SPECIES: Scientific [common]	*Potentilla uniflora* or ***Potentilla subgorodkovii**** Jurtzev, Bot.Zhurn. (Moscow & Leningrad) [one-flower cinquefoil]
Forest:	Bridger-Teton National Forest
Forest Reviewer:	Jessica Irwin & Rose Lehman
Date of Review:	01/12/2021
Forest concurrence (or recommendation if new) for inclusion of species on list of potential SCC: (Enter Yes or No)	No

***Current accepted name in Flora of North America and recognized by WYNDD (http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250100365; Heidel 2018)**

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]
1994 Element Occurrence 6	Unknown	Gros Ventre Area: Granite Creek, 0.3 stream mi N of Bunker Creek, then E up to summit of ridge extending S from Packsaddle Pass and Pyramid Peak. Jackson Ranger District	Rocky (dolomite) slopes. Elevation 8600-10200 ft.	Collector Ronald L. Hartman #48374. WYNDD 2019; Rocky Mountain Herbarium 2019
1994 Element	Unknown	Gros Ventre Area: east slope of Darwin Peak. Jackson Ranger District	Rocky alpine slopes. Elevation 9600-10800 ft.	Collector Ronald L. Hartman, #49445 WYNDD 2019;

Occurrence 7				Rocky Mountain Herbarium 2019
1998 Element Occurrence 7	Unknown	Gros Ventre Range: saddle at north end of Doubletop Mountain and lower slopes on north side of Doubletop Peak, 1.5 mi S of Brewster Lake. Jackson Ranger District/ Big Piney Ranger District	Cushion plant community on gravelly dolomite rim of saddle above wall of limestone; vegetative cover up to 50%, rock cover 40%; dominants include *Phlox pulvinata, Astrgalus kentrophyta, Castilleja pulchella, Smelowskia, Carex nardina*, and *Dryas*. Elevation 11000-11600 ft.	Collector Walter Fertig, #18515 WYNDD 2019; Rocky Mountain Herbarium 2019

[1]The 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___ No___ Unknown _X_

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?

