

SUBGENUS: *HABROANTHUS*

Section: *Glabri*

CULTIVATION OF THE SUBGENUS, SECTION and EACH SPECIES

Table 3

[subgenus]	<i>HABROANTHUS</i> (51)
[section]	<i>Glabri</i> (44) <i>Elmigera</i> (7)



Penstemon cyaneus

GENERAL DESCRIPTION OF PENSTEMONS IN THIS SECTION

“Penstemons in section *Glabri* have evolved into drought-tolerant species that are excellent choices for the dry sunny garden... most are quite easily grown in drier climates.” (Nold, Robert. “Penstemons”)

Location central and northern Rocky Mountains, Great Plains, and Intermountain regions; “...classic dryland species of the western desert states.”¹ The section is uniform; flowers almost always a dazzling shade of blue; leaves have smooth edges. About ¼ in this section are small alpine types. Telling one from another can be difficult. Use a magnifying glass and an Identification Key, if you are trying to distinguish one from another.

Habitat most altitudes and terrains

Foliage Plants are herbaceous (green colored, not woody) but have a woody base

Shape usually tall, short species may be tufted or matforming



Penstemon cyaneus

Leaves entire (not toothed); broad to narrow; narrow leaves remain narrow
basal leaves are evergreen

Plant in bloom Long bloom season

Corolla (flower)

Color blue to purple, “Some of the most beautiful blues and purples in the plant world.”²

Size fairly large flowers

Shape wide throats, bell-shaped

¹ Way, D. and James, P. *The Gardener’s Guide to Growing Penstemons*.

² Lindgren, D. and Wilde, E. *Growing Penstemons: Species, Cultivars and Hybrids*.



Penstemon cyaneus

Inflorescence (arrangement of flowers along flowering stalk; all the flowers on the stalk):

Height varies from small (2-3") to tall (2-3')

Shape upright spikes, usually long, often **secund** (the flowering stalk, called the inflorescence, has flowers arranged on just one side of it) or **subsecund** (almost secund), often **wand-like** (virgate)

Calyx (sepals on underside of flower, collectively; outermost part of the flower) usually ovate, often short

Cultivation needs³

Ease of cultivation most are easy, particularly in areas in or near native habitat; moderately easy in Rocky Mountain region; difficult in Pacific NW unless grown in a trough and under a plastic cover in the winter

Moisture drought tolerant; too much moisture may cause them to droop and even collapse; Graham Nicholls' advice for growing this type of penstemon: those in a humid environment will need an especially lean scree soil, even if they shelter plants from rain; more xeric in Pacific Northwest, less so in arid climates including native habitat areas; keep in mind that seedlings, in their first year need generous watering during the summer

Sun full

Heat tolerance can tolerate short periods of high temperatures with adequate moisture

Cold tolerance 0° F or below; seedlings of many species in this section have survived -20°F in the Denver area.

Shade yes; most will tolerate, if not appreciate part day shade or shadows in Rocky Mountain area

³ Keep in mind, penstemons can be surprising in their ability to adapt to conditions different from their native environs, so be willing to experiment.

Soil moderately alkaline or neutral, not acidic; sharp drainage is essential, most use a sandy-gravelly mixture; some report success with silt loam; gravel (some use the term squeegee which is gravel of various small sizes); one writer reports that hard clay soils that are dry in the winter can support many penstemon species
mulch may be helpful, but not necessary

Drainage needs to be good

Climate preference 10-20" precipitation; warm to hot summers and some cold temperatures; zones 3-5

Longevity can live 5-10 years under cultivation; deadheading helps promote longevity.

