

**Species:** *Oxytropis parryi* A. Gray

Common names – Parry’s oxytrope; Parry’s crazy-weed

**Status:** Table 1 summarizes the current status of this plant by various ranking entities and defines the meaning of the status.

<b>Table 1.</b> Current status of <i>Oxytropis parryi</i>		
<b>Entity</b>	<b>Status</b>	<b>Status Definition</b>
NatureServe	G5	G5—Global ranking of secure - Common, widespread, and abundant. Perpetually secure under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
Colorado Natural Heritage Program (CNHP)	S1	S1- State ranking of critically imperiled - because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation or extinction. Typically 5 or fewer occurrences or less than 1000 remaining individuals.
USDA Forest Service	None	
USDI Fish and Wildlife Service	Not listed	Not federally recognized under the Endangered Species Act (ESA) as endangered, threatened, proposed, or candidate species.

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.

**Distribution, abundance, and population trend on the planning unit:**

According to the USDA PLANTS database and NatureServe *Oxytropis parryi* is known from California, Colorado, Idaho, Montana, New Mexico, Nevada, Utah and Wyoming. In Colorado it’s known from Boulder, Clear Creek, Costilla, Huerfano, Lake, Park, Rio Blanco, Saguache and Summit Counties (USDA NRCS 2015, NatureServe 2015). In Region 2 it is known from the Arapaho-Roosevelt, Routt and White River National Forests (CNHP 2015 and RM Herbarium 2015).

The species is listed as S2 (imperiled) in Wyoming, but it is not tracked by the Wyoming Natural Diversity database.

There is one CNHP element occurrence record (historical) of *Oxytropis parryi* within the planning area. There is a question as to if the occurrence is on NFS lands. The GIS point is outside of the planning area, the element occurrence report indicates that it may actually be on BLM-administered land. There are an additional six occurrences reported for Colorado, outside the planning area (CNHP 2015).

There are no data on population trends for *Oxytropis parryi*. The historical occurrence that may be within the planning area has not been revisited. Population sizes have not been estimated and multi-year population or demographic monitoring has not been initiated for any site.

#### **USFS Corporate Database Habitat Type Associated with the Species:**

*Oxytropis parryi* is a montane to alpine species that occupies “rocky slopes and saddles above timberline and open places in high-montane parkland” (Barneby 1989 as reported in Heidle 2002). The element occurrence report for the historical occurrence in the planning area describes the habitat as “grassy slopes, coniferous covered tops”, 9,400 – 9,800 feet (CNHP 2015). The GIS data for the occurrence show it as outside the RGNF boundary, so there is no information pertaining to the Land Type Association (RGNF GIS data).

#### **CNHP Ecological System of the Southern Rocky Mountains Ecoregion:**

There is not enough information about this species to determine a CNHP Ecological System.

#### **Brief description of natural history and key ecological functions:**

*Oxytropis parryi* is a small herbaceous perennial with 1-4 leafless stems that are 2-7 cm high and arising from a branched rootcrown. The pea-like purple flowers are clustered at the tip of the stem. The united lower petals, or keel, are shorter and have a prolonged point at their tip. The black-hairy calyx has 5 narrow lobes and is 3/4 the length of the corolla. The flowers appear immediately after snowmelt.

Information about *Oxytropis parryi*, including life history stages, population structure, longevity, mortality, pollination biology and seed biology, are not available. There is no information regarding population parameters or demographic features, such as metapopulation dynamics, life span, age at maturity, recruitment, and survival. Demographic parameters, such as recruitment and survival rates, are not currently available so there are no definitive data regarding the vital rates that contribute to species fitness.

There is insufficient knowledge about *Oxytropis parryi* to determine what factors limit population growth. Heidle (2002) noted that the “high, rocky habitat is probably resilient”. But population growth or establishment could be limited by competition with other species (e.g., invasive species), inadequate genetic variability for long-term persistence, ineffective pollination, or reduced habitat availability, as a result of human-related changes or environmental fluctuations. The rate at which colonization and establishment of new populations occurs is unknown and it is unclear what type, size, intensity, or frequency of disturbance regime is important. Genetic concerns, such as the amount of genetic variability between and within the occurrences, have not been studied.

