SPECIES: Scientific [common]	*Physella columbiana* [Rotund Physa]
Forest:	Bridger-Teton National Forest
Forest Reviewer:	Randall Griebel, James Wilder
Date of Review:	02/10/2020; reviewed 4/25/2025
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.)	Source of Information
1996	Unknown	Bridger-Teton National Forest, Blackrock Ranger District, Lower North Fork Spread Creek	WYNDD (2019), Only identified to genus level
1994	Unknown	Bridger-Teton National Forest, Jackson Ranger District, Snake River, Alpine	WYNDD (2019), Only identified to genus level

   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?

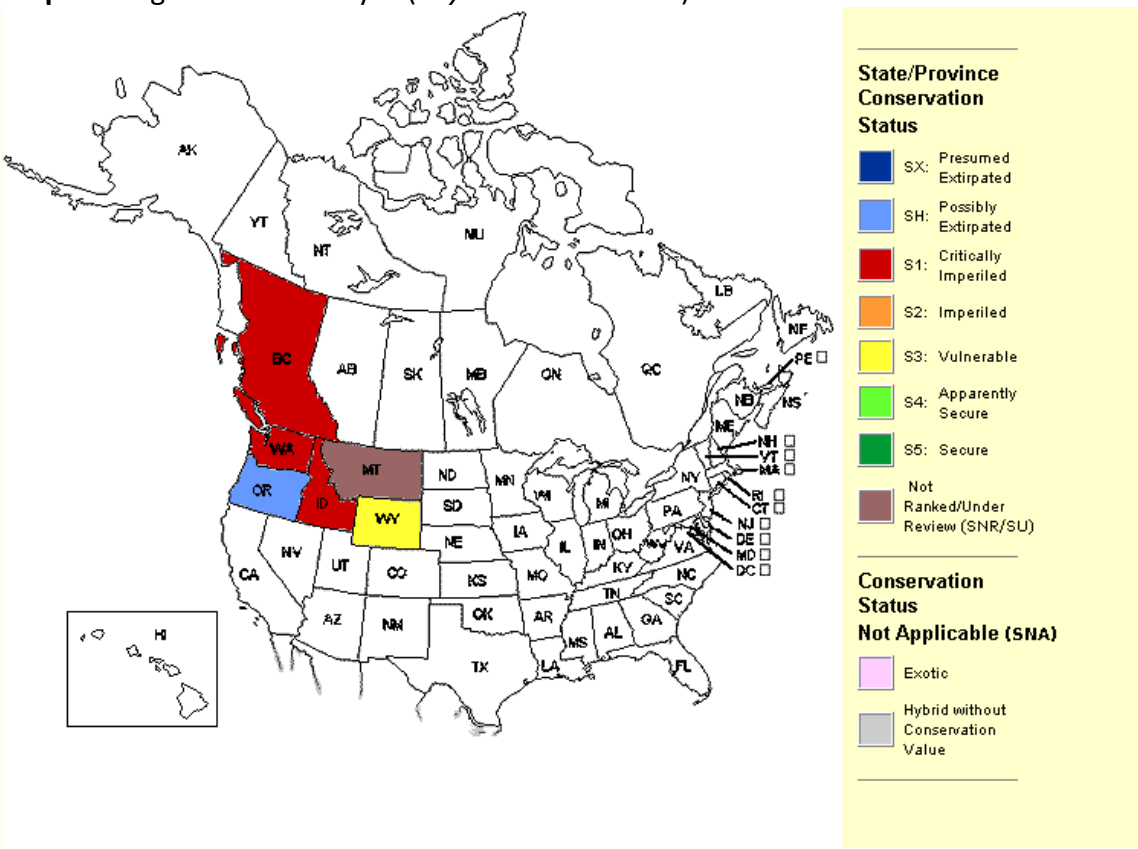
Yes ___ No___

Provide explanation for determination

N/A—potential occurrences have been documented since 1990.

