

Add plucky, pollinator-friendly penstemons to your garden

For people looking for native wildflowers to grow in their gardens, there is no better choice than penstemons. There are many beautiful species to choose from, and each attracts a multitude of pollinators, including bees and hummingbirds. Plus, the majority of species are adapted to harsh, dry landscapes—perfect for Wyoming!

The common name penstemon is also the scientific name of the genus. *Penstemon* is the most diverse genus of wildflowers that is restricted to North America. Currently, about 280 species are recognized by botanists and more than 40 of them are native to Wyoming.

Defining characteristics

Penstemons may grow up to 6 feet in height, or barely an inch, depending on the species. Flower colors range from white to pinks, reds, purples, blues, and even yellow. Penstemon leaves are dark green through pale green to silvery blue-green.

What makes these diverse wildflowers all penstemons? They all share an unusual feature that is easy to see when you know what to look for—the staminode.

Stamens are fertile male reproductive structures, consisting

of the anther, where pollen is produced, and a stalk that attaches the anther to the flower. A staminode is a sterile structure that is evolutionarily derived from a stamen. It is frequently long enough to extend beyond the floral tube and is often hairy. This feature is obvious enough in some penstemons to provide the other common name applied to members of the genus: beardtongue.

The purpose of the staminode is not known for sure, but it is thought to help lead or position bees inside the flower so that pollination is completed efficiently.

The birds and the bees

The flowers of penstemons have evolved to accommodate bees in other ways, too. The petals of many penstemons are arranged such that the lower petals form a landing pad,

Pollen wasps

Another interesting penstemon pollinator is the pollen wasp, a wasp that looks like a yellowjacket but acts like a bee. Unlike other wasps, which are carnivores, pollen wasps provision their nests with pollen. One species of pollen wasp is a beardtongue specialist, and can be very common in penstemon gardens. Look for its mud nests on the sides of rocks close to the garden.



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▲ *Palmer's penstemon*, showing its large, golden-haired staminodes and dark nectar guides. This individual was photographed in Nevada, part of its native range.

▼ A female pollen wasp constructs a mud nest cell by cell. Each cell is provisioned with pollen on which she lays her egg; she then seals the cell and builds another.



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which is essential for bees, since they cannot hover above a flower.

The purple lines in the flowers of Palmer's beardtongue and the blue stripes of *P. virens* flowers are called nectar guides. They attract bees and point them toward the back of the flower where the nectar is located. As the bees crawl in and back out, they leave pollen on the stigma to fertilize the eggs and gather pollen to take to the next flower.

This tight association of penstemons and bees probably accounts for the large number of *Penstemon* species. The center of North American bee diversity is the American Southwest, the same place that *Penstemon* has its greatest diversity.

Most penstemons are adapted to harsh and dry climates; in those difficult habitats, efficient pollination of the few flowers produced during a restricted bloom season is essential for survival. Plant and flower shape, size, and color evolve and diversify rapidly under selection by pollinators.

Despite this close association, a few types of penstemon have left bees behind and taken up with hummingbirds. Hummingbird-pollinated beardtongues are easily recognized by their bright red flowers, though it is not uncommon to see hummingbirds also visiting purple penstemons. Red-flowered species generally have longer, narrower floral tubes than non-red species, which exclude bees but fit hummingbird beaks very well; they also lack the "landing pad," further excluding bees.

Beardtongues in the garden

Although we have more than 40 native species in Wyoming, most are not in cultivation. But that's okay! Many species, selections, and hybrids can be found in nurseries. Even species from as far away as New Mexico may grow well in Wyoming—just be sure to select ones suitable for your USDA plant hardiness zone. In fact, if we were to limit ourselves to only Wyoming

natives, we would have to forgo the hummingbird-magnet red species.

To grow penstemons successfully, garden conditions should mimic the plant's native habitat to the extent possible—generally speaking, this means growing them in lean, dry soils. Even in the best conditions, most beardtongues are short-lived perennials, typically surviving three to four years, then dying after a stunning floral display.

