SPECIES: Scientific [common]	*Draba porsildii* Mulligan [Porsild's whitlow-grass] Taxonomic comment: Per Flora of North America (2010) subspecific taxa (var. *brevicula* and var. *porsildii*) are included.
Forest:	Bridger-Teton National Forest
Forest Reviewer:	**Rose Lehman**
Date of Review:	**1/25/20; 3/25/20; 3/31/2021**
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 __X_____

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]
8/1/1925	unknown	Bridger-Teton National Forest: Bridger Wilderness: Sheep Mountain: Green River Lakes. T38N R109W S12. 43.26889 N, 109.87861 W; uncertainty 1 mi.	Rock field. Phenology: fruiting. Elev. 11500 ft.	Collector: Edwin B. Payson, 4489, RM 103670 (*D. p.* var. *porsildii*) (Rocky Mountain Herbarium 2020)
8/5/1925	unknown	Bridger-Teton National Forest: Bridger Wilderness:	Rocks, Mountain. Phenology: fruiting. Elev. 10500 ft.	Collector: Edwin B. Payson, 4560, RM 103677 (*D. p*.

Year Observed	Number of Individuals	Location of Observations (USFS District, Town, River, Road Intersection, HUC etc.)	Habitat Description	Source of Information[1]
		In the vicinity of Green River Lakes. T39N R108W S28; also S33. 43.3196 N, 109.8247 W; uncertainty 2 mi.		var. *porsildii*) (Rocky Mountain Herbarium 2020)
7/14/1990	unknown	Bridger-Teton National Forest: West Slope Wind River Range: southwest crest of Osborn Mountain and western ridgeline; ca 31 air mi N of Pinedale. T39N R108W S27; also S28 and S33. 43.31611 N, 109.8 W; uncertainty 2 mi.	Krummholz. Phenology: fruiting. Elev. 10800-11200 ft.	Collector: Walter Fertig, 3792, RM 590152 (*D. p.* var. *porsildii*) (Rocky Mountain Herbarium 2020)
7/20/1990	unknown	Bridger-Teton National Forest: West Slope Wind River Range: Union Peak and ridge southeast of peak; ca 10 air mi SW of Dubois. T40N R108W S11. 43.44417 N, 109.78028 W; uncertainty 1 mi.	Talus field on summit of peak. Phenology: fruiting. Elev. 11200-11491 ft.	Collector: Walter Fertig, 4296, RM 590151 (*D. p.* var. *porsildii*) (Rocky Mountain Herbarium 2020)
7/20/1990	unknown	Bridger-Teton National Forest: West Slope Wind River Range: Union Peak and ridge southeast of peak; ca 10 air mi SW of Dubois. T40N R108W S11. 43.4442 N, 109.7803 W.	Alpine ridge SE of Union Peak. Elev. 11200-11491 ft.	Collector: Walter Fertig, 4283 (*D. p.* var. *porsildii*) (Rocky Mountain Herbarium 2020)
8/6/1991	unknown	Bridger-Teton National Forest: Bridger Wilderness: West Slope Wind River Range: west slope and summit of Mount Geikie; ca 28 air mi E of Pinedale. T33N R105W S13. 42.83167 N, 109.33722 W; uncertainty 1 mi.	Cracks and crevices in granite outcrops in alpine zone. Phenology: flowering & fruiting. Elev. 11000-12370 ft.	Collector: Walter Fertig, 10917, RM 590346 (*D. p.* var. *porsildii*) (Rocky Mountain Herbarium 2020)
7/7/1993	unknown	Bridger-Teton National Forest: Bridger Wilderness: Wind River Range, Haystack	Granitic substrate. On steep fellfield slope interspersed with	Collector: Loraine Yeatts 3438, Kathryn