Display recommendations

several species suitable for rock garden; taller ones work well in a dryland garden, particularly in groups

Pollinated by

most penstemons are visited by several bee species including honeybees and bumblebees.; hummingbirds prefer red penstemons, but commonly are seen at most penstemon species

for *virgatus*, and maybe others, wasp (*Pseudomasaris vespoides*) which sleeps in the plant at night

Interbreeding

species within *Glabri* and *Elmigera* will cross

Cuttings

flowering stems do not strike roots; rooted offsets may be best

Species

<i>P. absarokensis</i>	<i>P. fremontii</i>	<i>P. neomexicanus</i>	<i>P. speciosus</i>
<i>P. alpinus*</i> (now <i>P. glaber</i> v. <i>alpinus</i>)	<i>P. gibbensii</i>	<i>P. nudiflorus</i>	<i>P. strictiformis</i>
<i>P. ammophilus</i>	<i>P. glaber</i> v. <i>alpinus</i> (syn. <i>P. alpinus</i>)	<i>P. pahutensis</i>	<i>P. strictus</i>
<i>P. brandegei</i> (syn. <i>P. glaber</i>	<i>P. glaber</i> v. <i>brandegeei</i> (syn. <i>P.</i>	<i>P. parvus</i>	<i>P. subglaber</i>
<i>brandegeei</i>)	<i>brandegeei</i>)	<i>P. payettensis</i>	<i>P. tidentromii</i>
<i>P. caryi</i>	<i>P. hallii</i>	<i>P. paysoniorum</i>	<i>P. uintahensis</i>
<i>P. comarrhenus</i>	<i>P. idahoensis</i>	<i>P. penlandii</i>	<i>P. virgatus</i>
<i>P. compactus</i>	<i>P. laevis</i>	<i>P. pennellianus</i>	<i>P. virgatus</i>
<i>P. cyananthus</i>	<i>P. leiophyllus</i>	<i>P. perpulcher</i>	<i>P. wardii</i>
<i>P. cyaneus</i>	<i>P. lemhiensis</i>	<i>P. pseudoputus</i>	
<i>P. cyanocaulis</i>	<i>P. leptanthus</i>	<i>P. putus</i>	
<i>P. deaveri</i>	<i>P. longiflorus</i>	<i>P. saxosorum</i>	
<i>P. debilis</i>	<i>P. mensarum</i>	<i>P. scariosus</i>	
	<i>P. moriahensis</i>		
	<i>P. navajoa</i>		

<p><i>brandegei</i> (syn. <i>glaber brandegeei</i>)</p> <p>17-36" x 7" or taller</p> <p>typically as wide as tall</p> <p>blue</p>	<p>June-July</p>	<p>large flower showy; clusters of large blue flowers; secund (along one side of the bloom stalk) inflorescence</p> <p>multi-stemmed; forms a bowl shape in cultivation;</p> <p>performs well in western gardens,</p> <p>long lived; border, raised bed, dryland garden cultivated in: CO, WA, and probably several areas of the country</p>	<p>neutral –alkaline; sandy-gravelly</p> <p>pumice/compost in troughs in the Pacific Northwest</p>	<p>moderate supplemental moisture if normal rainfall is below 12"/year</p>	<p>☀</p>	<p>7000'</p> <p>plains and slopes, road cuts; steep south-facing limestone slopes</p>	<p>n.NM, s.CO</p> 	<p>tolerates below 0° F (to -20° in Denver 07)</p> <p>zone 5</p>
<p><i>caryi</i></p> <p>4.7-6" x 4.7" wide</p> <p>blue to blue-violet</p>	<p>June-July</p>	<p>medium-large flowers several short racemes (racemes are bloom stems that have no branching and has each flower attached to it by an individual little stem or pedicle)</p> <p>forms mats after a few years as wide as tall; deep green leaves, rock gardens (compact form only), border, dryland garden cultivated in: Denver, CO where it has been a good performer with a long bloom season and some rebloom; also grown in other mountainous regions, WA, Midwest, and Europe</p>	<p>neutral -alkaline sandy, gravelly</p>	<p>generous moisture in spring but avoid excess at all times</p>	<p>☀</p>	<p>6,500-7,500'</p> <p>sparsely vegetated openings within sagebrush, Utah Juniper, Rocky Mountain juniper, or Ponderosa pine meadows on outcrops of calcareous bedrock or on semi-disturbed limey clay or talus slopes on soils derived from the Bighorn Dolomite, Madison Limestone, Tensleep Sandstone or Amsden formations</p>	<p>Bighorn Mts. WY; Pryor Mts. MT</p> 	<p>tolerates to -20° in Denver</p> <p>zone 3</p>

