

1. **Species [12.53 1]:** *Aliciella sedifolia* (Brandeggee) J.M. Porter [syn. = *Gilia sedifolia* Brandeg.] (stonecrop gilia).
2. **Status:** Table 1 summarizes the current status of this plant by various ranking entity and defines the meaning of the status.

Entity	Status	Status Definition
NatureServe	G1	Critically Imperiled—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
CNHP ^a	G1	Globally critically imperiled; typically 5 or fewer occurrences.
CNHP	S1	State critically imperiled; typically 5 or fewer occurrences.
USDA Forest Service	Sensitive	Species identified by a regional forester for which population viability is a concern, as evidenced by: a) significant current or predicted downward trends in population numbers or density, or b) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.
USDI FWS ^b	Not Listed	Not federally recognized under the Endangered Species Act (ESA) as endangered, threatened, proposed, or candidate species.
^a Colorado Natural Heritage Program.		
^b US Department of Interior Fish and Wildlife Service.		

The 2012 U.S. Forest Service Planning Rule defines Species of Conservation Concern (SCC) as “a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area” (36 CFR 219.9). This overview was developed to summarize information relating to this species' consideration to be listed as a SCC on the Rio Grande National Forest, and to aid in the development of plan components and monitoring objectives.

3. **Distribution, abundance, and population trend on the planning unit [12.53.2,3,4]:**

Aliciella sedifolia is evidently an extremely rare Colorado endemic and it is reported from only Hinsdale and San Juan Counties (CNHP 2015). There are two known occurrences¹ (NatureServe 2015) and they are on the Rio Grande National Forest (RGNF); one is from Sheep Mountain, and the other is south of Half Peak along the northern RGNF border.

The Sheep Mountain location was originally found by Dr. Carl A. Purpus in 1892, but the locality description was ambiguous (there are many Sheep Mountains in the Colorado). The precise Sheep

¹ Any naturally occurring population that is separated by a sufficient distance or barrier from a neighboring population. As a guideline, Element Occurrences (EOs) are separated by either: 1 mile or more across unsuitable habitat or altered and unsuitable areas; or 2 miles or more across apparently suitable habitat not known to be occupied.

Mountain located roughly 1.5 miles southeast of Stony Pass was considered a likely candidate for this plant since Purpus would have had ready access to this area via the existing wagon route at the time. This mountain also appeared to have a similar elevation and habitat to his collection notes.

A. sedifolia had not been seen for more than 100 years until Susan Komarek found an occurrence south of Half Peak in 1995 (and later documented the occurrence in 2003). Komarek reported two populations near Half Peak; one consisting of approximately 1,000 plants (over approximately an acre), and the other consisting of approximately 100 plants (over approximately a 40 by 40 foot area). This was a significant botanical discovery.

Then, Purpus' Sheep Mountain site was later "rediscovered" in July 2007 by Tim Hogan (COLO) [aka University of Colorado Herbarium] and Luke Tembrock (DBG) [aka Denver Botanic Gardens] after a focused search. Hogan and Tembrock documented the Sheep Mountain occurrence and found 17 individuals—likely Purpus' 1892 discovery. Then, they visited and documented the occurrence south of Half Peak (i.e., Komarek's 1995 discovery).

There are currently no data suggesting that *Aliciella sedifolia* has a disjunct range. As is characteristic of many alpine species, occurrences of *A. sedifolia* are probably isolated on islands of suitable habitat surrounded by lower elevation, unsuitable areas.

There are insufficient data to make any inferences regarding the population trend for *Aliciella sedifolia*. The population size of the Half Peak occurrence was estimated for the first time in 2003, and later observed again by Hogan and Tembrock in 2007. However, there have been no monitoring efforts from which a trend could be determined. It is very likely that other occurrences remain to be discovered, so more species inventory work is needed before the population trend can be accurately assessed. No information exists on abundance changes for the RGNF populations. [primary source: Anderson 2004; Komarek personal communication 2003; Hogan personal communication 2008; USDA Forest Service 2015].