Year Observed	Number of Individuals	Location of Observations (USFS District, Town, River, Road Intersection, HUC etc.)	Habitat Description	Source of Information[1]
		Mt. on NE facing summit ridge between Black Joe & Clear Lakes. 42.733896 -109.165504 +- 1376m. WGS84	patches of well-developed tundra; dominants include *Smelowskia calycina, Oxytropis campestris* var. *cusickii, Phlox pulvinata, Cymopteris longilobus, Draba* ssp. Elevation: 3231 meters	Kalmbach Herbarium KHD00002528 (*D. p.*) (SEINet 2020)
8/10/1993	unknown	Bridger-Teton National Forest: Bridger Wilderness: West Slope Wind River Range: ridge on west slope of Osborn Mountain; ca 1 1/4 air mi E of Lower Green River Lake. T39N R108W S28 S1/2. 43.3196 N, 109.8247 W; uncertainty 1 mi.	North slope of limestone outcrop and talus slope at timberline; soil thin, sandy; with *Draba oligosperma*. Phenology: fruiting. Elev. 10500 ft.	Collector: Walter Fertig, 14315, RM 603019 (*D. p*. var. *porsildii*) (Rocky Mountain Herbarium 2020)
8/2/1994	unknown	Bridger-Teton National Forest: Gros Ventre Wilderness: Gros Ventre Area: 1-1.5 air mi N of Hodges Peak. T39N R112W S14 SE1/4; also NW1/4 S23. 43.3424 N, 110.2539 W.	Rocky alpine slopes. Phenology: fruiting. Elev. 10400-11000 ft.	Collector: Ronald L. Hartman, 49156b, RM 625925 (*D. p.* var. *porsildii*) (Rocky Mountain Herbarium 2020)

[1] The Consortium of Pacific Northwest Herbaria (2020) data portal was 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?