<p><i>comarrhenus</i></p> <p>18-30"</p> <p>pale pink, lavender, blue or almost white</p> <p>EASY</p>	<p>May-Aug</p>	<p>large flower</p> <p>a delicate plant, open inflorescence, stems arise from a basal mat;</p> <p>there are two forms: one is narrow with a tall spike and subsecund (flowers along one side of the bloom stalk) and one is more spreading</p> <p>somewhat short-lived;</p> <p>dryland garden; wild garden; plant in groups</p> <p>cultivated in: CO</p>	<p>neutral –alkaline</p> <p>sandy -gravelly</p> <p>excellent drainage or stems break</p>	<p>dry</p>	<p>☀</p>	<p>3,300-9,840'</p> <p>sandy soil, among sagebrush associated with pinyon/juniper and ponderosa pine communities</p>	<p>Four Corners region</p> 	<p>tolerates to -20° in Denver</p>
<p><i>compactus</i></p> <p>4-12" x 10" wide</p> <p>brilliant blue to violet</p> <p>rare</p>	<p>June-Aug</p>	<p>medium flower</p> <p>seldom reported in cultivation;</p> <p>a dwarf, compact plant</p> <p>compact thyrse (a densely compact bloom stalk/inflorescence) which is quite lovely</p> <p>basal leaves are robust, tapered, smooth and attractively placed on the bloom stalk</p> <p>sometimes described as a shorter form of <i>P. cyananthus</i></p> <p>rock garden</p> <p>cultivated in: popular in Scotland; share your experiences with us</p>	<p>neutral –alkaline</p> <p>sandy-gravelly</p>	<p>will appreciate supplemental water during the summer</p>	<p>☀</p>	<p>7,900-9,900</p> <p>rocky south-facing limestone slopes or outcrops; subalpine to alpine</p>	<p>n. UT, se. ID</p> 	<p>Zone 3</p>
<p><i>cyananthus</i></p> <p>up to 36" x 18" wide</p> <p>brilliant deep blue</p>	<p>May-Aug</p>	<p>large flower</p> <p>beautiful, showy; free flowering; single to several erect stems</p> <p>basal clump of glossy lanceolate leaves</p> <p><u>varieties</u></p> <p><i>cyananthus</i></p> <p><i>subglaber</i></p> <p>dryland garden; wild garden</p> <p>cultivated in: CO; seedlings sold by CO and MI nurseries</p>	<p>neutral –alkaline</p> <p>sandy-gravelly</p>	<p>tolerates more moisture than many</p>	<p>☀</p>	<p>8100'</p> <p>among aspen, on grassy slopes, road cuts</p>	<p>n. UT, e. ID, WY</p> 	<p>Zone 4</p> <p>tolerates to -20° in Denver</p>

<p><i>cyaneus</i></p> <p>12-17.6" x 7" wide</p> <p>dark blue, purplish throat</p> <p>EASY</p>	<p>May-Aug</p>	<p>large flower long-lived;</p> <p>blooms of 3-10 verticillasters (arise from a node, and composed of two slender stems which hold the flowers) that are spaced at intervals up the stalk; several stout stems which sometimes are glaucous (covered with fine waxy powder giving a blue or grey appearance)</p> <p>may rebloom if cut back after first bloom;</p> <p>forms well-developed mat; border, dryland garden, raised bed</p> <p>cultivated in: n. CA, n. Rocky Mts, Walla Walla, WA, Scotland; sold by MI nursery</p>	<p>neutral –alkaline sandy-gravelly</p>	<p>moderately xeric, will appreciate summer water</p>	<p>☀</p>	<p>4,900-7,900'</p> <p>open plains, often with sagebrush; dry, gravelly slopes, and into lower mountains</p>	<p>c. ID, sw MT, nw WY, UT</p> 	<p>Zone 3</p> <p>tolerates to -20° in Denver</p>
<p><i>cyanocaulis</i></p> <p>12-13.7" x 5.9"</p> <p>violet blue-blue</p>	<p>May-June</p>	<p>medium flower not widely cultivated; easy, beautiful; several bloom stems packed with flowers, arise from a thick crown</p> <p>unique foliage of large tufts of rather unusual, wavy-margined leaves (crisp)</p> <p>has a tap root border, dryland garden, raised bed</p> <p>Cultivated in: Denver</p>	<p>neutral –alkaline sandy-gravelly</p>	<p>dry</p>	<p>☀</p>	<p>4,200-7,900'</p> <p>dry places, usually pinyon-juniper, sagebrush areas, sandy soils, slopes and mesas, edge of the desert</p>	<p>ec. UT, w. CO (Colorado Plateau)</p> 	<p>Zone 5</p> <p>tolerates to -20° in Denver</p>
<p><i>deaveri</i></p> <p>2'</p> <p>blue</p>	<p>May-June</p>	<p>medium flower well liked, but described as "not a strong plant, but bloomed" several stems; willowy short lived open garden, border</p> <p>cultivated in: NM</p> <p>Other places? Please share your ideas</p>	<p>neutral –alkaline sandy-gravelly</p>	<p>in mountain states such as Colorado, water about once/2 weeks during the summer</p>	<p>☀</p>	<p>6,500-11,280'</p> <p>Habitat: Slopes and rocky areas from ponderosa pine forest to above timberline (in Arizona);</p>	<p>AZ, NM White Mts, Mogollon rim</p> 	

