little information available on the life history of <i>I. crebrifolia</i> . As a perennial (NatureServe 2019), it may have a long lifespan, which may increase its reproductive success. The typically rare populations may lead to reduced fitness from a lack of genetic diversity. However, it's local abundance may mean it is less vulnerable to stochastic events that may cause local extinction as compared with small populations.
Date: September 13, 2019 Reviewer: L. Chipman	

Summary and Recommendations

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

Ipomopsis crebrifolia is listed as S3 (vulnerable) and G5T3T4 (between vulnerable and apparently secure) globally. General habitat has been described as open slopes with loose shale, clay or sandstone within sagebrush, grassland or Douglas-fir woodland. It is a regional endemic found in southwest Montana, western Wyoming, western Utah and northern New Mexico.

There are four occurrences on the Bridger-Teton, with three possibly overlapping due to uncertainty of precise locations. Population counts and trend monitoring has not occurred, but plants were often locally abundant when first documented (1979-1995). While most Wyoming populations occur at lower elevations in the Green River Basin, roughly 11% of the BT represents appropriate vegetation communities. Further survey could provide trend data and more accurately define distribution on the Forest.

Mid-low elevation rangeland habitats are likely to experience moderate to high effects from disturbance related to livestock grazing, recreational use and invasive species. Two occurrences (collections #32094 and #3281) are within area burned in the 2012 Fontenelle fire and these also within a mile of a large invasions by *Carduus nutans* and *Cirsium arvense*. With one exception, all occurrences are within active RMUs. Nevertheless, the abundance of occurrences in Wyoming warrants recommendation that *Ipomopsis crebrifolia* not be included as a SCC.

Evaluator: Jessica Irwin Date: 11/13/2020

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