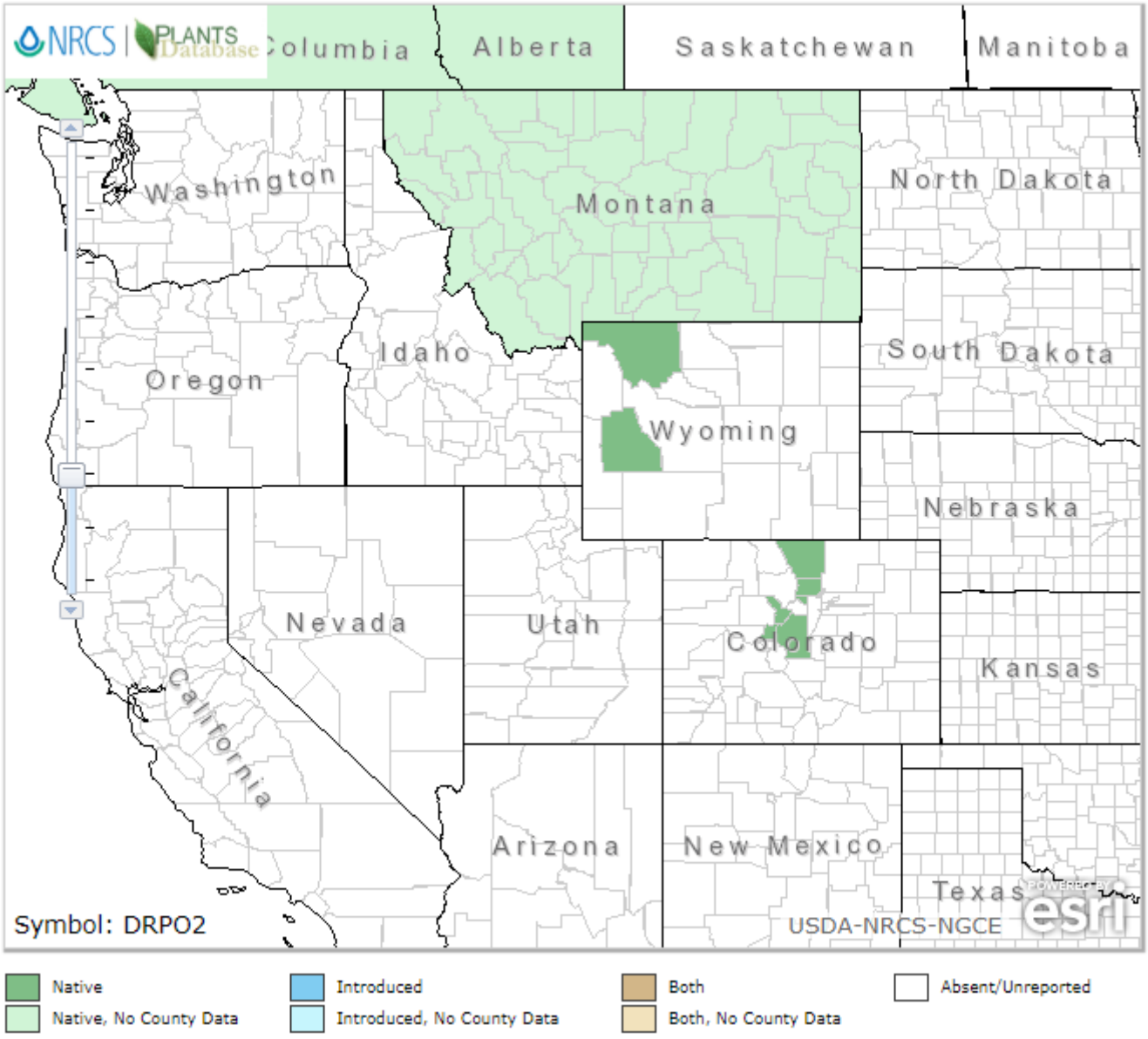
Yes___ No___

Provide explanation for determination

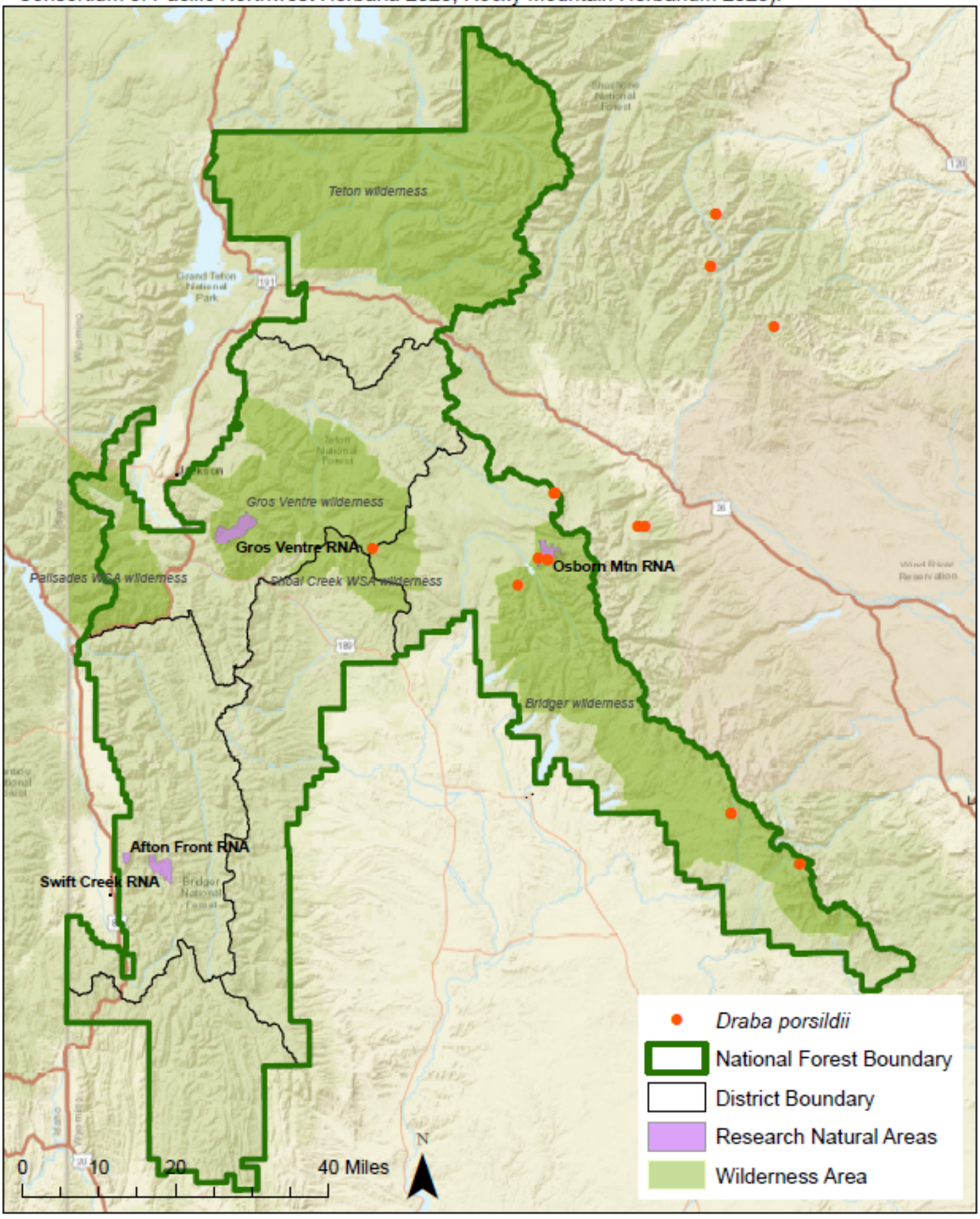
N/A–Occurrences have been made since 1990.