USFS Corporate Database Habitat Type Associated with the Species, and Acreage of this Habitat on the Planning Unit: The habitat for this species would be considered an alpine gravel sparse forb cover type. The known *A. sedifolia* occurrences are found on ash-flow tuff (geologic symbol Taf) and Andesite tuff (geologic symbol Tpl) according to the RGNF's GIS soils coverage. A query of geologic symbols Taf and Tpl (above 11,600 feet) yielded the following: Taf = 94,180 acres, and Tpl = 51,394. This query could be further refined with additional criteria as more is learned about the habitat to create a better refined search image for *A. sedifolia*. [source: USDA Forest Service 2015].

CNHP Ecological System of the Southern Rocky Mountains Ecoregion: Rocky Mountain Alpine Bedrock and Scree [source: http://www.cnhp.colostate.edu/download/projects/eco_systems/eco_systems.asp].

4. **Brief description of natural history and key ecological functions [basis for other 12.53 components]:**

Aliciella sedifolia is a small-statured, taprooted herb with a basal rosette of leaves. It appears to be a biennial, or possibly a short-lived, monocarpic perennial. Flowering and fruiting occur in late June-August, and possibly into September. *Aliciella sedifolia* occurs in the alpine zone on a substrate of white

volcanic ash. It is apparently restricted to dry, rocky, or gravelly talus described as “tuffaceous sandstone.” Habitat is very sparsely vegetated. Associated species include *Erysimum capitatum*, *Elymus scribneri*, *Thalictrum alpinum*, and *Acomastylis rossii*. Elevation ranges from approximately 12,800 to 13,400 feet based on the two occurrence records on the RGNF (CNHP 2015). The elevation given in the Purpus collection (11,750 feet) would actually be near the base of Sheep Mountain and is unlikely to be suitable habitat.

In 2007, Hogan and Tembrock described the south slopes of Half Peak just below hogback leading to the summit as a barren site with volcanic gravels and scattered *Erysimum capitatum* and *Elymus scribneri*. An *Acomastylis rossii* dominated community formed a distinct boundary line around the gravel patches which were virtually bare and contained *Aliciella sedifolia*. Total moss/lichen cover was 1-2% with total bare ground cover 98+%. *Aliciella sedifolia* was never found to occur even in sparsely vegetated portions of areas dominated by *Acomastylis rossii*. The processes responsible for this interesting microscale pattern are not known. They may be chiefly biotic, such as might arise from gradual spreading and stabilization of fine scree by *Acomastylis rossii*. Frost heave may also play a role in the creation and maintenance of the sharp boundaries observed between the gravel patches and denser vegetation. However, the soil is coarse and droughty, probably with very little organic matter. Coarse soils are not typically subject to intense disturbance by frost heave.

Hogan and Tembrock also described the Sheep Mountain occurrence as a large expanse of barren, cobbly volcanic rock with *A. sedifolia* growing in finer grained (pea sized) gravels. The other species in the vicinity included *Claytonia megarhiza*, *Smelowskia calycina*, *Silene acaulis*, *Ligularia soldanella*, *Saxifraga cernua*, and *Papaver kluanense*.

The geology of the known sites is apparently similar. Purpus noted on one duplicate collection that *Aliciella sedifolia* was collected on “tuffaceous sandstone.” Half Peak is underlain by ash-flow tuff. This layer includes many named strata, but no information is available regarding the specific geology of Half Peak. Unfortunately no detailed geological map is available for the Pole Creek Mountain Quadrangle where Half Peak is located. A gravel sample collected by Susan Komarek is apparently welded rhyolitic ash-flow tuff, although there is some possibility that it is a rhyolitic lava flow. However, the apparent tendency for it to weather and decompose rapidly is more suggestive of rhyolitic ash-flow tuff. This substance is chemically simple, consisting commonly of 70 percent SiO₂ and 15 percent Al₂O₃. The concentration of sodium and potassium is often high in these rocks, but magnesium and iron concentrations are very low. It is possible that the mineralogy of this substrate in the San Juan Mountains is not conducive to optimal plant growth.

The geology in the vicinity of the 2007 Hogan and Tembrock collection on Sheep Mountain has been mapped in detail on the adjacent quad to the west (Howardsville). Two strata are exposed on the upper slopes of this Sheep Mountain that might also be those that occur on Half Peak. These are Blue Mesa Tuff (a reddish-brown, moderately to densely welded tuff), which sits atop Ute Ridge Tuff (gray to grayish-brown and moderately to densely welded). The physiography of these two mountains is similar. Hogan described the habitat on the Sheep Mountain site as bare patches of pea-sized gravels with very sparse vegetation cover.

