SPECIES: Scientific [common]	***Juncus triglumis* var*. albescens* [Northern white rush]**
Forest:	Bridger-Teton National Forest
Forest Reviewer:	**R.Lehman; J.Irwin**
Date of Review:	**4/9/20; 10/13/20**
Forest concurrence (or recommendation if new) for inclusion of species on list of potential SCC: (Enter Yes or 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
8/25/1990	Unknown	U.S.A., Wyoming, Sublette County: West Slope Wind River Range: Mount 11820, ca 1 mi N of Lozier Lakes, ca 23 air mi N of Pinedale. Elev. 10400-11820 ft. 43.2028° N, 109.8208° W; uncertainty 2 mi.	Moist, rocky bank of stream on SE flank of mountain.	Walter Fertig, 6840. (Rocky Mountain Herbarium 2020; SEINet 2020)
7/29/2005		U.S.A., Wyoming, Fremont County: East Slope Wind	Marshy pockets in granite blocks along glacier	Rob Massatti, 3308. (Rocky

		River Range and Vicinity: Tayo Park to Coon Lake to Wind River Peak to Deep Creek Lakes, ca 16 air mi WSW of Lander. **Just outside BTNF border.** Elev. 10910-13210 ft. 42.7084° N, 109.1285° W to 42.7284° N, 109.0929° W; GPS Reading	meltwater drainage. Phenology: fruiting.	Mountain Herbarium 2020; SEINet 2020; WYNDD GIS 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_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?