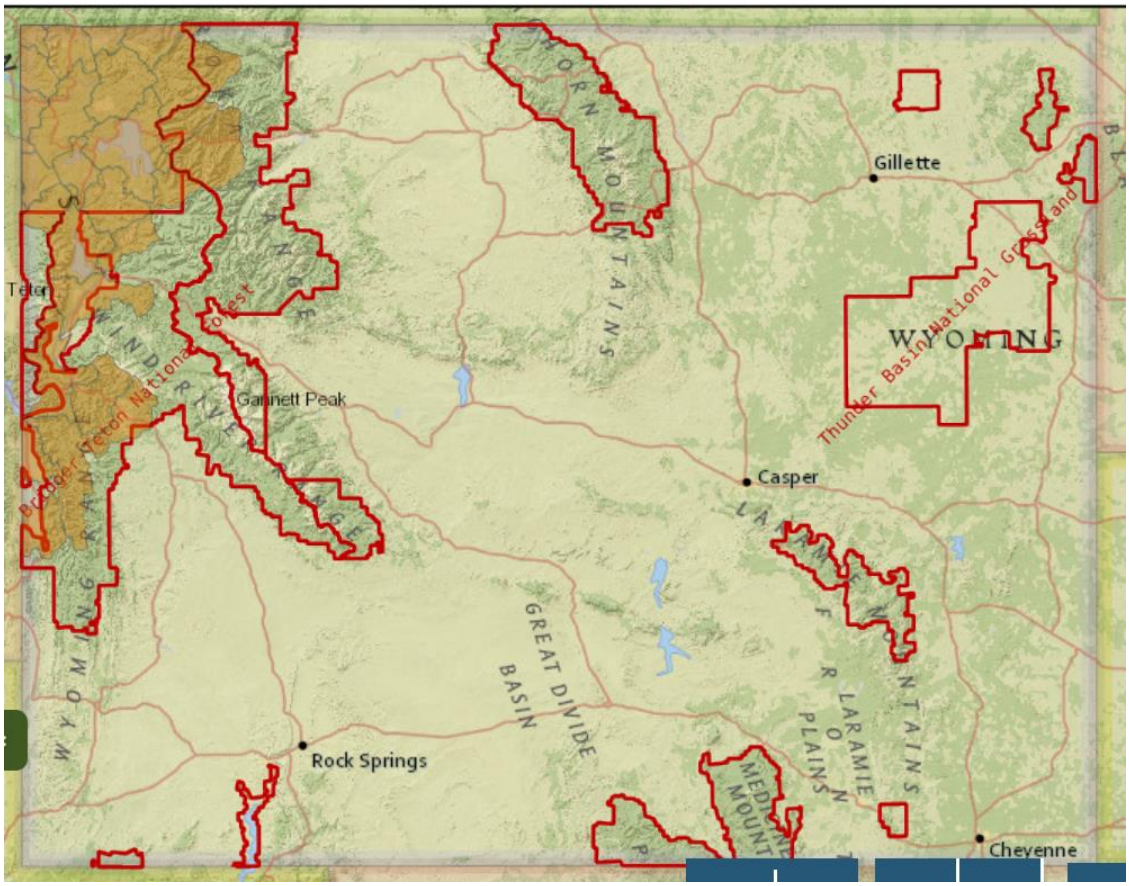
If determination is no, stop assessment

d. **Map 1**. Range of Rotund Physa (*Physella columbiana*) in the United States and Canada.