The geology of the area around Silverton is complex and includes many strata. A massive profusion of volcanic activity in the Tertiary resulted in the formation of the San Juan Mountains. The original volcanoes in this field have been heavily eroded and glaciated, exposing deeper strata. The Silverton and San Juan Calderas were major vents in this area. The rim of the Silverton Caldera passes within five

miles to the northwest of Half Peak and contains rich mineral deposits that have been mined extensively. Numerous mining claims remain in this area.

Areas of ash-flow tuff throughout the San Juan Mountains above tree line would likely form a coarse search image for possible *Aliciella sedifolia* habitat.

The definitions of high quality and marginal habitat are not known for *Aliciella sedifolia*. Alpine areas on ash-flow tuff parent material that are not occupied may be suitable but unoccupied habitat, or they might instead be unsuitable for reasons we do not yet understand.

Interactions between *A. sedifolia* and any arthropods (an invertebrate animal having an exoskeleton, a segmented body, and jointed appendages) or pollinators is unknown.

The disturbance regime to which *A. sedifolia* is subjected is probably maintained by mass wasting and erosion, and possibly by frost heave. The ash-flow tuff substrate on which *A. sedifolia* occurs is easily weathered into gravel-size particles that are unconsolidated at the surface.

The extent to which *A. sedifolia* is capable of selfing is unknown. Both self-compatibility and self-incompatibility are present in the genus *Aliciella*.

There has been no research on the pollination ecology and pollinators of *A. sedifolia*. Other *Gila* species are pollinated primarily by bumble bees (*Bombus* spp.), megachilid bees (*Megachile* spp.), and anthophorid bees. However, as elevation increases, visitation by various species of flies becomes more prevalent. The floral biology of *A. sedifolia* should be investigated to ensure the protection of its pollinators. Because biennials have a short life span and lack the ability to reproduce vegetatively, there is strong selective pressure for successful reproduction.

The viability of seeds from *A. sedifolia* is not known. The seeds of *A. sedifolia* are winged which is rare as a dispersal mechanism among arctic plant species. However, seeds from plants growing on exposed sites are probably dispersed effectively by wind. As a biennial, the seed bank dynamics are particularly important in the life cycle of *A. sedifolia*. However, there is no information regarding seed longevity, dormancy, and germination requirements.

Maintaining genetic integrity and eliminating inbreeding and outbreeding depression are important management considerations for *A. sedifolia*. It is more vulnerable to genetic concerns if it is heavily dependent on outcrossing. Maintaining distinct genetic populations and natural levels of gene flow are also important for its conservation. No Population Viability Analysis (PVA) has been performed for *A. sedifolia*.

As a habitat specialist, population sizes of *A. sedifolia* are naturally limited by the availability of habitat. The high elevation outcrops of ash-flow tuff on which *A. sedifolia* lives are insular and often separated from other suitable patches by many miles of unsuitable habitat. Within an area of suitable habitat, the availability of microsites suitable for *A. sedifolia* is probably also limited, possibly precluding the development of a large population. Thus, the distribution and physiognomy of habitat for *A. sedifolia* imposes constraints on population growth at a variety of scales. It is not known if *A. sedifolia* is seed limited or what factors control seedling recruitment success.

There have been no reports in the literature or other observations of parasite or disease attack on *A. sedifolia*. Herbarium specimens show no obvious damage resulting from herbivory and none has been reported. [primary source: Anderson 2004; Komarek personal communication 2003; Hogan personal communication 2008].

5. Overview of ecological conditions for recovery, conservation, and viability [12.53 7, 9?, 10, 11, 12]:

There is a relatively large amount of alpine environment on the RGNF and a total of 145,574 acres above 11,600 feet with geology similar to the known occurrences. However, as stated above, there are many uncertainties of what constitutes suitable habitat for this species.

There are two known occurrences of *A. sedifolia* on the RGNF. One is immediately south of Half Peak and the other is on the south face of Sheep Mountain. Plant collecting is not known to be a threat to this species on the RGNF. The possible threats to the known occurrences on the RGNF are generally categorized as follows: recreation; permitted livestock; wildlife use; mining; exotic species; roads and trails; natural disturbance; and global climate change. Each of these potential threats is briefly discussed below.