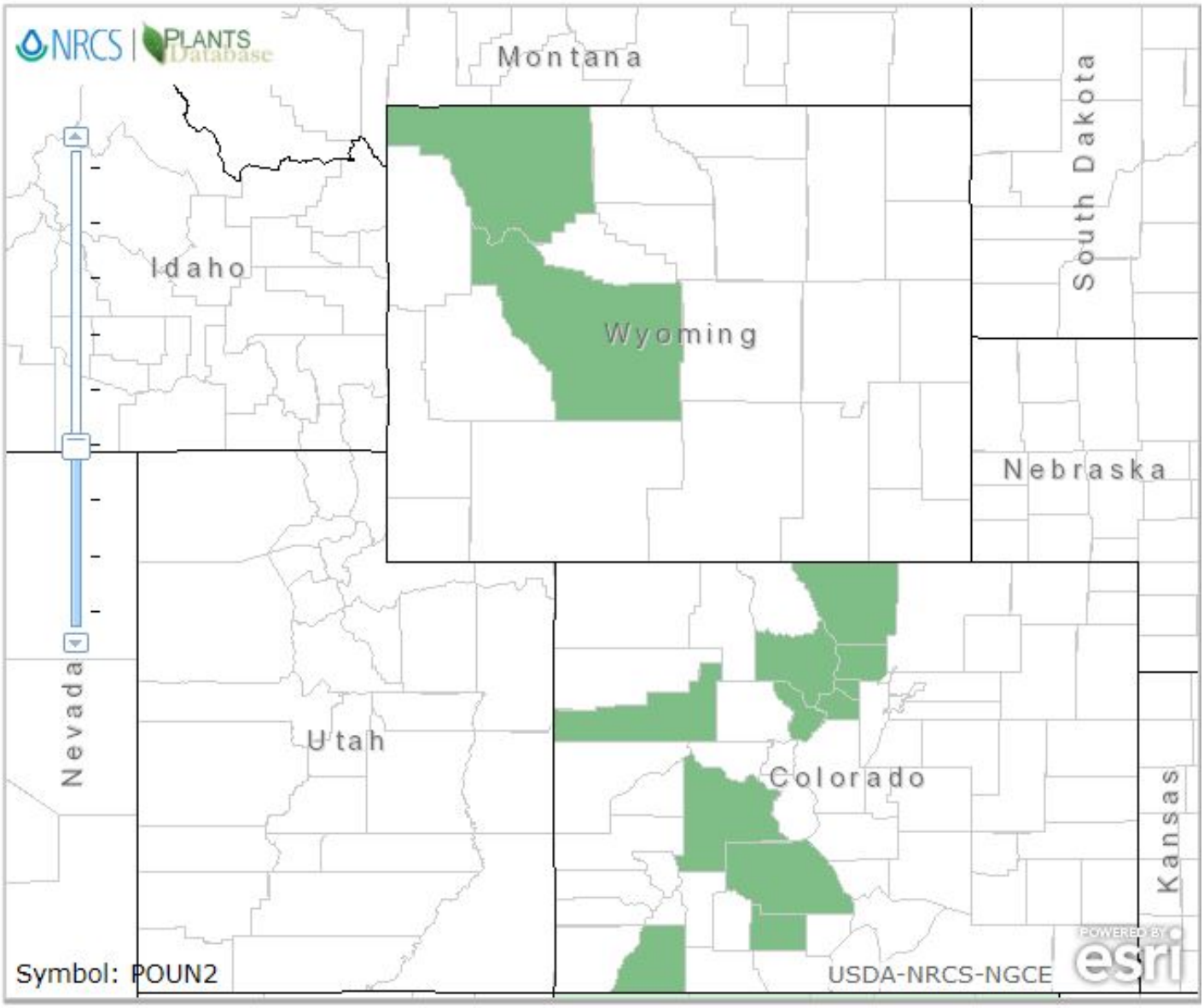
Yes____ No___

Provide explanation for determination

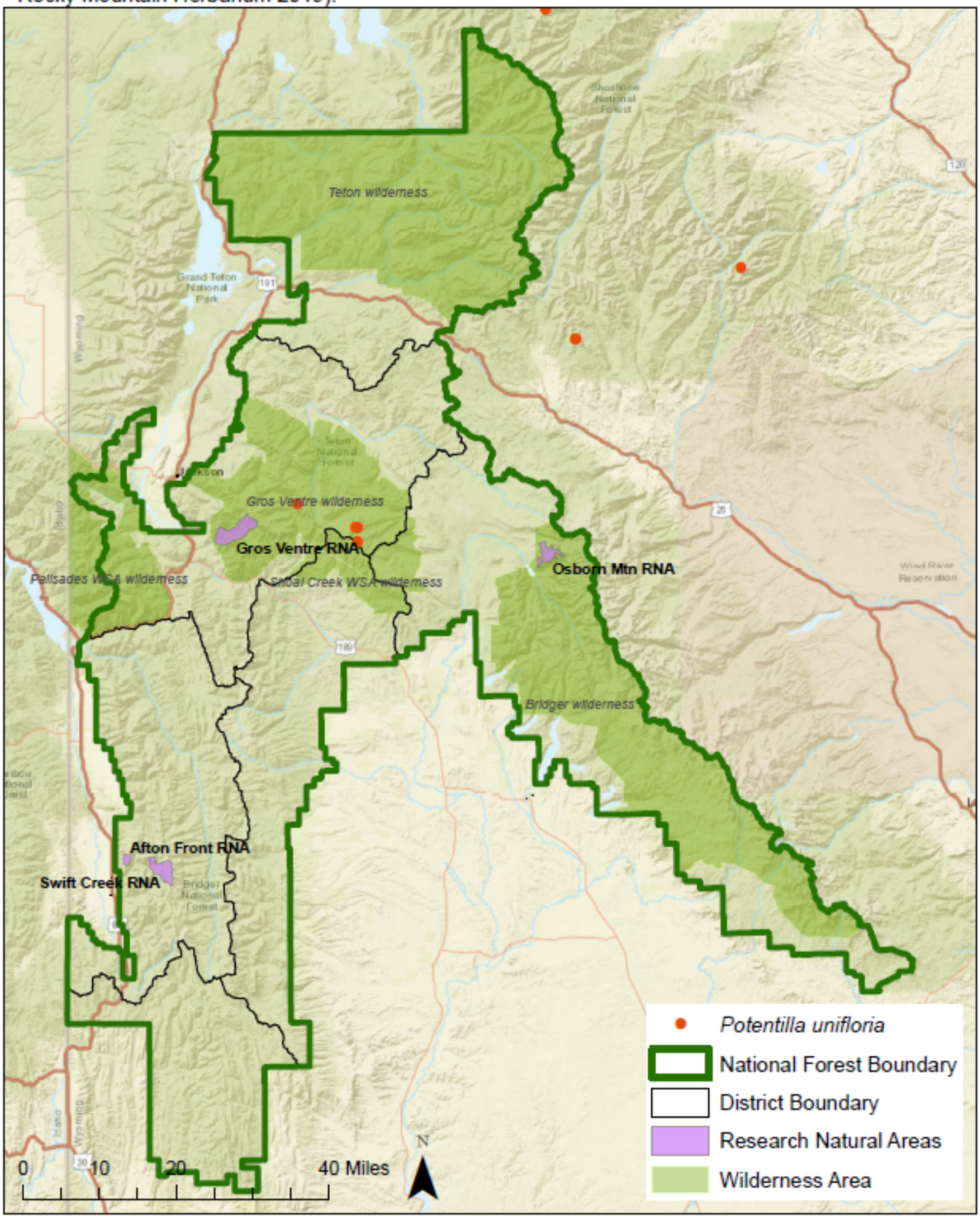
N/A–Occurrences have been made since 1990.