<p><i>debilis</i></p> <p>3.5" x 6.2" wide</p> <p>pinkish-lavender</p> <p>endangered awaiting designation; use only garden collected seeds, please</p>	<p>unknown</p>	<p>medium flower</p> <p>charming, well liked; blooms well</p> <p>blooms profusely in dense clusters</p> <p>silver green foliage in a compact mound, mat forming; dies back to ground in winter;</p> <p>long-lived</p> <p>rock garden; trough</p> <p>cultivation in: Walla Walla, WA</p>	<p>neutral –alkaline</p> <p>sandy-gravelly, lean</p>	<p>in mountain states such as Colorado, water about once/2 weeks during the summer</p>	<p>☀</p>	<p>8,200"</p> <p>oil shale talus slopes; rocky cliffs</p>	<p>CO</p> 	<p>Zone 5</p>
<p><i>fremontii</i></p> <p>4.7-12" x 3.2" wide</p> <p>deep purple-blue</p>	<p>May-June</p>	<p>medium flower</p> <p>beautiful plant; generous flowers, tightly packed on several stems; may bloom in first year</p> <p>prominent foliage; cinerous grey leaves</p> <p>rock garden; trough</p> <p>cultivated in: CO; Walla Walla, WA, but not widely cultivated</p>	<p>neutral –alkaline</p> <p>sandy-gravelly, dry, loose</p>	<p>even in mountain states such as Colorado, watering mature plants every two weeks may be excessive as gets little rain in native habitat during summer and lives in very dry, loose soil</p>	<p>☀ or ☀</p> <p>in native habitat gets some shade</p>	<p>4000-8000'</p> <p>dry hillsides, pinyon/juniper</p>	<p>Uintah Basin UT, nw. CO, sw. WY</p> 	<p>zone 5</p>
<p><i>(gibbensii)</i></p> <p>4-8"</p> <p>clear blue</p> <p>[may be threatened]</p>	<p>June</p>	<p>large flower</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>barren sandy clay on slopes</p>	<p>sc. WY</p> 	<p>NA</p>