If determination is no, stop assessment

d. **Map 1**, *Draba porsildii* range in Wyoming and surrounding states (NRCS 2020).



Map 2, *D. porsildii* occurrences in Bridger-Teton National Forest vicinity (SEINet 2020; Consortium of Pacific Northwest Herbaria 2020; Rocky Mountain Herbarium 2020).



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	**G3G4—Vulnerable—Apparently Secure** *Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.* *Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.* *A numeric range rank (e.g., G3G4) is used to indicate any range of uncertainty about the status of the species or ecosystem.*
NatureServe State Status	**S2—Imperiled** *At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.*
State of Wyoming	Not listed
WYNDD	**Plant Species of Concern** *Species vulnerable to extirpation at the global or state level due to:* *a. their rarity (e.g., restricted distribution, small population size, low population density)* *b. inherent vulnerability (e.g., specialized habitat requirements, restrictive life history)* *c. threats (e.g., significant loss of habitat, sensitivity to disturbances)* (Wyoming Natural Diversity Database - Species of Concern)
USDA Forest Service	Not Region 4 Sensitive
USDOI FWS	Not Listed
USDOI BLM	Not Listed
IUCN	Not listed

Sources: Heidel 2018; NatureServe 2020

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

Criteria	Rationale
Distribution on the Bridger-Teton National Forest	*Draba porsildii* is known from 7 contemporary (post-1990) collections on the Bridger-Teton National Forest, however, the most recent collection was made in 1994. Contemporary collections from the forest are from the Absaroka and Gros Ventre Ranges and the Teton Wilderness (Table 1, Map 2; Rocky Mountain Herbarium 2020, SEINet 2020). Contemporary collections from the forest are primarily from the Wind River Range. Collections have been made from Union Peak, in the northern portion of the range and outside of the Bridger Wilderness, from the Osborn Mountain Research Natural Area vicinity in the wilderness, and from Mount Geikie and Haystack Mountain on the western slope of the range and in the wilderness. Prior to 1990, 2 collections were made on the forest, both from 1925 (Rocky Mountain Herbarium 2020, Table 1). These are located in the Bridger Wilderness, on Sheep Mountain and in the vicinity of Green Creek Lake.
Distribution outside the Bridger-Teton National Forest	*Draba porsildii* has a relatively wide range in North America, where it occurs throughout the Rocky Mountains in the United States and Canada. The main portion of the range is in British Columbia and Yukon Territory, Canada; it also occurs in Alberta and the Northern Territory. In the United States, it occurs in Alaska, Montana, Wyoming (FNA 2020; NatureServe 2020) and Colorado (WYNDD 2020). In Wyoming, *Draba porsildii* is known from the Absaroka, Beartooth and Wind River Ranges (Fremont, Park and Sublette counties; WYNDD 2020), within the Bridger-Teton and Shoshone National Forests.
Abundance on the Bridger-Teton National Forest	Occurrences are based on collection with limited or no abundance or population information, so a precise abundance estimate cannot be made. WYNDD (2020) notes that abundance is not known. Based on 7 known occurrences documented since 1990 and distributed in alpine habitat in the Absaroka and Wind River Ranges of the Bridger-Teton National Forest, abundance is estimated as low to moderate. However, without abundance data for occurrences or species-specific surveys, confidence in this criterion is low.
Population Trend on the Bridger-Teton National Forest	Recent trends for this species are unknown (Heidel 2018, WYNDD 2020); there is insufficient information to assess this criterion.
Habitat Trend on the Bridger-Teton National Forest	Habitat for *Draba porsildii* is on scree and in grassy meadows, along ridges, slopes, and summits in the alpine zone, between 9,600 and 13,100 feet (Mills and Fertig 2002). Most known populations are located within designated Wilderness areas on the forest (Map 2). These high-altitude communities receive minimal disturbance from forest management activities including recreation, motorized vehicle travel, and vegetation treatments, with one exception described below. Alpine habitats are likely stable on the forest but may decrease due to climate change effects (see below).