Recreation. The Half Peak occurrence of *A. sedifolia* is in 3.3 Backcountry Management-area Prescription (MAP) where no motorized use is authorized. The RGNF's big game afternoon ATV game retrieval policy is excluded from MAP 3.3. Therefore, no off-road vehicle travel is authorized (nor expected). A hiking trail is nearby so foot traffic and recreation livestock (primarily horses; possibly pack goats and llamas at times) would be expected on the trail with infrequent incidental cross country foot traffic possibly intersecting a population of *A. sedifolia*. It is noteworthy that nearby Half Peak is one of the 100 highest Thirteeners in Colorado, so climbing these "Centennials" is a goal for many avid climbers. Hogan and Tembrock mentioned, "[a]t least a half dozen people had climbed Half Peak in the week prior to our visit (summit register) and tracks [footprints] were clearly evident in the *Aliciella* habitat." Thus, there is at least some intersection at times of foot traffic with this species' habitat.

The Sheep Mountain occurrence is on the boundary of the 3.3 MAP and a 4.3 Dispersed and Developed Recreation MAP (typically applied along road corridors). The *Aliciella sedifolia* occurrence is roughly .6 mile from the Stony Pass motorized road. The RGNF's big game afternoon ATV game retrieval policy is allowed in MAP 4.3. However, the slope near the occurrence is greater than 40%, making ATV use unlikely for game retrieval. There is no designated recreation trail near this site, so only infrequent incidental (if any) foot traffic would be expected. Hogan and Tembrock did not note any evidence of trampling impacts.

Permitted Livestock. The Stony Pass area has been open to domestic sheep grazing since the late 1800s. *Aliciella sedifolia* is not known to be palatable and no herbivory has been reported. The occurrence on Sheep Mountain is in the Stoney Sheep and Goat Allotment and it is active. Therefore, there is a risk of domestic sheep grazing and/or trampling this site. However, use is unlikely due to topography, steep slopes, and lack of forage (rock outcrop and scree). The herder would more likely trail a band through the tundra areas with significant forage or along the Stony Pass 4x4 road. Regardless, after this site was reported by Hogan and Tembrock, Dean Erhard (Ecologist, RGNF) immediately alerted the range personnel on the Divide Ranger District to make a note in the permanent allotment folder to ensure that herders keep bands away from this area.

The occurrence south of Half Peak consists of three populations in close proximity (within a mile); one is in the Middle Pole Sheep and Goat Allotment (which is vacant), and the other two are in the Lost Trail-Carson Sheep and Goat Allotment (which is vacant). A vacant allotment is one that is currently not being used by permitted livestock but could be stocked in the future. Therefore, there is no current risk of domestic sheep grazing and/or trampling this site. However, this could change in the future if a decision is made to restock these allotments. If restocking occurs, then use would likely be limited (but still possible) due to topography, steep slopes, and lack of forage (rock outcrop and scree).

Wildlife use. Wildlife effects to *A. sedifolia* are unknown. No wildlife herbivory has been reported. Trampling has not been documented at the known occurrences but it is possible since sites are readily accessible.

Mining. Mining considers leasable (oil and gas), saleable (sand and gravel), and locatable (hard-rock) minerals. Although there are no known cases where resource extraction is impacting *A. sedifolia*, mining (primarily locatables) presents a possible threat. The ash-flow tuff on which it grows does not contain valuable mineral resources, but other strata in the area do. It is conceivable that future mining projects that disturb or remove ash-flow tuff to access deeper strata could impact habitat or individuals of *A. sedifolia*. Presently, active mining claims exist in the general Stony Pass area. However, none of these directly threaten any of the known occurrences of *A. sedifolia* within the RGNF.

Exotic species. There is no specific information suggesting that *A. sedifolia* is threatened by exotic species. Although weeds are more problematic at lower elevations, some such as *Linaria vulgaris* have been found in the alpine zone. *L. vulgaris* is known to occur in the upper Rio Grande drainage but not near the Stony Pass area. While the probability of infestation by exotics in *A. sedifolia* habitat is small, the potential ecosystem impacts from exotic species must also be considered, such as their effects on pollinators. Also, as a habitat specialist, it might be a poor competitor which may leave it vulnerable to negative impacts from introduced species.

