

BLUESTEM PENSTEMON

Penstemon cyanocaulis Payson
Plant Symbol = PECY4

Contributed by: USDA NRCS Colorado Plant Materials Program and the Upper Colorado Environmental Plant Center (UCEPC)



Figure 1: Bluestem Penstemon detailing the wavy leaf bases. Photo by Suzette Jones, Colorado State University Extension (CSU) Native Plant Master Program.

Alternate Names

Common Alternate Names: *Payson penstemon*, *dusty penstemon*, *bluestem penstemon*, *bluestem beardtongue*, *dusty beardtongue*.

Uses

Pollinator: As with other species of *Penstemon*, the showy flowers of bluestem penstemon attract numerous pollinators including bumble bees (*Bombus* spp.), mason bees (*Osmia* spp.), and mining bees *Andrena* spp. (Cane, 2012).

Wildlife habitat: Bluestem penstemon may be used in a mix for wildlife habitat enhancement and restoration efforts post-fire and mine reclamation (Ogle, et al, 2011). *Penstemon* species may be utilized by small birds for cover and seed and are considered desirable forages for deer and antelope (Ogle, 1996).

Landscaping: This species may be used in xeriscaping and other low-water-use landscaping. It is a drought-tolerant perennial and may be grown in full sun or

partial shade. It is also well suited for roadside and other beautification plantings.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Description

General: Figwort Family (*Scrophulariaceae*), however, taxonomic revision based on DNA analysis places *Penstemon* in the Plantaginaceae Family, a closely related plant family (Albach, et al., 2005; Wolfe et al., 2006; Stevens 2012; and Freeman, 2012). The genus name *Penstemon* is derived from the Greek "pente" (five) and "stemon" (stamen), with the distinctive feature of the genus, the prominent infertile stamen, or "staminode."



Figure 2: Bluestem penstemon detailing the wavy leaf bases. Photo by Suzette Jones, Colorado State University Extension (CSU) Native Plant Master Program.

Bluestem penstemon is a cool-season, short-lived perennial forb, 8" to 1.5' (2 to 4.5 decimeters) tall, with showy blue flowers. One to several stems arise from a short-branched woody caudex (woody base of an otherwise herbaceous perennial). Stems are glabrous and ascending to erect. Leaves are opposite, mostly basal, and commonly wavy-margined (crisped) (Weber, 2001) and not folded (Figure 2). The basal leaves are ob-ovate to ob-lanceolate narrowed to a petioled (stalked) base and the upper leaves are oblong to ob-lanceolate and sessile to

clasping (Welsh, et al., 1987). The cymose (opposite-branched flower cluster with a terminal flower) inflorescence is glabrous and arranged in pairs at the nodes, in a false whorl, called a verticillaster. Cymes are 1-4 flowered. The at least partially united sepals (green) are subtended by 5 blue to lavender lobed petals. Corolla is bilabiate with a 2-lobed upper lip and 3-lobed lower lip. Flowers contain 4 fertile stamens and an infertile sparsely yellow-bearded staminoid. Anther sacs are pubescent and open partially at anthesis (Hitchcock et al., 1959). Flowers are ovate to broadly lanceolate, corolla (petals) approximately 0.64 to 0.96 in. (16-24 mm) long, with lavender-blue tube and throat (Cronquist, et al., 1984). The fruit (a capsule) is mature when it turns brown and begins to open, which typically occurs 5 to 8 weeks after flowering.

Welsh, et al (1987), differentiates bluestem penstemon from *P. strictiformus* by its broader and more obtuse and crisp leaves, its shorter and more hispid pubescence of the anthers, and by the ovate to broadly acute shape of the calyx lobes. *P. strictiformus* occurs in similar habitat as bluestem penstemon but more to the south.

Flowering season is from April to June. Fruit is a two-chambered capsule.

Ethnobotany

Species of *Penstemon* have been utilized by Native American tribes for cultural, medicinal and culinary purposes. Uses range from a beverage for tea, to making blue paint for moccasins and spear heads, and as remedies for snakebite, toothache, and vomiting (Native American Ethnobotany Database, 2012).