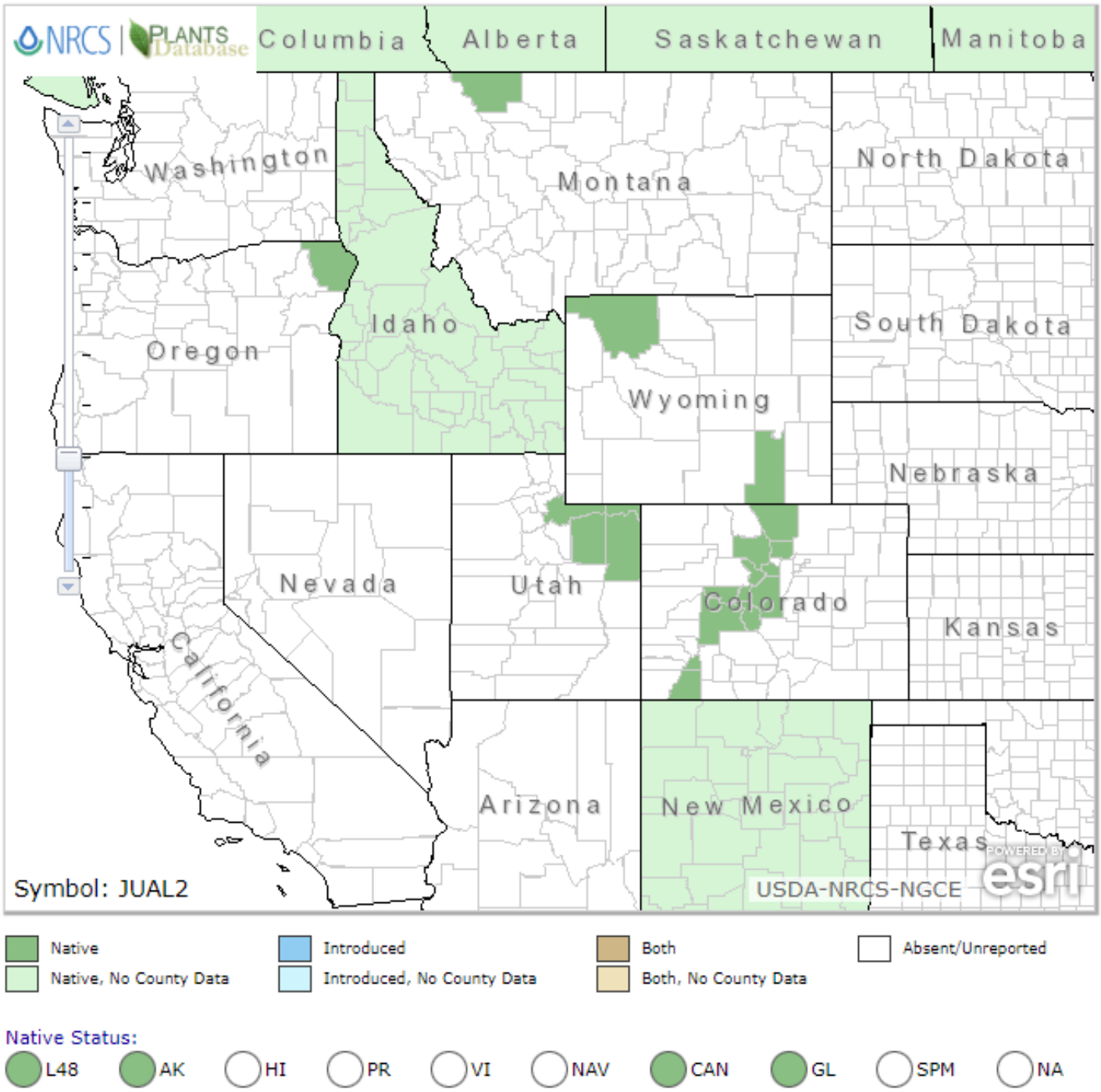
Yes___ No___

Provide explanation for determination

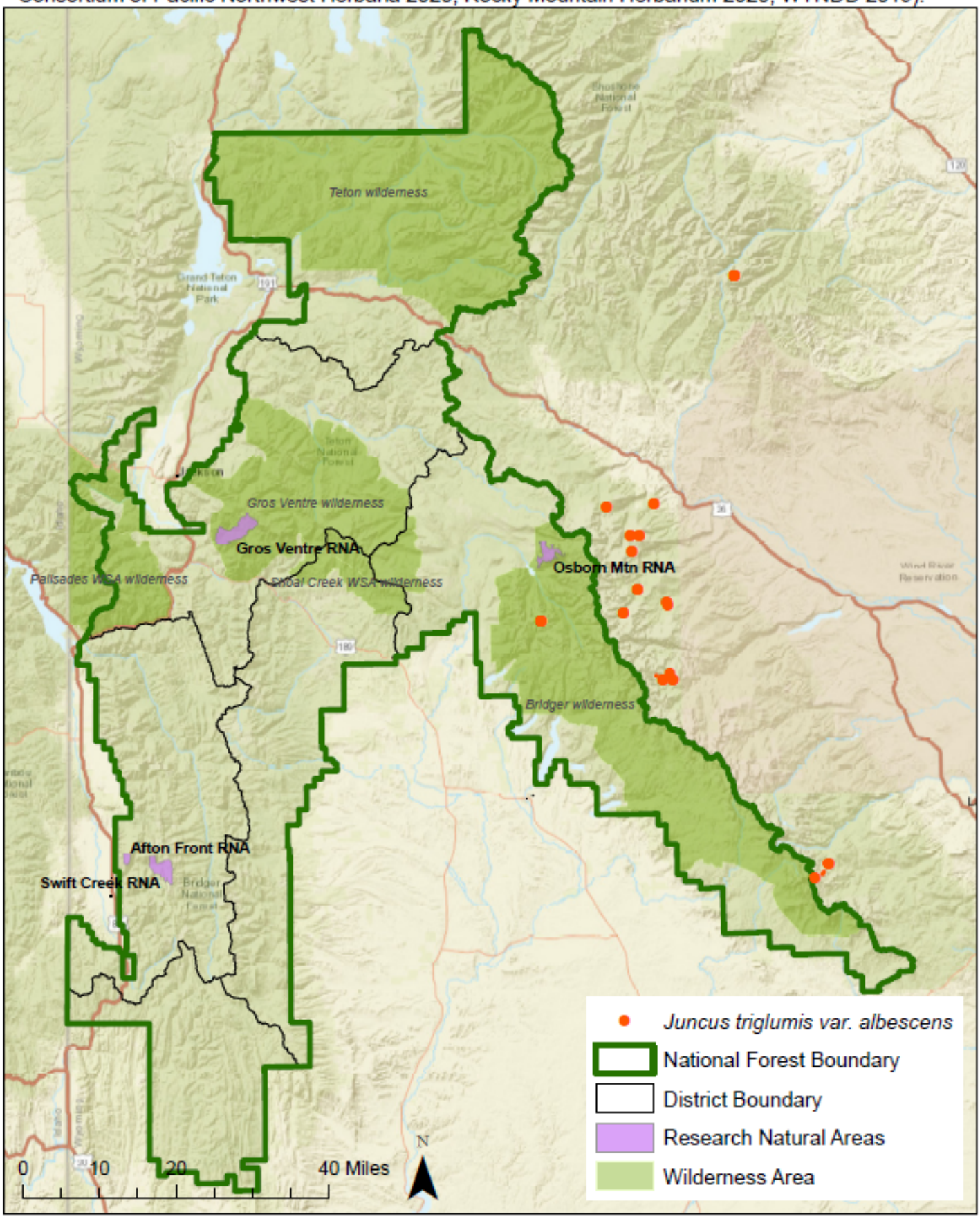
N/A–Occurrences have been documented since 1990.