Roads and trails. There is an infrastructure network of roads and trails in the RGNF and it will continue to receive periodic maintenance. Effects of this maintenance (primarily trails) to *A. sedifolia* are unknown. This infrastructure can potentially facilitate new invasive species spread. However, the infrastructure is not known at this time to be causing invasive species spread or threatening known occurrences of *A. sedifolia*.

Natural disturbance. This include events such as avalanches; water erosion; land/rock movement; fire; blowdown; frost-heaving; wind-scouring; and insects and disease. Little is known about these events and their specific relationship with this species. The type, size, frequency, and intensity of disturbances that define the natural disturbance regime are unknown. Since this species is found in gravels it is likely adapted to some degree of substrate movement.

Global climate change. Global climate change is likely to have wide-ranging effects in the future. Projections based on current atmospheric CO₂ trends suggest that average temperatures will increase while precipitation will decrease in Colorado. This will have significant effects on nutrient cycling, vapor pressure gradients, and a suite of other environmental variables. Temperature increase could cause vegetation zones to climb 350 feet in elevation for every degree Fahrenheit of warming. Because the habitat for *A. sedifolia* is already xeric, lower soil moistures in the growing season induced by decreased

precipitation could have significant impacts. If this plant is truly a biennial, then this species is possibly more vulnerable to environmental stochasticity than longer-lived perennial species.

It is unclear how *A. sedifolia* would respond to warmer temperatures. Climate change effects to arthropod populations, both beneficial and detrimental to *A. sedifolia*, cannot be predicted. The importance of either specific or general pollinators to *A. sedifolia* sustainability is unknown.

Atmospheric nitrogen deposition (of both organic and inorganic forms) is increasing worldwide. Relatively low levels of nitrogen enrichment are advantageous to some species but deleterious to others, making it difficult to predict species- and community-level responses.

Overall, based on current information, threats to *A. sedifolia* are considered relatively low. However, this should be tempered with the high number of unknowns about this species. [primary source: Anderson 2004].

6. Key ecosystem characteristics and ecological conditions for recovery, conservation, and viability:

NatureServe (2015) does not rank the known occurrences of this species for viability or it is unknown. The RGNF has a crucial role and responsibility in sustaining this critically imperiled species (see Section 2, Table 1) since all of the known global occurrences are on the RGNF. Presently, all threats appear to be at a relatively low and manageable level. Alpine systems are relatively fragile and are not able to recover rapidly from disturbance.

The RGNF should strive to maintain habitat conditions for *A. sedifolia* by applying suggested management practices as follows:

- 1) Manage habitat. Manage and adjust/reduce, where needed to protect populations, pressures from any management influences (see section 5) found to be creating unacceptable impacts.
- 2) Manage environmental stressors. Continue assessing the RGNF's contribution to global climate change and adaptively adjust actions where permissible within the Forest Service's legal and regulatory authority. Use tools such as the Forest's Climate Change Scorecard to assess impacts and make positive changes where needed. Reductions in the RGNF's contribution to global climate change should benefit *A. sedifolia*.

7. Key uncertainties and information needs/gaps:

To begin a discussion of uncertainty, it is relevant to assess the overall risk to alpine environments at a very broad scale. Alpine habitats account for about 3% of Colorado's landscape. At a very coarse landscape scale, alpine habitats are considered to be effectively conserved in Colorado (CNHP 2011). The likely dominate potential threat to alpine plants at this broad scale is predicted to be global climate change (Neely *et al.* 2009; Rondeau *et al.* 2011). Neely *et al.* (2009) evaluated the overall conservation status of *A. sedifolia* and rated it as "moderately conserved."

This taxon appears to be very rare and little is known about this species. The distribution of *Aliciella sedifolia* is poorly known, so further species inventory work is arguably a high priority. Refining the potential habitat search image for *A. sedifolia* with finer-scale geological data and relevant data such as

slope and vegetation type could expedite new discoveries. Suitable habitat should be searched for additional occurrences. Little is known about the lifecycle of *Aliciella sedifolia* and little is known about the habitat of *A. sedifolia*. Population trend is unknown for *A. sedifolia*.