### **Overview of ecological conditions for recovery, conservation, and viability:**

There are too many unknown concerning this species to determine ecological conditions for recovery, conservation and viability. As mentioned above, the habitat identified for the species are likely resilient, however, we do not know if disturbance has a positive or a negative impact on the species.

Occurrences of *Oxytropis parryi* may be at risk from environmental or demographic stochasticity due to the small neighborhood size of populations. Threats to reproductive processes (e.g., inadequate pollinator activity, possible outbreeding depression through a hybridization event, lack of safe sites for germination or seedling establishment) as well as unknown barriers to gene flow may pose possible risks to this species.

Although there are no reports of non-native invasive plant species specifically affecting *Oxytropis parryi*, invasive species are always a threat to rare plants. The potential for infestation at higher altitudes is reduced, however the potential ecosystem impacts from invasive species, such as their effects on pollinators, must also be considered.

As a species found at high altitudes, global warming could be a threat to *Oxytropis parryi*. Climate models project earlier, faster snowmelt along with decreased summer precipitation and increased summer temperatures. Theoretically, snow cover could be reduced in extent, duration, and depth. How such changes would impact *O. parryi* is unknown.

Overall, based on current information, threats to *Oxytropis parryi* are considered relatively low, but this should be tempered with the high number of unknowns for this species.

### **Key uncertainties and information needs/gaps:**

There are a large number of information gaps and research needs for this species. Re-visiting the historical occurrence and determining if it is on NFS lands, estimating current abundance, assessing imminent threats, measuring demographic parameters, studying genetic variability, and determining ecological needs and limitations are of primary importance. The following suggestions are ordered from inventory activities (to determine the current status) to more complex biological studies (to help understand the species):

- Re-visiting and detailed mapping of the historical occurrence
- Surveying for new populations
- Defining and measuring habitat and microhabitat characteristics
- Measuring demographic parameters using long-term monitoring plots
- Analyzing genetics to assess gene flow and variability throughout range
- Conducting studies related to reproductive biology, including breeding system, germination trials, dispersal capabilities, pollinator surveys, mycorrhizal associations, and seedbank analyses.

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 low. This is primarily due to the global status of secure (see Table 1) and very limited occurrence (if any) on the RGNF. Existing management practices are not known to be causing detrimental impact. 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. Search for and document new species occurrences found on the Forest. Ensure that additional occurrences, as well as negative search results, are recorded in the appropriate electronic database. Additional occurrences increase the odds in the confidence of assessing population viability, especially with greater geographic separation. Finding additional occurrences helps inform whether additional monitoring is needed and at what intensity.
  - b. Monitor any new element occurrences to document presence or absence. Evaluate each occurrence based on appropriate database protocols. 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 are occurring to any new 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.
  - b. Genetics - 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 effects on *Oxytropis parryi*.

**Key literature:**

Colorado Natural Heritage Program (CNHP). 2015. Element Occurrence Records for the Rio Grande National Forest. Unpublished data on file at the Supervisor's Office for the Rio Grande National Forest. Monte Vista, Colorado. Data compiled 2/2015.

