SPECIES: Scientific [common]	***Papaver kluanense* [alpine poppy]** Other scientific names: ***Papaver coloradense*, *Papaver radicatum* ssp. *kluanense***
Forest:	Bridger-Teton National Forest
Forest Reviewer:	**R.Lehman**
Date of Review:	**5/7/20; 4/7/21**
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
7/9/1973	Very rare	U.S.A., Wyoming, Sublette County: Wind River Mountains: Knife Point Mountain. 43.0909° N, 109.5761° W; uncertainty 1 mi.	Dry, stable scree. Very rare. Elev. 12400 ft. Phenology: flowering.	Peter W. Dunwiddie, 110. EO #10 (Rocky Mountain Herbarium 2020; WYNDD GIS 2019)
8/13/1990	Unknown	U.S.A., Wyoming, Sublette County: West Slope Wind River Range: Fremont Peak, ca 22 air NE of Pinedale.	Granite cliff faces and talus fields on south face. Elev. 11400-13360 ft.	Walter Fertig, 6043. EO#2 (Rocky Mountain

		43.1158° N, 109.6131° W		Herbarium 2020; WYNDD GIS 2019)

The Consortium of Pacific Northwest Herbaria and SEINet were also searched, and no additional occurrences were found (Consortium of Pacific Northwest Herbaria 2020; SEINet 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_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?