Rates of reproduction, dispersal, and establishment and the effects of environmental variation on these parameters have not been investigated in *Aliciella sedifolia*. Understanding the reproductive system of *Aliciella sedifolia* will help determine the importance of pollinators for reproduction and population genetics. The relationship and dynamics between management practices and insect visitors to *A. sedifolia* is unknown.

Answers to questions about whether *A. sedifolia* reproduces mostly by asexual means or is instead an obligate or frequent outcrosser could have management implications. If *A. sedifolia* is heavily dependent on self-pollination, then the genetic population structure is more stable than if the species is an obligate outcrosser. Thus, a trail near a primarily asexual population will not be as potentially detrimental as one near a population of obligate outcrossers.

The specific responses of *Aliciella sedifolia* to disturbance and succession are not clear. Depending on the role of disturbance in the maintenance of habitat, and the nature of the disturbance to which *A. sedifolia* is adapted, it may be tolerant of some forms of human disturbance. The importance of herbivory in the ecology of *Aliciella sedifolia* is not understood. Observations made thus far do not suggest that it has a significant impact on biomass reduction and disturbance of the species, but this has not been critically assessed.

Baseline population dynamics and viability are unknown. Growth, survival, and reproduction rates are unknown. Migration, extinction, and colonization rates are unknown. [primary source: Anderson 2004].

The following is an outline of a monitoring approach that could be used to inform the development of the RGNF Forest Plan revision's monitoring plan. Additionally, areas of research opportunity (beyond the scope of the Forest Plan revision) are suggested below based on key uncertainties about this species.

- 1) Monitoring: monitoring priority is a judgment determination based on number of occurrences, potential threats, and conservation status. The priority for this species is thought to be high. This is because there are so few occurrences (Status is a G1/S1—see Table 1) and they are all on the RGNF. Existing management practices are not known to be causing detrimental impact but the known occurrences are seldom visited. Only limited search effort and monitoring have been conducted, so individual occurrences may be vulnerable to unforeseen impacts. Thus, monitoring is suggested as follows:
 - a. Through collaboration with an organization such as CNHP, explore the development of a habitat search image using known data about *A. sedifolia*. Search for and document new species occurrences found on the Forest. Ensure that additional occurrences are recorded in the appropriate electronic database. Also record negative search results in an appropriate electronic database to track habitat that has been searched. Additional occurrences increase the odds in the confidence of assessing population viability, especially with greater geographic separation (e.g., finding occurrences significant

distance away from Stony Pass, if possible). Finding additional occurrences helps inform whether additional monitoring is needed and at what intensity.

- b. Monitor known element occurrences to document presence/absence. Evaluate each occurrence, subject to available funding. Visually document the same populations every 5-7 years (twice in a planning cycle). Consider enlisting an organization such as CNHP to help develop a rapid monitoring technique that is meaningful for trend analysis but is easy to establish and simple to evaluate.
- c. Make visual observations to assess if any impacts (threats) are occurring to known occurrences. Assess the type, source, frequency, and magnitude of the impact. Develop a strategy at the appropriate time for mitigating impacts (eliminate, move, delay, or reduce the impact).

2) Research:

- a. Reproductive biology, autecology, and demography. There are many unknowns about this species' life cycle suggesting numerous areas of potential research. Relationships with pollinators and arthropods is largely unknown (see Anderson 2004 for a detailed discussion).
- b. Genetics. Genetic stochasticities are unknown. An accurate estimate of this species' genetic vulnerability is unknown.
- c. Disturbance. There are unknowns about the role and types of disturbance and their possible affect on *A. sedifolia*.
- d. Environmental uncertainty:
 - i. Continue and/or expand studies on the effects of air pollution on alpine environments; effects to alpine plant communities; and effects specifically on *A. sedifolia*.
 - ii. Continue and/or expand studies on the effects of global climate change on alpine environments; effects to alpine plant communities; and effects specifically on *A. sedifolia*.

8. Key literature:

Anderson, D.G. (2004, August 9). *Gilia sedifolia* Brandeg. (stonecrop gilia): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available:

<http://www.fs.fed.us/r2/projects/scp/assessments/giliasedifolia.pdf>. Date of access: May 2, 2015.