If determination is no, stop assessment

d. **Map 1.** *Potentilla subgorodkovii* range in Wyoming and surrounding states (NRCS 2019).



Map 2, *P. unifloria* 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	**G5— Secure** *Demonstrably secure, although the species may be rare in parts of its range, especially at the periphery*
NatureServe State Status	**S2— Imperiled** *Imperiled because of rarity (6-20 occurrences) or because of factors demonstrably making a species vulnerable to extinction.*
State of Wyoming	Not listed
WYNDD	**Wyoming Plant Species of Concern** **G5/S2** *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 listed
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	Two element occurrences of *Potentilla subgorodkovii* have been documented on Bridger-Teton National Forest. Element Occurrence 6 was observed in 1994 on the Jackson Ranger District, and Element Occurrence 7 was observed in 1994 on the Jackson Ranger District and again in 1998 on the Jackson and Big Piney Ranger Districts (Table 1, Map 3). All occurrences are within the Gros Ventre Wilderness area. Plants were in fruit and/or flower during all observations, but the number of individuals was not reported (WYNDD 2019). This information indicates the species is likely sparse and isolated on the Forest.
Distribution outside the Bridger-Teton National Forest	*Potentilla subgorodkovii* occurs from Alaska to the Northwest Territories, south to Oregon and to Colorado. In Wyoming, it is known from the Absaroka, Beartooth, and Gros Ventre Ranges (Fremont, Park, Sublette, and Teton counties) and has also been reported in Hot Springs County (Heidel 2018; WYNDD 2019). It is known from seven occurrences in the state (WYNDD 2019). The species has a large range, encompassing several states and territories. Populations appear to be sparse and isolated within the range in Wyoming but more common than previously known (Heidel 2018)
Abundance on the Bridger-Teton National Forest	Only three occurrences of *Potentilla subgorodkovii* have been documented on Bridger-Teton National Forest (Map 3; Rocky Mountain Herbarium 2019, WYNDD 2019). Although the number of individuals for these observations is unknown, it is likely rare on the Forest. 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: • Afton Front Research Natural Area Bridger-Teton National Forest (Fertig and Jones 1994a) • Horse Creek Research Natural Area Bridger-Teton National Forest (Fertig and Jones 1994b) • Swift Creek Research Natural Area Bridger-Teton National Forest (Fertig and Jones 1994c) • Sensitive plant surveys and status of rare plant species on Bridger-Teton National Forest, 1997-1998 (Fertig 1999) • Rare Species and Riparian Vegetation of the Snake River Basin in Wyoming (Jones et al. 2001) • Survey for *Stephanomeria fluminea* 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)

Criteria	Rationale
	• 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	Recent trends for this species are unknown (Heidel 2018); therefore, there is insufficient information to assess this criterion.
Habitat Trend on the Bridger-Teton National Forest	*Potentilla subgorodkovii* occupies a variety of habitat types throughout its range, from coastal habitats to alpine meadows, fellfield and outcrops, and from very acidic to very basic bedrock (NatureServe 2019). In Wyoming, populations occur in alpine meadows, tundra, rocky scree and talus often on limestone or granite substrates, and the occurrences on Bridger-Teton National Forest were on rocky alpine slopes within designated wilderness (WYNDD 2019). Roughly 98 percent of alpine tundra in Wyoming is publicly owned, and 72 percent is in wilderness areas (WGFD 2017), indicating that human use of alpine land may be minimal. All known occurrences are located in the Gros Ventre Wilderness with minimal forest management activities occurring.
Threats to the Species and its Habitat on the Bridger-Teton National Forest	The Wyoming Natural Diversity Database reports that immediate threats to rocky alpine habitat in the state are likely low, and this species may resprout after fire (WYNDD 2019). However, environmental change may have an impact on small, isolated rare plant populations such as *Potentilla subgorodkovii*. 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

