

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Plant Abstract

Element Code: PDSCR1L5G1

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Penstemon rydbergii* var. *aggregatus*
COMMON NAME: Meadow Beardtongue, Rydberg's Penstemon
SYNONYMS: *Penstemon rydbergii* subsp. *Aggregatus*, *P. aggregatus*
FAMILY: Scrophulariaceae

AUTHOR, PLACE OF PUBLICATION: Holmgren, Noel Herman. *Brittonia* 31(1): 106. 1979.

TYPE LOCALITY: Wyoming: Uinta County: 1-2 miles S of Evanston. 7000 feet.

TYPE SPECIMEN: Rocky Mountain Herbarium, Univ. of Wyoming. RM 4142 (Isotype of *Penstemon aggregatus*). F.W. Pennell, #5918. June 26, 1915.

TAXONOMIC UNIQUENESS: With over 250 recognized species, *Penstemon* is the third largest genus of flowering plants found in the interior west, following *Astragalus* and *Eriogonum*. Except for one minor species, the genus *Penstemon* does not occur naturally outside of North America. *P. rydbergii* has three recognized varieties: *P.r. var. aggregatus*, *P.r. var. rydbergii*, both of which occur in Arizona, and *P.r. oreocharis*.

DESCRIPTION: A perennial herb to woody subshrub, 2 to 4 dm tall with well-developed basal leaves and stems arising from a woody caudex. Flowers blue to violet or purple with a densely golden-yellow bearded staminode (EOL 2015).

AIDS TO IDENTIFICATION: The following key is taken from Holmgren 1984:

Anther sacs opening throughout; inflorescence or corolla or both glabrous externally.

Leaves broader than 1.7 mm, not terete or appearing so.

Leaves green, not particularly glaucous, thin.

Corolla 10-20 mm long, the throat somewhat ampliate, mostly 3-5 mm wide when pressed; anther sacs 0.6-1.1mm long, ovate to oblong, longer than wide, not fully explanate; inflorescence often less prominently fascicled, the fascicle(s) less densely flowered, mostly 3-4 cm in diameter.

Calyx 3-9 mm long, the lobes long –acuminate to caudate, the broadly scarious margins usually prominently erose to lacerate; basal tufts of leafy sterile shoots often present.

ILLUSTRATIONS:

Herbarium Mounts:

<http://swbiodiversity.org/seinet/taxa/index.php?taxon=Penstemon%20rydbergii%20var.%20aggregatus>.<http://eol.org/pages/1283021/media>.

Photos:

http://www.fs.fed.us/wildflowers/plant-of-the-week/penstemon_rydbergii.shtml.

TOTAL RANGE: Rocky Mountain States: Idaho, Wyoming, Montana, Utah, Colorado and Arizona.

RANGE WITHIN ARIZONA: Kaibab Plateau, Coconino County, from about 12 air miles south of Jacobs Lake to the North Rim of the Grand Canyon.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Perennial herb to subshrub.

PHENOLOGY: Flowers collected from Arizona specimens from June 20 – July 29.

Seed normally ripens from mid-August to mid-September and is mature when seed capsules dry and become hard and dark in color (Ogle et al 2013).

BIOLOGY: The small flowers of *P. rydbergii* are apparently adapted for pollination by small bees that crawl into the corolla tube to drink nectar and pick up, transport, and deposit pollen in the process (Fertig 2015).

Adaptation: *Penstemons* do best on well-drained soils. Most ecotypes do well on infertile, disturbed soils. They have excellent cold winter and drought tolerance. They will tolerate weakly saline to weakly acidic sites. They are usually found in open areas, but will tolerate semi-shaded conditions. They are not tolerant of fire, but are fire resistant due to leaves staying green with relatively high moisture content during the fire season (EOL 2015).

HABITAT: Moderately moist to dry slopes, meadows and stream banks (EOL 2015).

ELEVATION: 8200 – 9100 feet (2500-2775m) in Arizona. Range-wide: 4265 – 10825 feet (1300 – 3300m.)

EXPOSURE: They are usually found in open areas, but will tolerate semi-shaded conditions.

SUBSTRATE: Dry gravelly soil, deepish soils and Kaibab Limestone were mentioned from some Arizona collections.