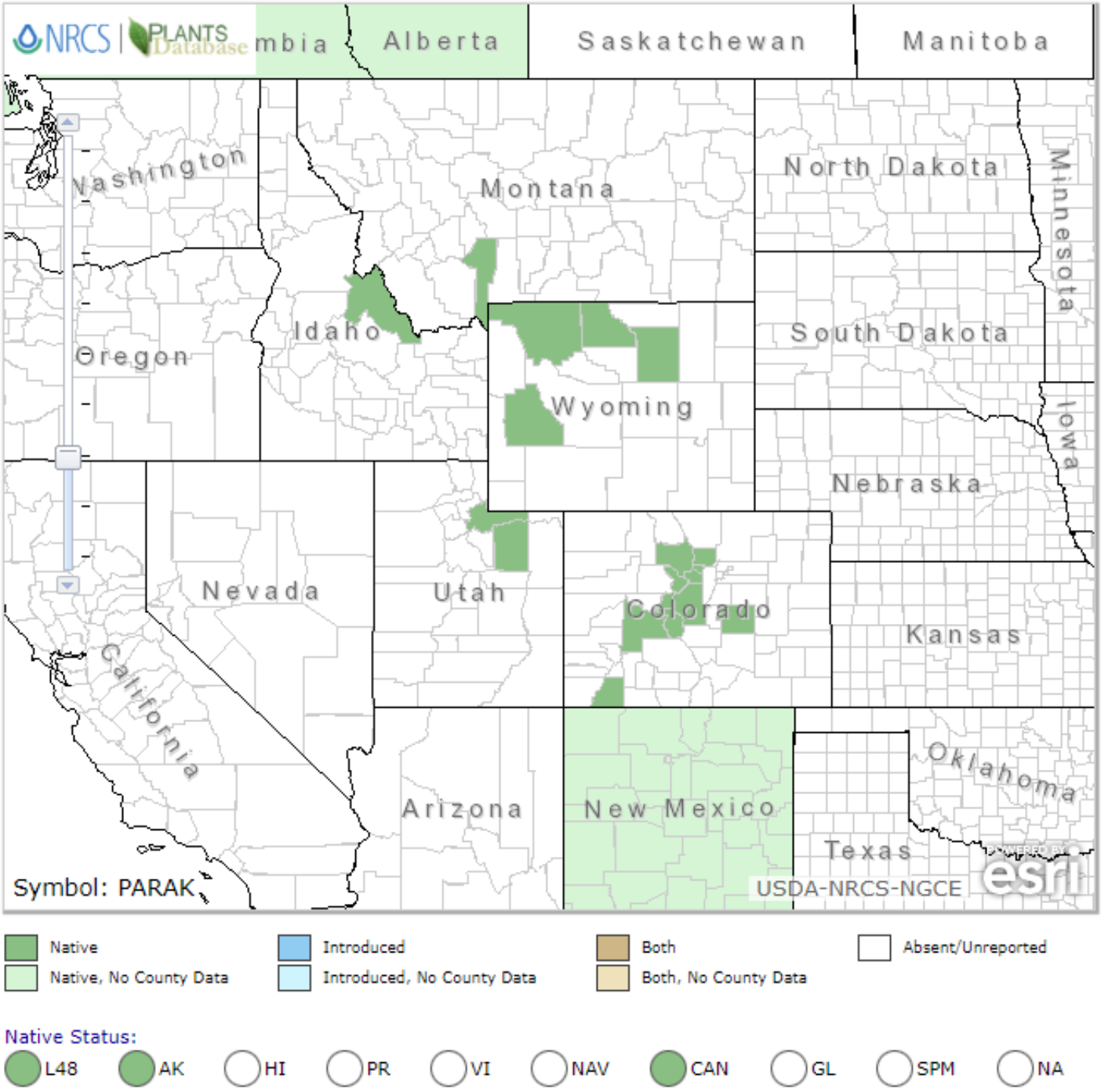
Yes___ No___

Provide explanation for determination

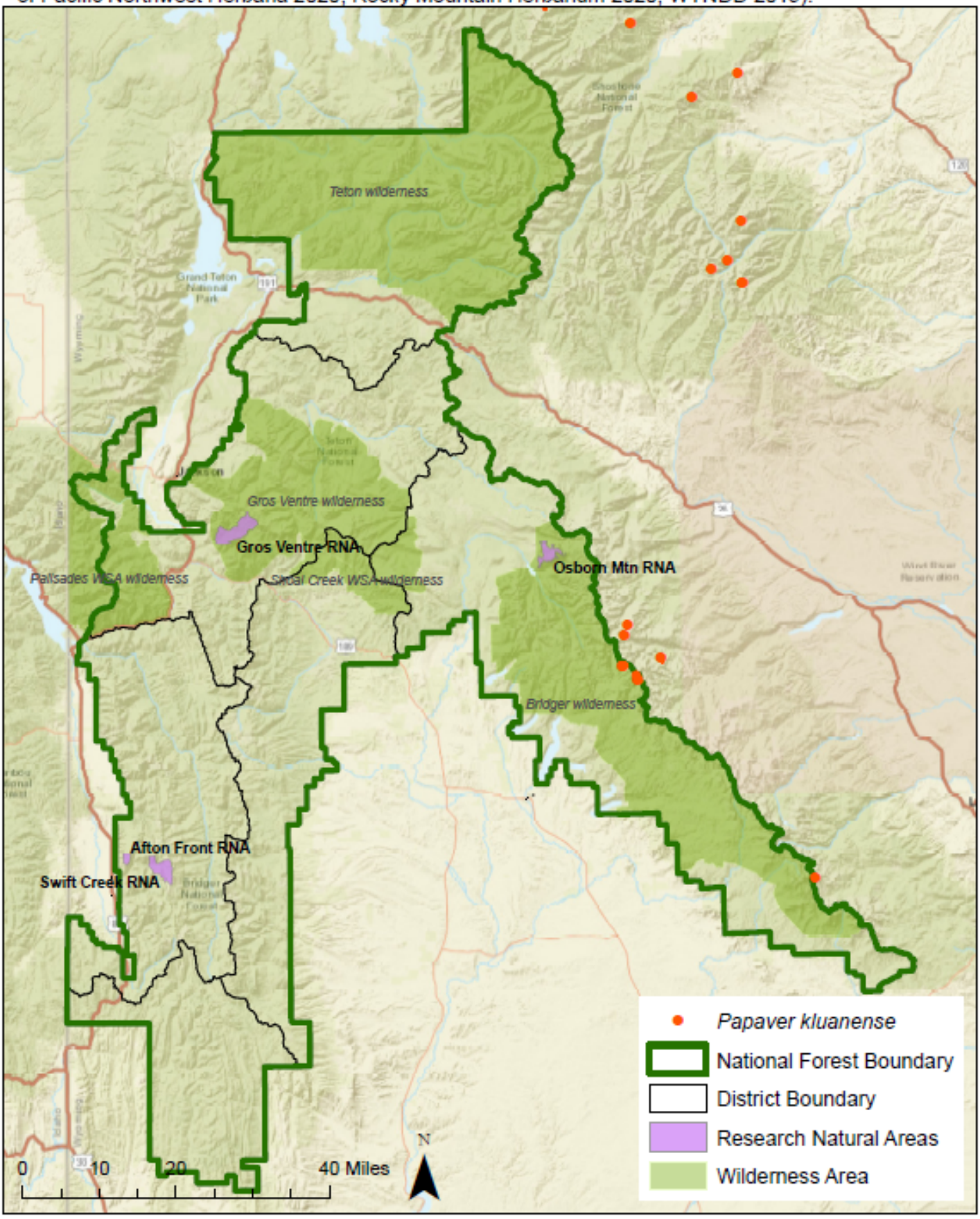
N/A–Occurrences have been documented since 1990.

If determination is no, stop assessment

Map 1, *Papaver kluanense* range in Wyoming and surrounding states (NRCS 2020).