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9. Envirogram:

An envirogram is not available for this species.

10. Map of Known Occurrences:

There are two known occurrences of *A. sedifolia* on the RGNF. One occurrence is on Sheep Mountain and the other occurrence (three points) is south of Half Peak along the northern border of the RGNF (Figure 1).

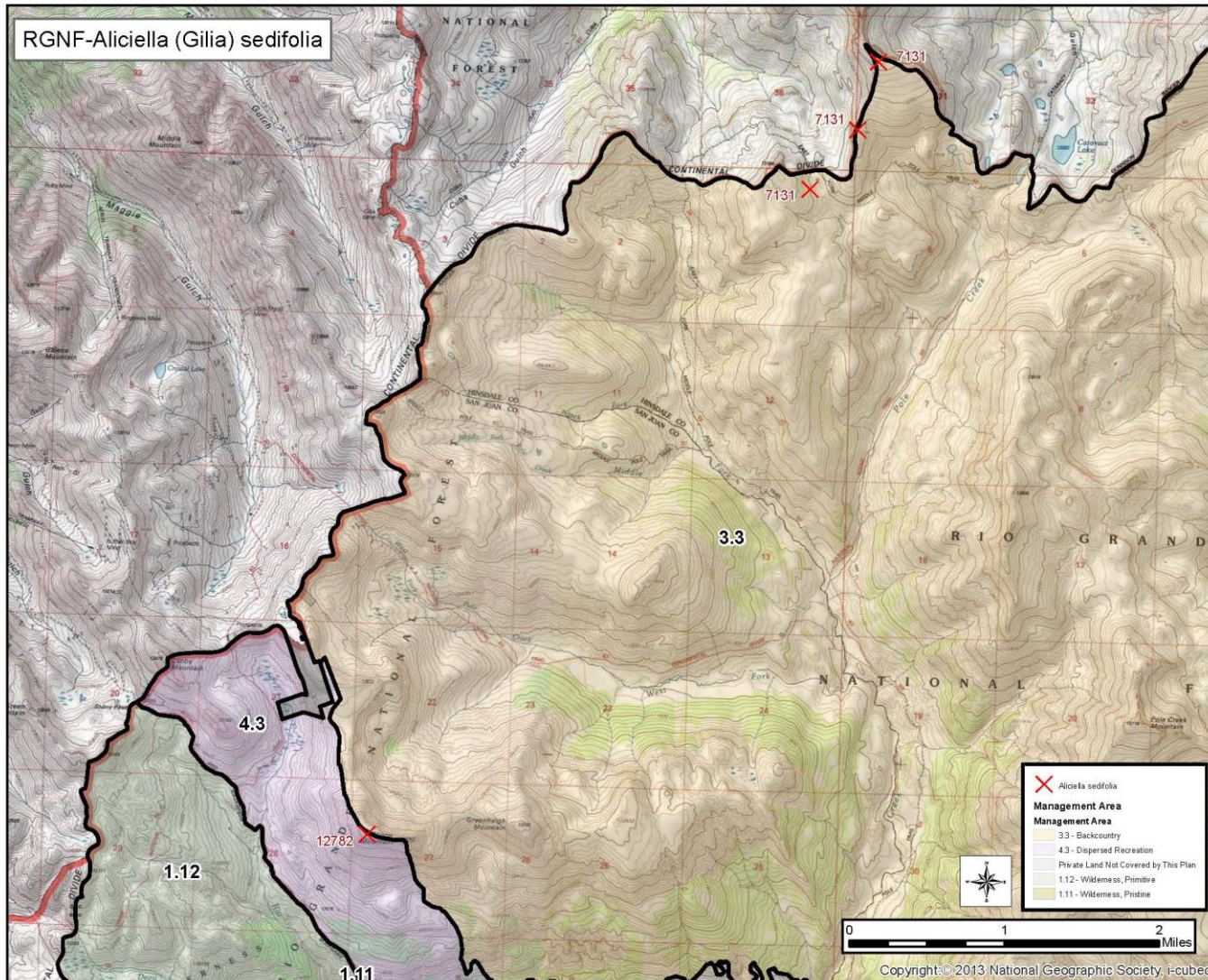


Figure 1. *Aliciella sedifolia* occurrences on the RGNF.