If determination is no, stop assessment

Map 1, *Juncus triglumis var. albescens* range in Wyoming and surrounding states (NRCS 2020).



Map 2, *J. triglumis var. albescens* 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/Taxon Secure** *Common; widespread and abundant.*
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 2020a; 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	*Juncus triglumis* var. *albescens* is known from one occurrence on the Bridger-Teton National Forest (Table 1, Map 2), indicating it is sparsely distributed and isolated.

Criteria	Rationale
Distribution outside the Bridger-Teton National Forest	*Juncus triglumis* var. *albescens* occurs from Alaska to Newfoundland, south to British Columbia, Montana, Utah and Colorado. In Wyoming, it is known from the northern and eastern Wind River, Absaroka and Medicine Bow mountains. Reports from the Beartooth Range are now known to represent var. *triglumis* (Mills and Fertig 2000; WYNDD 2020b).
Abundance on the Bridger-Teton National Forest	Few data exist on population size, although at least two populations have been reported as locally abundant (Mills and Fertig 2000) in Wyoming. Abundance on the Bridger-Teton National Forest is unknown due to lack of data.
Population Trend on the Bridger-Teton National Forest	Population trends for this taxon, including on the Bridger-Teton National Forest, are unknown (Mills and Fertig 2000; WYNDD 2020b).
Habitat Trend on the Bridger-Teton National Forest	Habitat for *J. triglumis* var. *albescens* is montane streambanks, peatlands (fens), and short willow and sedge meadows on wet to saturated soils, sometimes influenced by limestone (Mills and Fertig 2000). 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 (WYNDD GIS 2019, Google Earth Pro 2020). The single occurrence on the Forest, Fertig #6840, is located within Bridger wilderness area. 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 are likely minimal. Additionally, no roads exist near these occurrences, which further confirms the low potential for human effects. Proximity (within approximately 1–2 miles) to non-motorized hiking trails may slightly increase potential for human presence and trampling impacts, but because the occurrence is in remote, rugged locations, they likely seldom see human visitors. The occurrence is not accessible to livestock, within large fire perimeters, nor in close proximity to non-native plant invasions. The above analysis suggests that habitat for *J. triglumis* var. *albescens* 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 below.