Map 2, *P. kluanense* occurrences in Bridger-Teton National Forest vicinity (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	**G5T4—Secure, Taxon Apparently Secure** *Secure — At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.* *Taxon Apparently Secure — Taxon at fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.*
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.*
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: WYNDD 2020; Heidel 2018; USDA Forest Service Regions 2 and 4 Sensitive Species Lists; NatureServe 2020

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

Criteria	Rationale
Distribution on the Bridger-Teton National Forest	*Papaver kluakense* is known from two records on the Bridger-Teton National Forest. These records are on the lower-east portion of the Forest, on alpine scree/talus (Table 1, Map 2). The scarcity of occurrences suggests this species is rare and isolated on the Forest.
Distribution outside the Bridger-Teton National Forest	*Papaver kluakense* occurs from southern Alaska, south along the Rocky Mountains to northern New Mexico. In Wyoming, known from the Absaroka, Big Horn, and Wind River Ranges (Big Horn, Fremont, Park and Sublette counties) (Fertig and Markow 2000; WYNDD 2020).
Abundance on the Bridger-Teton National Forest	Census data are lacking for nearly all known populations. Occurrences studied by Fertig (1990-97) have all been small and highly localized (Fertig and Markow 2000; WYNDD 2020). Of the two records on the on the Bridger-Teton National Forest, one was noted as "very rare" in 1973. However, as there is no recent data, abundance on the Bridger-Teton National Forest cannot be assessed.
Population Trend on the Bridger-Teton National Forest	Population trends in Wyoming, including on the Bridger-Teton National Forest, are unknown (Fertig and Markow 2000; WYNDD 2020).
Habitat Trend on the Bridger-Teton National Forest	*Papaver kluakense* inhabits dry, rocky alpine ridges at elevations of 10800- 12300 feet. Wyoming populations are in dry, alpine meadows, talus slopes and fellfields (Fertig and Markow 2000; WYNDD 2020). 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 2020). • Element Occurrence #2 (Fertig 6043, 1990): Within Bridger wilderness area; not within RMU; not within perimeter of any major fire event; non near (further than 10 mi) any mapped non-native plant invasions; not near any motorized roads; in vicinity (within 1 mile) of several non-motorized trails, but due to its remote, rugged location, likely seldom sees human visitors • Element Occurrence #10 (Dunwiddie 110, 1973): Within Bridger wilderness area; not within RMU; not within perimeter of any major fire event; non near (further than 10 mi) any mapped non-native plant invasions; not near any motorized roads; in vicinity (within 1 mile) of several non-motorized trails, but due to its remote, rugged location, likely seldom sees human visitors

Criteria	Rationale
	The above analysis suggests that habitat for *P. kluanense* has likely experienced low levels of effects from natural and anthropogenic disturbances, and trends may be stable on the forest. However, climate change effects could degrade conditions, as described below.
Threats to the Species and its Habitat on the Bridger-Teton National Forest	This species is potentially threatened by grazing and recreation, but immediate threats are inferred to be low due to rugged alpine habitat (Fertig and Markow 2000; WYNDD 2020). 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.

Criteria	Rationale
	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 (Ellstrand and Diane 1993, Halofsky et al. 2018). Changes in temperature and precipitation may lead to greater variability in forb flowering, which could create an asynchronistic effect with native pollinator emergence (Halofsky et al. 2018; Miller-Struttmann et al. 2015), leading to decreased reproduction in native plants. The value of pollinators in natural systems is difficult to quantify, but 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.
Life history and demographic characteristics of the species	Arctic poppy is a short tufted perennial herb with stems up to 15 cm high and covered with soft, spreading hairs. Leaves are all basal, the blades blue-green, sparsely hairy, and divided into 3-5 lobes (the lobes sometimes notched). Flowers are solitary at the ends of stems, with two sepals which fall off shortly after the flower opens and four yellow to greenish-yellow petals, each about 1 cm long. Capsules are about 1 cm long and covered with stiff brownish hairs. The fruiting/flowering period is from late June to August (Moseley 1989; Fertig and Markow 2000; MNHP 2020; WYNDD 2020).
Date: April 23, 2020 Reviewer: L. Chipman	

Summary and Recommendations
Species (Scientific and Common Name): ***Papaver radicatum ssp. kluanense*** (alpine poppy)
Papaver radicatum ssp. *kluanense* has a conservation ranking of G5T4 S2. Taxon is formerly known as *Papavar kluanense*, but the taxon is now recognized as a subspecies of *P. radicatum* (FNA). Populations are scattered across the rocky mountain arc in North America, from Alaska to northern New Mexico. Nineteen occurrences in Wyoming, with just two falling within the Bridger Teton Forest. Of these two, one is reported from 1973, the other from 1990. In Wyoming *P. radicatum* ssp. *kluanense* inhabits dry, rocky alpine ridges, talus and fellfields at elevations of 10800- 12300 feet (WYNDD 2020). The two occurrences on the Forest fall within designated wilderness areas outside of existing RMUs. Noxious weeds have not been documented within ten miles of the occurrences and the proximity of non-motorized trails may largely be offset by the remoteness and ruggedness of habitat. The dry habitat preference of this species in alpine areas may mitigate impacts by climate change in this otherwise vulnerable ecosystem. Given this assessment of risks and distribution, it is recommended that *Papaver radicatum* ssp. *kluanense* not be included as a species of conservation concern in spite of the scarcity of occurrences.
Evaluator: Jessica Irwin & Rose Lehman Date: 04/2021

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