<p>glaber</p> <p>6-11.8" x 6.2" wide</p> <p>blue, purple</p> <p>EASY</p>	<p>May-Aug</p> <p>medium flower</p> <p>popular</p> <p>free-flowering over a long period, with flowers that are secund and crowd onto the upper third or half of the stem;</p> <p>waxy, shiny, and dense green basal foliage</p> <p>long bloom season</p> <p><u>varieties:</u> <i>alpinus</i> (until recently, this variety was considered a species in its own right); grown in: widely, including NM, Walla Walla, and Denver; plants sold by nursery in CO; large rich blue flowers; showy, numerous spikes packed into tight clusters;</p> <p>glossy green foliage; clump forming; long lived; grows under almost any condition</p> <p>not an alpine plant</p> <p>border cultivated in: NH, VA, MI, SC, NE, CA, WA, Rocky Mt. region; Europe; troughs in Pacific NW; seedlings sold by nurseries in CO and MI</p>	<p>neutral –alkaline</p> <p>sandy, gravelly; coarse or medium textured soil;</p> <p>pH 6.0-8.0</p>	<p>USDA: medium drought tolerance</p> <p>tolerates 14-24" rain</p> <p><i>glaber v. alpinus</i> will tolerate much more moisture than others in this section (in native habitat receives daily showers)</p>	<p>☀️</p> <p>for most varieties, said not to tolerate shade</p> <p>☀️</p> <p>OK for variety <i>G. alpinus</i></p>	<p>6,000-10,000'</p> <p>foothills to montane; alpine meadows</p>	<p>sw. ND, nc. SD, nw. WY to se. WY, nc. CO, w. NE</p> 	<p>Zone 3</p> <p>tolerates to -20° in Denver</p>
<p>hallii</p> <p>3.5-6" x 2.7" wide</p> <p>violet-purple</p> <p>EASY</p>	<p>late June</p> <p>medium flower</p> <p>alpine; adapts well to garden, generous display</p> <p>early bloomer, long blooming, flowers large in proportion to the plant;</p> <p>tufts of linear foliage, short stems; forms mats</p> <p>long lived</p> <p>rock garden, trough cultivated in: e. WA, NV, CO, NM, IA, MI, PA, VA, Scotland; troughs in Pacific NW; seedlings sold by NM, CO and MI nurseries</p>	<p>neutral –alkaline</p> <p>sandy-gravelly</p> <p>mix suggestion: gravel, sand, peat; or gravel over sandy loam</p> <p>covered trough in Pacific NW</p>	<p>in mountain states like Colorado, does well with weekly watering (in native habitat it gets rained on almost every day)</p>	<p>☀️</p> <p>in native habitat, is in full sun</p>	<p>10,000-12,000'</p> <p>Rocky Mts. above timberline</p>	<p>CO</p> 	<p>Zone 3</p> <p>tolerates to -20° in Denver</p>

<p><i>idahoensis</i></p> <p>4.7-8" x 7.8" wide</p> <p>blue-purple</p>	<p>June</p>	<p>medium flower showy</p> <p>several bloom stalks in a low clump, filled with flowers (congested verticillasters) grow well in cultivation</p> <p>long, glistening leaves</p> <p>long -lived rock garden, trough</p> <p>cultivated in: NM (did not live long); please share your experiences using our Cultivation Message Board</p>	<p>neutral –alkaline</p> <p>sandy loam low in organic matter</p>	<p>xeric</p>		<p>5,350-5,700'</p> <p>can occur on slopes of any aspect, but is most common on south to southwest exposures; restricted to dry, light-colored, sparsely vegetated, tuffaceous exposures of Salt Lake Formation sediments; tufa-like soil; very soft, silty white sand</p>	<p>sc. ID, nw. UT, possibly NV</p> 	<p>Zone 5</p>
<p><i>laevis</i></p> <p>12-15.6" x 6.24" wide</p> <p>blue to purple</p>	<p>May-June</p>	<p>large flower flowers generously distributed on the stem</p> <p>subshrub; smooth, bright green leaves, stems erect or ascending (arc-like)</p> <p>short-lived display suggestions: send us your ideas cultivated in: tell us, use the Message Board</p>	<p>neutral –alkaline</p> <p>deep sand</p>	<p>moderately xeric</p>		<p>5,000-7,100'</p> <p>dryland, deep sandy soil among sagebrush, pinyon, juniper and ponderosa pine</p>	<p>UT near Zion, AZ Kaibab</p> 	<p>Zone 5</p>