Distribution: Bluestem penstemon occurs in southwestern Colorado and eastern Utah in the canyonlands of the Colorado Plateau. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Bluestem penstemon is found scattered as individuals or in dense stands on high and dry mesas (Schultz et al., 1987). It is locally common on canyon slopes among Gambel oak (Holmgren, 1979) and occurs on cryptogamic soils, rimrock pavement, sandstone, and canyon slopes and walls. It occurs in elevations from 4,600 to 7,500 ft. (1,400m to 2,300m) in 6" to 15 inches precipitation zones.

Adaptation

Bluestem penstemon is adapted to occur in Pinyon-juniper and Sage communities, where it thrives in moderately coarse sandy soils with a neutral pH. It is adapted to dry wash and adjacent hillsides and to barren, granitic gravel. It occurs with scattered *Artemisia ssp.*, *Yucca ssp.*, *Purshia ssp.*, *Rosa ssp.*, *Ephedra ssp.* and *Cercocarpus ssp.* in red sandstone, sandstone benches above creeks, and sandy soils. It also grows with

ponderosa pine, Gambel's oak, *Amelanchier ssp.*, and antelope bitterbrush in dry-wash areas and adjacent hillsides (Hartman, 2012).



Figure 3: Photo by Steve Parr, UCEPC Manager taken of production fields of bluestem penstemon in 2009.

Establishment

Bluestem penstemon is a member of the section of Penstemons which reproduce exclusively from seed (Kitchen and Meyer, 1991). Plant seed to a depth of 1/8" to 1/4" into a well-firmed and weed-free seed bed at a full seeding rate of 11lb/ac (2kg/ac), for 25 to 30 Pure Live Seed (PLS) per linear foot with 22" to 36" row spacing for cultivation. There are approximately 656,000 seeds per pound. When used as a component of a seed mix, adjust to the percent of mix desired. To address the small seed size, add rice hulls or cracked grain to provide more accurate seed flow through planting. For greenhouse production, sow under thin cover 12 weeks at 40°F (4°C), move to 50°F (10°C) for germination (Swayne, 2000). Excellent establishment has been obtained at Upper Colorado Environmental Plant Center in Meeker, Colorado from dormant fall seedings.

Management

Bluestem penstemon should be used as component of seed mixtures for pollinator plantings and restoration projects throughout its range. Management strategies should be based on the key species in the established plant community. Grazing should be deferred on seeded lands for at least two growing seasons to allow for full stand establishment (Ogle, 2011).

Pests and Potential Problems

Bluestem penstemon is susceptible to soil-borne fusarium and rhizoctonia root rot and smut infections (Tilley et al., 2012). These infections can be prevented by limiting irrigation and increasing spacing between plants under cultivation.

Environmental Concerns

Bluestem penstemon is a native plant species in western North America and has no known negative impacts on wild or domestic animals. It is not considered a weedy or invasive species but can spread to adjoining vegetative

communities under ideal conditions. It co-exists with other native species and adds biodiversity to plant communities.

Seeds and Plant Production

Capsules do not retain seed for more than two weeks beyond maturation. Fields for seed production can be established from direct seeding or from transplanting greenhouse grown containerized stock. Direct seeding should take place in the fall to allow for natural stratification of the seed (Meyer and Kitchen, 1994 and Tilley, 2012). In greenhouse plant production, treatment of seed with gibberellic acid (GA₃) may reduce the stratification requirement (Kitchen and Meyer, 1991). After collection, the thoroughly dried capsules may be placed in a standard freezer for 48 hours to remove insect pests (Winslow, 2002).

Cultivars, Improved, and Selected Materials (and area of origin)

The Uncompahgre Partnership (UP) Native Plant Programs, UP San Miguel Germplasm Bluestem penstemon, was collected at Burn Canyon located in western Colorado at 6979 feet (Free, 2012). Common wild land collected seed is available from commercial sources. There are currently no commercial releases of blue penstemon.

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For more information about this and other plants, please contact your local NRCS field office or Conservation District at <http://www.nrcs.usda.gov/> and visit the PLANTS Web site at <http://plants.usda.gov/> or the Plant Materials Program Web site <http://plant-materials.nrcs.usda.gov>.

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