Fortunately, the varieties that are most successful in the horticultural trade are also most successful in near-standard garden conditions. Wyoming native Rocky Mountain penstemon, *P. strictus*, is a good example. While it can develop mildew if overwatered (especially late in the summer), it can tolerate moderate watering and provide a flush of 2-foot-tall stems of purple flowers that will attract people, insects, and hummingbirds. Like most penstemons, it has a short bloom season, usually the month of June. It reseeds readily; to control



A bumblebee comes in for a landing on Rocky Mountain penstemon.



Penstemon glaber is found across Wyoming, except in the southwest deserts. Can you find the painted lady caterpillar on this garden specimen?



This individual of *P. glaber* shows its hairless (glabrous) staminode amid striking nectar guides.

this tendency, remove the flower spikes after blooming.

Nurseries that specialize in native plants may have additional blue-flowered beardtongues. *P. glaber*, with larger, sky-blue flowers, and *P. virens*, with smaller, densely clustered flowers, are both worth looking for. *Penstemon caespitosus*, mat penstemon, grows only a couple inches tall, but spreads across the ground. These three species have more particular requirements than Rocky Mountain penstemon and prefer well-drained soils.

For red displays, consider firecracker beardtongue (*P. eatonii*) and beardlip beardtongue (*P. barbatus*). Firecracker beardtongue is native to states southwest of Wyoming, extending nearly to the Wyoming-Utah border. Beardlip beardtongue's range includes the southern Colorado mountains and extends through southern Utah, Arizona, and much of New Mexico. Both of these species can be grown successfully in

Resources

Penstemons, by Robert Nold. This is the number one book about the genus, with information on growing and descriptions of species. The taxonomy is a bit dated, but the information is not.

Plants with Altitude: Regionally Native Plants for Wyoming Gardens, University of Wyoming Extension. Download a free copy at <https://bit.ly/wy-native-plants> or purchase a hard copy at <https://bit.ly/plants-with-altitude-book>.

Dr. Andrea Wolfe at The Ohio State University provides species descriptions with fabulous photos, all from the perspective of an evolutionary biologist, at <https://bit.ly/wolfe-lab-penstemon>.

The American Penstemon Society website provides information on all things penstemon at penstemons.org.

The Rocky Mountain Herbarium at the University of Wyoming contains the world's largest collection of Rocky Mountain plant specimens. Visit rockymountainherbarium.org to find the locations of penstemons by searching the database by location name, polygon, or species name (scientific names only).

Wyoming and can be found in most well-stocked nurseries.

Palmer's penstemon grows to 6 feet in height and is attractive to large bees and hummingbirds. It is sometimes used in highway mixes, so you may see it in odd places.

Palmer's penstemon is also unusual amongst penstemons in having scented flowers.

Growing from seed

The above suggestions touch only the tiniest tip of the *Penstemon*



Jennifer Thompson

The long floral tube, reflexed lower lip, and bright red color make *P. barbatus* a hummingbird magnet.



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Mat penstemon has full-sized flowers on low, spreading stems. It is native to the basins of southwest Wyoming and south into Arizona.



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Penstemon virens is restricted to the Colorado Front Range and southeast Wyoming. Here, it is on full display along the side of a Wyoming highway.

iceberg. Many other desirable species and hybrids can be found in nurseries, and vastly more choices are available if you are willing to grow from seed, which is not difficult.

Beardtongue seeds require an extended period of cold to break seed dormancy; that period varies from about 6 to 12 weeks depending on species. However, unless you choose to take a scientific approach to germinating seeds, the exact length doesn't matter—any plant that tolerates life in Wyoming can tolerate 12 or more weeks of cold!

Seeds can be sown directly in the garden or into pots (left outdoors) in late fall for spring germination. Germination of some species

improves as seeds age, so don't despair if germination rates are low the first year.

Then again, you can forgo penstemons in your garden and instead spend your days seeking them in the wild. That is where you will find the greatest diversity and the most spectacular displays. Without a doubt, once you discover penstemons, you too will become a penstemaniac!

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Firecracker beardtongue serving as a host for Indian paintbrush in a Wyoming garden.