Criteria	Rationale
Threats to the Species and its Habitat on the Bridger-Teton National Forest	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. 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 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). 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). 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. 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

Criteria	Rationale
	with native pollinator emergence (Halofsky et al. 2018; Miller-Struttmann 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. To analyze trends in occupied habitat, aerial imagery and a USFS GIS database of invasive plant populations, historical wildfires, trails, roads, Wilderness Areas, and Research Natural Areas was assessed at each contemporary occurrence on the Forest (USFS GIS 2019, Google Earth Pro 2019). • 7/20/1990 (Walter Fertig, 4296 and 4283). These occurrences are from Union Peak in the west slope of the Wind River Range. This location is outside of designated wilderness. These occurrences are in close proximity (within approximately 0.1-mile) of the Seven Lakes ATV trail. Disturbance from the trail, including multiple sets of double-track, erosion control mitigation, and other trail infrastructure, are visible on aerial imagery in this area. Because both the occurrences and the trail are at a peak, it is likely that ATV users would use this area to dismount, rest, view the scenery, etc. Thus, impacts from users trampling plants are likely occurring. A large polygon of *Cirsium arvense* is mapped within approximately 0.25-mile of these occurrences. However, this invasive plant is likely not a threat, because it does not occur in alpine environments. These occurrences are not in a livestock grazing allotment, so no impacts from gazing would occur. Neither occurrence is near a wildfire, so it is unlikely they have been affected by fire. • The remaining five occurrences on the forest (Walter Fertig 3792, 10917, and 14315, Loraine Yeatts 3438, and Ronald L. Hartman 49156b) are in the Bridger Wilderness or Gros Ventre Wilderness areas. A Wilderness Area is “an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions" (Wilderness Act of 1964), 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 2 miles) of all occurrences to non-motorized hiking trails may slightly increase potential for human presence and trampling impacts, but because the occurrences are in remote, alpine locations, they likely seldom see human visitors. None of the occurrences are in close proximity to large wildfires or mapped nonnative plant invasions; it is, therefore, unlikely that populations and surrounding habitat have been affected by fire or invasive plants. Two of the five occurrences are within livestock grazing allotments (Cross Lake and Kinky Creek allotments). However, impacts from livestock are likely minimal to non-existent given the alpine environment which is unsuitable for livestock.

Criteria	Rationale
	The above analysis suggests that habitat for *Draba porsildii* has likely experienced low effects from natural and anthropogenic disturbances, with the exception of occurrences on Union Mountain near the Seven Lakes ATV trail.
Life history and demographic characteristics of the species	*Draba porsildii* is a tufted perennial herb with glabrous to sparsely pubescent stems 2-6.5 cm tall. Leaves are mostly basal, linear to obovate, 2-10 mm long, and covered in many-branched, long-stalked hairs. The inflorescence consists of 2-10 flowers with 4 white petals arranged in an elongate raceme. Fruits are 4-8 mm long, narrowly ovate, hairless, occur on stalks 3-4 mm long, and have styles approximately 0.25 mm long (Mills and Fertig 2002). Flowering is reported from June to July (Mills and Fertig 2002) and July to August (WYNDD 2020).
Date: January 13, 2020 Reviewer: Morgan Trieger	

Summary and Recommendations
Species (Scientific and Common Name): ***Draba porsildii Mulligan [Porsild's whitlow-grass]***
D. porsildii is listed as S2 for Wyoming and G3G4 globally. It is a WYNDD species of conservation concern. *porsildii* has a relatively wide range in North America, where it occurs throughout the Rocky Mountains in the United States and Canada. The main portion of the range is in British Columbia and Yukon Territory, Canada; it also occurs in Alberta and the Northern Territory. In the United States, it occurs in Alaska, Montana, Wyoming (FNA 2020; NatureServe 2020) and Colorado (WYNDD 2020). Habitat for *Draba porsildii* is on scree and in grassy meadows, along ridges, slopes, and summits in the alpine zone, between 9,600 and 13,100 feet (Mills and Fertig 2002). Most known populations are located within designated Wilderness areas on the forest (Map 2). One occurrence is found is outside of designated wilderness. The above analysis suggests that habitat for *Draba porsildii* has likely experienced low effects from natural and anthropogenic disturbances, apart from the occurrences on Union Mountain near the Seven Lakes ATV trail. Based on this analysis *D. porsildii* is not recommended to be included as a SCC; however, site specific surveys and monitoring for the occurrence near the Seven Lakes ATV trial is recommended.
Evaluator: Rose Lehman Date: 03/31/2021

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