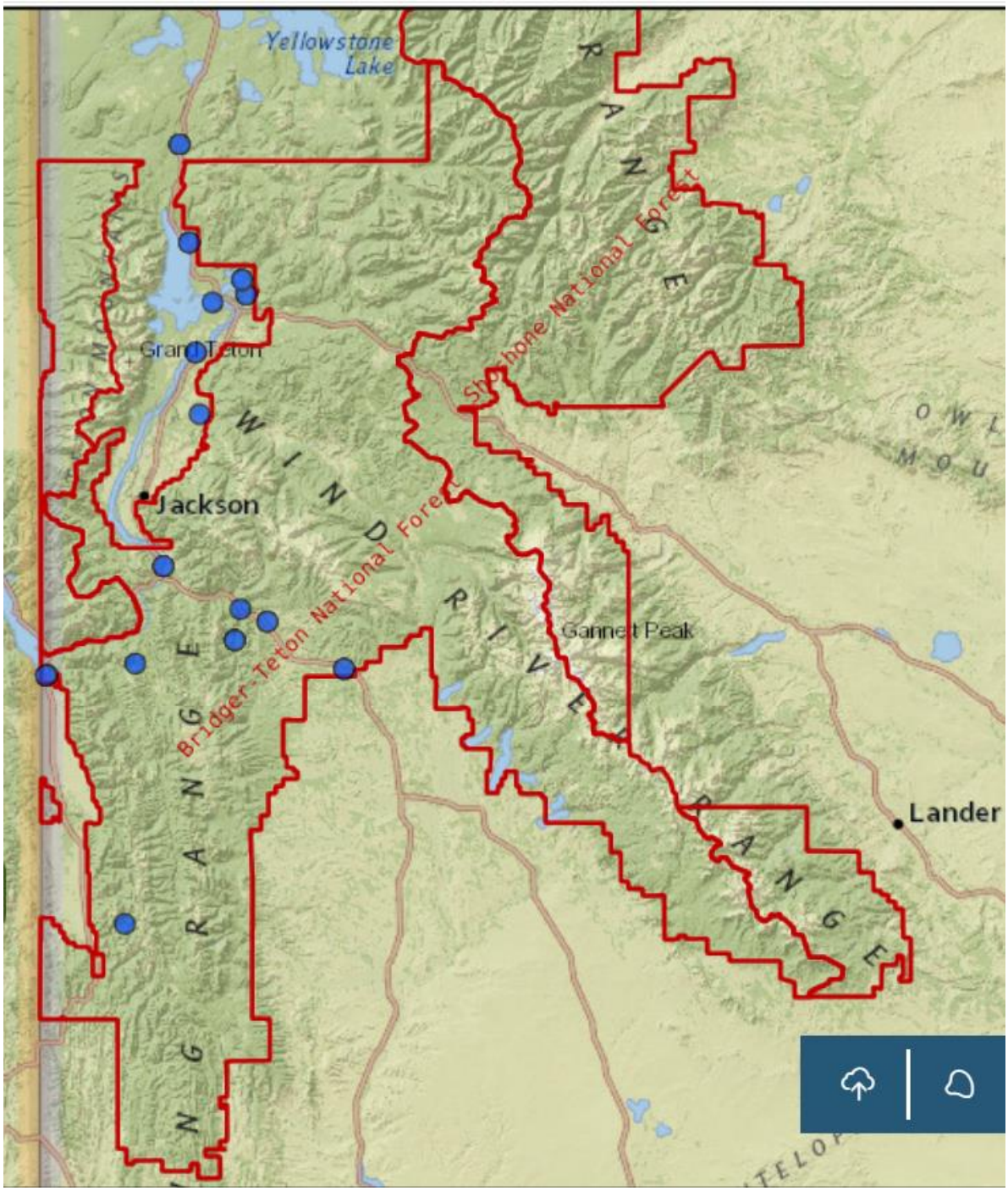
NatureServe (2019)

e. **Map 2**. Range of Rotund Physa (*Physella columbiana*) in Wyoming.



WYNDD (2025)

f. **Map 3**. Rotund Physa (*Physella columbiana*) occurrences in and around Bridger-Teton National Forest.



(WYNDD 2025)

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	**G3— Vulnerable** ***Vulnerable*** *— At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.*
NatureServe State Status	**S3— Vulnerable** *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.*
WGFD	**NSSU (U) Tier II** *Population Status: Unknown* *Limiting Factors: Unknown* *Tier II: Moderate priority* *[The WGFD's Species of Greater Conservation Need (SGCN) designation process is based upon its* ***Native Species Status (NSS)*** *classification system that compares population and limiting factor variables using a 16 cell matrix. As a species moves from a placement closest to the upper left corner of the matrix (Aa/NSS1) toward the lower right corner (Dd/NSS7) the species' population status in Wyoming is considered more secure. Numerical scores were assigned to each of these variables and summed to provide a total score (i.e. NSS3). SGCN were placed into one of three tiers based on their total score: Tier I – highest priority, Tier II – moderate priority, and Tier III – lowest priority.]* (WGFD, 2017 - Wyoming Species of Greatest Conservation Need)
WYNDD	**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)*

USDA Forest Service	Not Listed
USDI FWS	Not Listed
WY BLM	Not Listed
IUCN	Not listed