<p><i>leiophyllus</i> 8-28" blue to purple</p>	<p>July-Aug</p>	<p>medium flower</p> <p><u>varieties</u> <i>v. francis pennellii</i> small; described as "This is one of the choicest members of the section Glabri." long-lived and floriferous; superb alpine penstemon</p> <p><i>v. leiophyllus</i> generally considerably taller than <i>v. f-p</i>; flowers the same size; described as one of the better in the subgenus; several dense racemes (racemes are bloom stems that have no branching and has each flower attached to it by an individual little stem or pedicle)</p> <p><i>v. keckii</i></p>	<p>neutral –alkaline sandy-gravelly</p>	<p>dry</p>		<p>6,000-11,900'</p> <p>dry, upland; sagebrush, oak, Manzanita, ponderosa pine, spruce, limber pine and bristle cone pine associations; <i>v. leiophyllus</i> south facing slopes in fine soil derived from volcanic tuff <i>v. francis pennellii</i> alpine summits on shaley limestone scree</p>	<p>sw. UT, NV</p> 	<p>up to -20°F in Denver</p>
<p><i>lemhiensis</i> 12-28" dark blue or blue purple threatened</p>	<p>June-July</p>	<p>large flower</p> <p>reportedly a good garden plant</p> <p>few to several stout, upright stems with a generous distribution of flowers</p> <p>interesting, graceful leaves</p> <p>long lived in the north when grown in rich soil</p> <p>display suggestions: send us your ideas</p> <p>cultivated in: northern gardens; Denver</p>	<p>neutral –alkaline rich soil</p>	<p>in Rocky Mountain states such as Colorado, does well with water once/week in the summer</p>	 or ¾ sun	<p>up to 7,500'</p> <p>grassy hills, sometimes with sagebrush; valleys into ponderosa pine forests in the mountains</p>	<p>ID, MT</p> 	
<p><i>leptanthus</i></p>		<p>This species was added in late 2007. It had been classified as a variety of <i>Pentstemon tirstromii</i>. No additional information yet available.</p>						

<i>(longiflorus)</i>	June-July	large flower	NA	NA	NA	6,000-8,200'	near Beaver City, UT	NA
2'								
blue		NA				sagebrush, gambel oak, mountain mahogany associations		
		NA						
<i>mensarum</i>	May-July	medium flower	neutral –alkaline	moderately dry, but will appreciate moderate supplemental water in the summer	☀	7000-10,000'	w. CO	Zone 4 tolerates to -20° in Denver
2-4'		popular, long blooming, a penstemon of mesas, hence the name mensarum	sandy-gravelly (tolerates wide variety of soils)			on Grand Mesa, CO		
royal blue		many-stemmed; flowers in whorls (a ring of 3 or more flowers arising from a common node or point)	trough in Pacific NW					
		well developed leaves at the base, but almost absent on bloom stem						
		seedlings transplant well						
		long lived in some locations, but not NM						
		border, rock garden, open garden						
		cultivated in: CO, NM, MO, MI, VA, WA, trough in Pacific NW; seedlings sold by NM and MI nurseries						
<i>(moriahensis)</i>	June-July	large flower	NA	NA	NA	sagebrush, mountain mahogany, pinyon/juniper, ponderosa pine	e. NV	NA
20"		NA						
blue		NA						
		NA						
<i>(navajoa)</i>	July-Aug	medium flower	NA	NA	NA	Navajo Mt ponderosa woodland	Four Corners area	NA
1'		slender stem, flowers sparse						
blue		NA						
		NA						