Criteria	Rationale
	(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). Because the majority (72 percent) of alpine vegetation in Wyoming is in wilderness areas (WGFD 2017), where human interference disturbance is minimal, alpine communities of the Bridger-Teton National Forest, and therefore habitat for *Potentilla subgorodkovii*, likely exhibit good integrity and are relatively stable. However, climate change is a main threat to alpine habitat and may alter habitat conditions in the future. To analyze trends in habitat and potential disturbances 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) were assessed at each occurrence (USFS GIS 2019, Google Earth Pro 2019). All Bridger-Teton National Forest populations are in remote designated wilderness away from trails and roads. The following summarizes identified disturbances for each occurrence in Bridger-Teton National Forest: • 1994 Collection #48374: In Gros Ventre Wilderness in high alpine habitat. The 2007 Granite Creek fire came within 0.5 mile of this occurrence. No roads, trails, invasive plants, or livestock grazing documented nearby. • 1994 Collection #49445: In Gros Ventre Wilderness in high alpine habitat. No fire disturbance, roads, trails, invasive plants, or livestock grazing nearby. • 1998 Collection #18515: In Gros Ventre Wilderness in high alpine habitat. No fire disturbance, roads, trails, invasive plants, or livestock grazing nearby. The above information suggests that *Potentilla subgorodkovii* occupies habitat (alpine areas) on the Bridger-Teton National Forest has undergone low impacts from public land uses and low impacts from natural disturbance (wildfire). If impacts continue at this rate, habitat conditions may remain stable.
Life history and demographic characteristics of the species	Recent taxonomic revision has rendered obsolete the name, Potentilla uniflora. The name *Potentilla subgorodkovii* is instead applied in a collective meaning for plants combining characteristics from multiple species of the *P. uniflora*/*villosa* and *P. nivea* groups. Plants previously identified as Potentilla uniflora within the lower 48 states have been grouped with this new taxonomic entity, but may instead represent a distinct species, not yet described Ertter et al. 1999+).

Criteria	Rationale
	Potentilla subgorodkovii is a tufted perennial herb. Its stems are 5-15 cm tall and pubescent with uniform, coarse, relatively straight hairs. Basal leaves have spreading-pubescent petioles and blades, which are divided into three elliptic leaflets with deeply toothed margins. Stem leaves are progressively smaller. One flowers (rarely 2-3) occurs at the top of the stem. The flower has 5 silky-hairy sepals alternating with 5 narrow bracts, 5 yellow petals 6-9 mm long (about as long as or a little shorter than the sepals), 20 stamens, and numerous pistils with slender, terminal styles. Fruits are glabrate achenes. Blooming occurs from early July until third week of the month (WYNDD 2019). Cinquefoils are subject to herbivory by the larvae of many Lepidoptera species, notably butterflies of the skipper family, and also serve as a nectar source for adult butterflies and moths visit. Some cinquefoils are pollinated by insects such as bees, hoverflies, muscid flies, butterflies, true bugs, and ants (Guillén et al. 2005). Data from interior Alaska suggest that *P. subgorodkovii* in the studied population may be a sexual, facultatively outbreeding species and is likely to be facultatively agamospermous (Eriksen 1996).
Date: September 29, 2019 Reviewer: Lindsay Chipman	

Summary and Recommendations
Species (Scientific and Common Name): *Potentilla uniflora* or ***Potentilla subgorodkovii*** (one-flower cinquefoil])
Recent taxonomic revision has rendered obsolete the name, *Potentilla uniflora*. The name *Potentilla subgorodkovii* is instead applied in a collective meaning for plants combining characteristics from multiple species of the *P. uniflora/villosa* and *P. nivea* groups (Ertter et al. 1999+). Considering this revision, *Potentilla subgorodkovii* is listed as S2 (imperiled) and G5 (secure) globally. It occurs from Alaska to the Northwest Territories, south to Oregon and to Colorado. Plants occupy a variety of habitat types throughout their range, from coastal areas to alpine meadows and fellfields, from very acidic to very basic bedrock (NatureServe 2019). This diversity of habitats may or may not be the result of multiple genetic entities combined into a single taxon rather than a single highly adaptive entity. In Wyoming, populations occur in alpine meadows, tundra, rocky scree and talus. Substrates include granitic and limestone parent material. It is known from seven occurrences in Wyoming (WYNDD 2019), with three of these on the Bridger-Teton National Forest. The three occurrences fall within the Gros Ventre Wilderness and have been combined into two element occurrences (EO6 and EO 7). Each of the three occurrences fall outside of active grazing allotments, lack reports of invasive plants and are not accessible by trail. Because the majority (72 percent) of alpine vegetation in Wyoming is in wilderness areas (WGFD 2017), habitat for *Potentilla subgorodkovii* may be considered intact and stable. Long term change in snowpack and temperature is a main threat to these areas and may alter habitat conditions in the future. Given these considerations, it is recommended that *Potentilla subgorodkovii* not be managed as a SCC.
Evaluator: Jessica Irwin & Rose Lehman Date: 01/12/2021

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