PLANT COMMUNITY: Meadows within Mixed Conifer forests. Associated species: *Pinus ponderosa*, *Pseudotsuga menziesii*, *Picea pungens*, *Abies concolor*, *Populus tremuloides*, *Penstemon pseudoputus*, *P. rydbergii*, *Lupinus*, *Gentiana parryi*, *Poa*, *Festuca*, *Deschampsia caespitosa*, *Stipa*, *Potentilla hippiana*, *Hymenoxys subintegra*, *Erysimum capitatum*, *Artemisia campestris*, *Eriogonum racemosum*, *Erigeron formosissimus*, *Heterotheca villosa*, *Achillea lanulosa*, *Carex microptera*, *Carex athrostachya*, *Symphotrichum foliacium*, *Phleum pratense*, *Veronica peregrina*, *Veronica americana*, *Castilleja lineariifolia*, *Solidago*, *Rumex acetosella*, *Prunella vulgaris*, *Agastache pallida*, *Epilobium ciliatum*, *Juniperus communis*, *Trifolium wormskioldii*, *Sedum*, *Artemisia dracunculoides*, *Blepharoneuron tricholepis*, *Carex bebbii*, *Antennaria parvifolia*, *Carex siccata*, *Juncus longistylis*, *Erigeron flagellaris*, *Ranunculus flammula*, *Pseudocymopterus montanus*, *Thlaspi montanum*, *Silene scouleri*, *Erysimum capitatum*, *Cryptantha setosissima*, *Hieracium fendleri*, *Ranunculus cardiophyllus*, *Hesperostipa comata*, *Polygonum*.

POPULATION HISTORY AND TRENDS: Unknown for Arizona. *P. rydbergii* var. *aggregatus* has been collected in Arizona only from the Kaibab Plateau. There are about one dozen known sites. Because the variety has been collected at several of these sites over many decades, it seems as if the plant is persistent. For the two collections where abundance was noted, it was either rare or “locally scattered,” suggesting that it may not be very common. NatureServe lists the variety as critically imperiled in Arizona.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None.
STATE STATUS: None.
OTHER STATUS: None.

MANAGEMENT FACTORS: None specified.

PROTECTIVE MEASURES TAKEN: None specified. More than half of the known collections in Arizona occur within the Grand Canyon National Park, which offers some level of protection.

SUGGESTED PROJECTS: Survey other meadow settings at 8000-9000 foot elevations to determine if the distribution within Arizona is wider than that currently documented. If these surveys are conducted during the July flowering time, this showy plant may be readily found. Collect information on abundance as well.

LAND MANAGEMENT/OWNERSHIP: USDI National Park Service, Grand Canyon National Park (7 collections), and USDA Forest Service Kaibab National Forest (5 collections).

SOURCES OF FURTHER INFORMATION

REFERENCES:

- Encyclopedia of Life (EOL), accessed 8/3/2015, <http://eol.org/pages/1283021/details>.
- Fertig, Walter. Rydberg's Penstemon, USDA Forest Service Plant of the Week. http://www.fs.fed.us/wildflowers/plant-of-the-week/penstemon_rydbergii.shtml. Accessed 8/4/2015.
- Holmgren, Noel H. 1979. Nomenclature changes in some intermountain Penstemons (Scrophulariaceae). *Brittonia* 31(1): 104-107.
- Holmgren, N.H. 1984. In: Cronquist, A. et al. *Intermountain Flora*. Vol. 4. New York Botanical Garden, N.Y. pp. 370-455.
- JStor| Global Plants, accessed online 07/31/2015, <http://plants.jstor.org/stable/10.5555/al.ap.specimen.rm0004142>.
- NatureServe Explorer an online Encyclopedia of Life, accessed 8/04/2015, <http://explorer.natureserve.org/>.
- Ogle, D., Peterson, S., St. John, L. 2013. Plant Guide for Rydberg's penstemon (*Penstemon rydbergii*). USDA-Natural Resources Conservation Service, Plant Materials Center. Aberdeen, Idaho 83210.
- Tropicos, accessed online 07/31/2015, <http://www.tropicos.org/Name/29201476>.
- Welsh, Stanley L., N. Duane Atwood, Sherel Goodrich and Larry C. Higgins, eds. 1993. *Utah Flora*. 2nd ed., revised. Brigham Young University, Provo, UT.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

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ADDITIONAL INFORMATION: Many books mistakenly translate the Latin name *Penstemon* as meaning "five stamens", but this is incorrect. The "pen" in *Penstemon* comes not from penta (five) but from the Latin paene meaning "nearly" or "almost", while stemon is derived from Greek for "thread". "Nearly a thread" is a reference to the staminode, which is almost a functional stamen. Rydberg's penstemon is one of nearly two dozen plant species named in honor of Per Axel Rydberg, a prominent Swedish-American botanist of the late 19th and early 20th centuries (Fertig 2015).

A number of penstemons are seeded primarily for soil stabilization on depleted, disturbed and erosive areas for erosion control and as ornamentals. These include low penstemon (*Penstemon humilis*), Rydberg penstemon (*Penstemon rydbergii*), and thicketleaf penstemon (*Penstemon pachyphyllus*). No cultivar releases are known to have been made (EOL 2015).

Rydberg's penstemon is one of the more palatable species of **penstemon** and provides forage for wildlife, cattle and sheep (Ogle et al 2013).

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