<p><i>neomexicanus</i></p> <p>15-28" x 7" wide</p> <p>lavender-blue to blue</p>	<p>July-Aug</p>	<p>large flower widely cultivated;</p> <p>single or several stemmed; bloom stalk not crowded</p> <p>foliage is glabrous (smooth surface, no hairs), leathery, dark green, and has basal rosettes</p> <p>open garden; several plants together; may bloom as a seedling; give a feeling of delicacy</p> <p>CO; Walla Walla, WA, OR, but suggest covered troughs in winter in PacNW; seedlings sold by NM and CO nurseries</p>	<p>neutral –alkaline sandy-gravelly</p>	<p>medium water; extra water during dry spells</p>	<p>☀</p>	<p>6,000-9,000' mountains; pine woods, spruce, fir; Wooded slopes or open glades in ponderosa pine or spruce/fir forests;</p>	<p>se. NM</p> 	<p>zone 5</p>
<p><i>nudiflorus</i></p> <p>2'</p> <p>blue or lavender</p> <p>EASY</p>	<p>June-July</p>	<p>medium flower flowers on long pedicels (little stems of the flower itself) in a short inflorescence (the flowering stalk)</p> <p>bloom stalk has few leaves; small clump of leaves at the base</p> <p>lives > 4 yrs; self-sows</p> <p>plant in groups spaced close together</p> <p>cultivated in: se. Walla Walla, WA, OR in covered trough during winter</p>	<p>neutral –alkaline sandy-gravelly</p>	<p>dryland species; needs winter moisture</p>	<p>☀</p>	<p>4500-7000' pine woods</p>	<p>nc. AZ</p> 	<p>Zone 3-4</p>
<p><i>(pahutensis)</i></p> <p>7-10"</p> <p>lavender</p>	<p>June-July</p>	<p>medium flower</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>6250-7550' Grapevine Mts. also sw CA. sagebrush scrub, pinyon/juniper woodlands</p>	<p>NV</p> 	<p>NA</p>
<p><i>(parvus)</i></p> <p>8-10"</p> <p>deep blue</p> <p>threatened</p>	<p>June-July</p>	<p>medium flower</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>7200-11,500' sagebrush grassland</p>	<p>s. UT</p> 	<p>NA</p>

<p><i>payettensis</i></p> <p>20-28" x 9.4" wide</p> <p>brilliant deep blue</p>	<p>May-Aug</p>	<p>medium flower</p> <p>good garden subject; beautiful</p> <p>one to few graceful erect stems in a tight cluster; the flowers are arranged in a branched manner and are attractively crowded</p> <p>leaves are glabrous (smooth surface, no hairs), leathery basal rosettes</p> <p>longevity varies</p> <p>does not transplant well; best grown from seed</p> <p>border, dryland garden, large rock garden</p> <p>cultivated in: seedlings sold by a NM nursery</p>	<p>neutral –alkaline</p> <p>sandy-gravelly</p> <p>does not like compacted soils, can be damaged by excessive foot traffic</p>	<p>moderately xeric</p>		<p>5900-8200'</p> <p>dry, gravelly mountain slopes, ridge tops, open woodlands; valleys into the mountains</p>	<p>ne. OR, c. ID</p> 	<p>zone 5</p>
<p><i>paysoniorum</i></p> <p>5-6" x 3.1" wide</p> <p>pure blue</p>	<p>June</p>	<p>medium flower</p> <p>beautiful</p> <p>floriferous; generous distribution of flowers</p> <p>several stems which are ascending (wand-like) or decumbent lying flat with tips turning upward); glossy green foliage; woody base</p> <p>nice plant to cultivate</p> <p>excellent in dry rock garden</p> <p>cultivated in: seedlings sold by a CO nursery</p>	<p>neutral –alkaline</p> <p>sandy</p>	<p>xeric</p>		<p>6,400-7,500'</p> <p>desert areas; sagebrush covered hills, sandy creek bottoms, chalk bluffs; sandy, calcerous rubble</p>	<p>sw. WY</p> 	<p>zone 3</p>

<p><i>pseudopus</i></p> <p>6-16"</p> <p>blue-purple threatened</p>	<p>July-Aug</p> <p>medium flower</p> <p>similar to <i>virgatus</i> but shorter</p> <p>narrow, rolled leaves erect or ascending (wand-like); thyse (densely compact flower stalk) of 5-8 verticillasters (arise from a node, and composed of two slender stems which hold the flowers); the palate (lower lip) of the flower is often white with interesting purple guide-lines;</p> <p>basal leaves well developed</p> <p>short-lived</p> <p>rock garden, raised bed</p> <p>cultivated in: NV; sold by a NM nursery</p>	<p>neutral –alkaline</p> <p>sandy-gravelly; sandy loam</p>	<p>moderately xeric when established</p>		<p>7800-8800'</p> <p>open subalpine meadows and aspen-spruce forests; sandy loam</p>	<p>n. AZ, s. UT Kaibab Plateau</p> 	
<p><i>putus</i></p> <p>(<i>saxosorum</i>)</p> <p>6-24"</p> <p>deep blue</p>	<p>July-Aug</p> <p>medium flower</p> <p>This species was added in late 2007. Formerly it was a subspecies of <i>P. virgatus</i></p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>7500-8400'</p> <p>dry rocky slopes</p>	<p>s. WY, nw. to c. CO</p> 	<p>NA</p>
<p><i>scariosus</i></p> <p>5- 20" x 4.7" wide, the taller, the wider</p> <p>sky blue, violet throat</p> <p>v. albifluvi is threatened</p>	<p>May-July</p> <p>large flower</p> <p>beautiful, recommended; several varieties</p> <p>v. <i>garrettii</i> 14" x 12" wide</p> <p>v. <i>albifluvis</i></p> <p>may not be a good subject for most northern gardens</p> <p>cultivated in: Walla Walla, WA; seedlings sold by a nursery in NM</p>	<p>neutral –alkaline</p> <p>sandy-gravelly</p>	<p>xeric</p>		<p>4950-10,430'</p> <p>sagebrush, pinyon-juniper, ponderosa pine woodland; red, sandy-clay soil, also in sandy barrens</p>	<p>UT, CO border</p> 	<p>zone 4</p>