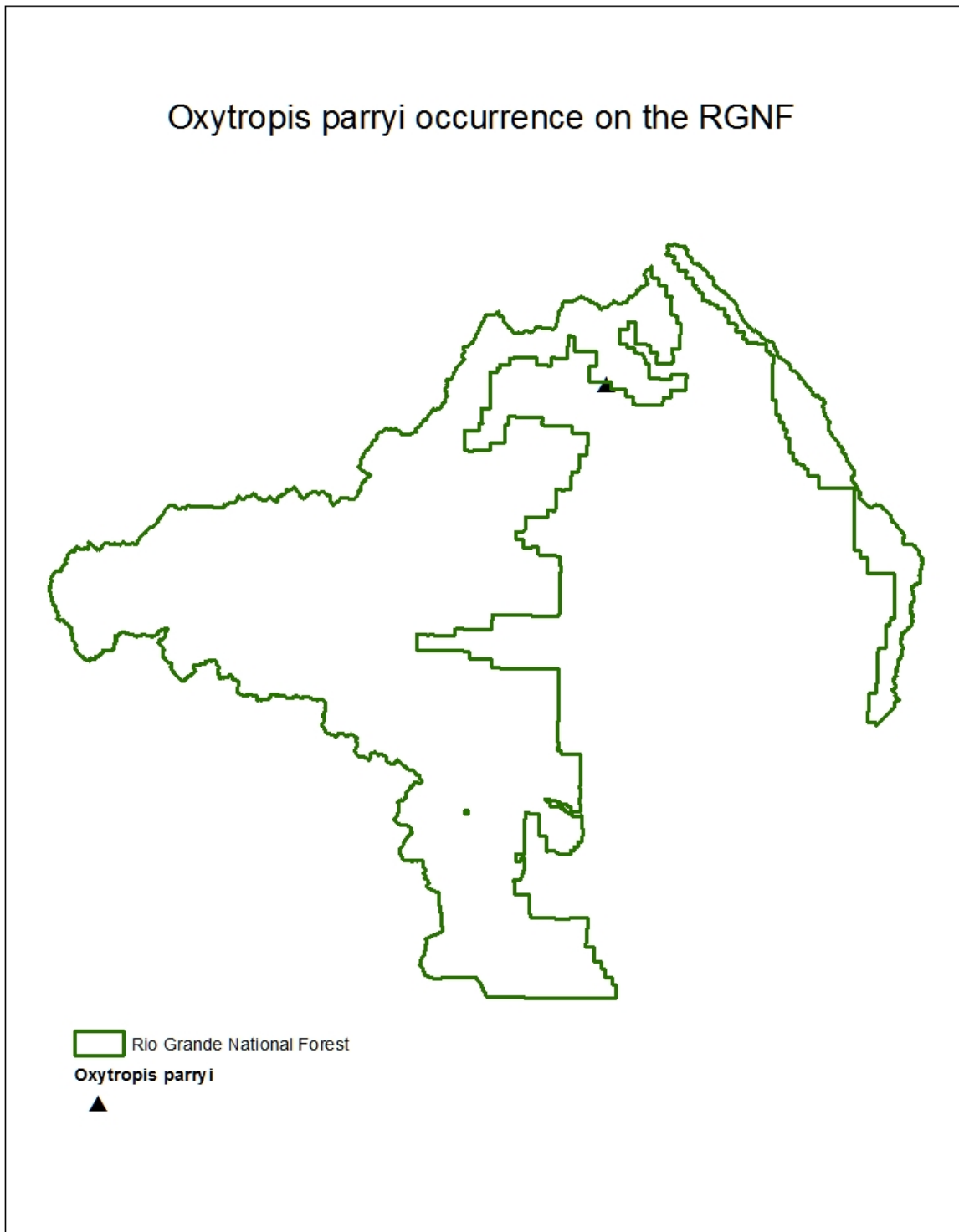
Heidel, Bonnie. 2002. Region 2 Sensitive Species Evaluation, *Oxytropis parryi*. June 4, 2002.

NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. (Accessed: October 1, 2015).

Rocky Mountain (RM) Herbarium. 2015. University of Wyoming. Online at <http://www.rmh.uwyo.edu/home.php> Database Search results for *Oxytropis parryi* downloaded November 3, 2015.

USDA Natural Resource Conservation Service (NRCS). 2015. The PLANTS Database (<http://plants.usda.gov>, 1 October 2015). National Plant Data Team, Greensboro, NC 27401-4901.

**Map of Known Occurrences:**



**Figure 1.** *Oxytropis parryi* occurrence on the RGNF.