Criteria	Rationale
Threats to the Species and its Habitat on the Bridger-Teton National Forest	*Juncus triglumis* var. *albescens* may be impacted by recreational and grazing activities in its wetland habitats (Mills and Fertig 2000), but immediate threats are inferred to be low due to its occurrence within alpine habitat (WYNDD 2020b). Because alpine vegetation communities mainly occur in designated wilderness, roadless, or remote areas where human disturbance is minimal, alpine communities are considered to be relatively stable. Riparian habitat and wetlands receive additional considerations and protections from disturbances through forest management direction and water regulations. These considerations and protections would avoid or minimize adverse effects to special status riparian and wetland plants, such as *J. triglumis* var. *albescens*, where they occur. Climate related effects and drying of wetlands could reduce habitat and viability for rare species. Warming temperatures and reduced snowpack may result in the loss of high-elevation riparian and wetland habitats, resulting in drier, less productive systems. With rising temperatures, frigid snow- and water-dependent ecosystems in the upper portions of watersheds will have very little room to move upslope. Elevating temperatures will increase competition from riparian species now occurring at lower elevations, and smaller snowpacks will increase competition from upland species that occupy drier sites. According to the Intermountain Adaption Partnership assessments, high-elevation riparian and wetland communities have a moderate to high sensitivity to climate change, a low to moderate adaptive capacity, and high vulnerability to climate change (Halofsky et al. 2018). The condition of wetlands in high elevation forests is generally excellent to good. Human stressors were observed in some fen wetlands while mapping fens on the BTNF, such as off-roading vehicle trails, foot trails, fences or impoundments, and those observations were captured in the “Notes” field of the GIS dataset accompanying this report. However most potential fens in BTNF showed little sign of human disturbance, particularly at higher elevations (Smith and Lemly 2018). 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

Criteria	Rationale
	profound implications.
Life history and demographic characteristics of the species	Northern white rush is a tufted perennial with thin, round stems 5-15 cm high. Leaves are all basal, 2-12 cm long, cylindrical, and have raised cross ridges (septa). Two to three flowers are in a single head with two brownish bracts at its base, the lowest with a long-tapering tip. Perianth segments are pale brown or whitish, blunt-tipped, and 4 mm long. The fruit is a brownish, somewhat pointed capsule that approximately equals the perianth. The seeds are 1.3-1.8 mm long with a long appendages at each end. Flowering is from late July to early September (WYNDD 2020b).
Date: April 6, 2020 Reviewer: L. Chipman	

Summary and Recommendations

Species (Scientific and Common Name): *Juncus triglumis* var. *albescens* (northern white rush)

Juncus triglumis var. *albescens* is listed as S2 (imperiled) and G5T5 (secure) globally. It occurs from Alaska to Newfoundland, south to British Columbia, Montana, Utah and Colorado. In Wyoming, it is known from the Wind River, Absaroka and Medicine Bow mountains. A single occurrence falls within the Forest along a high-elevation, moist rocky stream bank on the north end of the Bridger Wilderness, documented in 1990. The adjacent Shoshone National Forest hosts another 12 occurrences on the east slope of the Wind River Range, in the Fitzpatrick and Popo Agie Wildernesses. Range-wide, *J. triglumis* var. *albescens* grows in montane to alpine streambanks, peatlands, and short willow and sedge meadows, sometimes influenced by limestone (Mills and Fertig 2000).

Abundance and trend data are lacking across all occurrences in Wyoming, except that at least two populations are reported as locally abundant. Assessment of potential habitat must therefore guide conservation management at this time. All local and regional occurrences fall within designated wilderness, and wilderness trails may facilitate minimal human and livestock presence to plant populations. Additionally, riparian habitat and wetlands receive considerations and protections from disturbance through forest management direction and water regulation.

J. triglumis var. *albescens* may be highly vulnerable to climate related effects and drying of wetlands. With rising temperatures, frigid snow- and water-dependent ecosystems in the upper portions of watersheds will have very little room to move upslope and may experience increased competition from lower elevation species. Changes in temperature and precipitation may also lead to asynchronistic effects between pollinator emergence and flowering time (Halofsky et al. 2018; Miller-Struttmann et al. 2015) and thus reducing reproductive success. Specific resilience of *J. triglumis* var. *albescens* to potential impacts has not been studied.

In spite of potential vulnerabilities of *J. triglumis* var. *albescens* 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: Jessica Irwin Date: 04/09/2020

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