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

Criteria	**Rationale**
Distribution on the Bridger-Teton National Forest	*Physella columbiana* is found in the Pacific Northwest of North America, from Wyoming and Montana west to Washington. In Wyoming, occurrences have been documented in mountain counties such as Fremont, Hot Springs, Sublette, Uinta, and Yellowstone National Park (NatureServe 2019). The species is present on the Forest, though populations may be sparse and isolated.
Abundance on the Bridger-Teton National Forest	There are no abundance data available for this species on the Forest; information is insufficient to assess this criterion.
Population Trend on the Bridger-Teton National Forest	There is no population data available for this species on the Forest; information is insufficient to assess this criterion.
Habitat Trend on the Bridger-Teton National Forest	*Physella Columbiana* is found in shallow waters of lakes and low-gradient rivers (NatureServe 2019). Populations have persisted in heavy metal polluted sites, apparently due to decreased trematode parasite loads (NatureServe 2019). Water quality is a vital habitat characteristic to snails. Snails require sufficient calcium levels to secrete shells. Wyoming rivers and streams generally have high concentrations of calcium that do not limit shell formation; however, granite geology probably limits snails in some parts of the state. Snails have not been observed in some areas in the Teton and Wind River Ranges, which have granite geology and very low calcium concentrations during surveys (Tronsdad and Anderson 2018). Low pH can also impede shell growth because the acidity inhibits shell secretion. The pH of water in Wyoming generally is >7, indicating that pH levels are generally not a concern in the state. The exception may be in granite geology especially during snowmelt (Tronsdad and Anderson 2018).

Criteria	Rationale
	Several activities have reduced habitat quality on watersheds within the Forest. Residential development throughout the Snake River, Flat Creek and Salt River valleys are directly influencing groundwater levels, water quality, and important spring streams. Additionally, flow regimes, instream habitat, and riparian function in the basin have been altered from the combined effects of Jackson Lake Dam and the levee system (WDGF 2017). In the Green River basin in Wyoming, aquatic habitat in the basin has largely been degraded by the introduction of invasive species, water development, altered flow regimes (WGFD 2017). In the Bear River Basin, irrigation diversions and water developments have altered natural flow regimes and decreased habitat connectivity (WGFD 2017).
Threats to the Species and its Habitat on the Bridger-Teton National Forest	Specific threats to *P. columbiana* are unknown (NatureServe 2019). General threats to freshwater mussels in North America include: impoundments and loss or decline of host fish, channel modification from channelization, dredging and mining, restoration activities that impact streambanks or streambeds or dewater channels, contamination, sedimentation and scouring, nutrient enrichment, water withdrawal and diversion, thermal pollution, livestock grazing in riparian areas, shoreline development, and the introduction of non-native plant, fish and invertebrate species (Blevins et al. 2016). Climate change is exacerbating many of these impacts, especially reduction in stream flow and thermal pollution in arid areas. Climate change will likely lead to water development projects that alter the timing, magnitude and duration of natural hydrographs as well as intra- and inter-annual variability in Wyoming's streams and associated riparian corridors. Increased temperatures may alter the magnitude and timing of precipitation and runoff, possibly shifting the reproductive phenology and distribution of wildlife (WGFD 2017). Invasive aquatic snails may outcompete or displace native snails, mussels, and aquatic insects. Failure to detect dreissenids and mud snails in large lakes where motorized boating occurs indicates that aquatic habitats on BTNF have a low probability of current infestations. However, there has been detection of aquatic invasive species downstream of BTNF in the Snake River Drainage and detection of New Zealand mud snails in the Salt River at the confluence of the Snake River immediately downstream of the Greys River Ranger District. These recently discovered infestations could be inadvertently spread onto BTNF by recreational watercraft and could degrade habitat conditions for mollusks by competing for food, space, and other resources (USFWS 2019). Additional monitoring is planned for 2019 with the goal of limiting the spread of recently detected New Zealand mud snails (USFS 2019).
Date: L. Chipman Reviewer: October 4, 2019	

Summary and Recommendations

The small number of observations or collections on the Forest indicates that there is insufficient information to determine abundance, distribution, or population trends in the plan area. Preferred habitat is relatively unaffected by forest management activities such as timber harvest or prescribed fire treatments; thus, habitat trends are likely stable on the Forest. Although aquatic habitats are currently stable on the forest, they may decrease in the future due to climate change effects. Until better information becomes available on abundance, distribution, population trend, habitat trend, threats, or other life history characteristics, there is not a substantial concern for the species capability to persistence on the Forest over the long-term at this time, and it is recommended that the Rotund Physa is not a Species of Conservation Concern for the Bridger-Teton National Forest.

Summary and Recommendation Provided by: R. Griebel (February 10, 2020).

References

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USFWS (United States Fish and Wildlife Service). 2019. New Zealand Mudsnail (*Potamopyrgus antipodarum*). Available at: https://www.fws.gov/columbiariver/ANS/factsheets/mudsnail.pdf.

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