<p>speciosus</p> <p>8-20" x7.8" wide</p> <p>bright blue</p>	<p>May-July</p>	<p>large flower</p> <p>beautiful; few to several stems with clusters of flowers;</p> <p>stems are semi-erect and evergreen in some locations;</p> <p>ssp: <i>kennedyi</i> 10x12" wide</p> <p>short-lived</p> <p>may be difficult to cultivate outside of native habitat states</p> <p>border; dryland garden</p> <p>cultivated in: CO; Europe; excellent in east or south OR, not in w. OR even in a trough; seedlings sold by a NM nursery</p>	<p>well drained; sand and gravel beds pH 6.4-8</p> <p>coarse and medium soils only; not fine soil</p>	<p>dry location; need winter and spring moisture; USDA: high drought tolerance, annual moisture of 8"-24" according to USDA</p>	<p>full in moist climates ; may tolerate dabbled or part-day shade in CO and western states</p>	<p>3600-10,500'</p> <p>open sagebrush, bitterbrush, pinyon/juniper or mountain mahogany associations;</p> <p><i>kennedyi</i>: fine granite scree facing south</p>	<p>CA, OR, WA, ID, NV, UT</p> 	<p>-20°F in Denver</p> <p>USDA: -33°F</p> <p>zone 6</p> <p><i>kennedyi</i></p>
<p>strictiformis</p> <p>7-21"</p> <p>light blue or light purple</p>	<p>June-July</p>	<p>medium flower</p> <p>desirable;</p> <p>bloom stems are stiffly upright</p> <p>compact subshrub;</p> <p>not as vigorous as strictus but more drought tolerant;</p> <p>may be short-lived;</p> <p>cultivated in: CO, in Pacific NW blooms in quarry sand and upended rock slabs' seedlings sold by a NM nursery</p>	<p>neutral –alkaline</p> <p>sandy loam</p>	<p>drought tolerant</p>	<p>☀</p> <p>may tolerate some shade in CO and western states</p>	<p>4900-6900'</p> <p>juniper and pinyon/juniper woodlands;</p>	<p>Four Corners region; n. and central NM</p> 	<p>zone 5</p>
<p>strictus</p> <p>7-31" x 7" or more wide</p> <p>deep, intense blue or purple</p> <p>EASY</p>	<p>June-July</p>	<p>large flower</p> <p>large with multiple spires of scintillating flowers; showy; flowers found on one side of the bloom stalk (secund)</p> <p>1-2' basal mat; strong stems; clumps enlarge quickly; root depth at least 10"</p> <p>seeds self freely; crosses easily with many other penstemons</p> <p>moderate to long lived</p> <p>dryland garden;</p> <p>cultivated in: widely grown including Denver and WA; seedlings sold by NM and CO nurseries</p>	<p>neutral –alkaline</p> <p>medium -coarse textured soil</p> <p>pH6.0-8.0</p>	<p>USDA: medium drought tolerance; tolerates 14-26" rain</p>	<p>intermediate shade tolerance</p>	<p>6,700-10,750'</p> <p>often in large colonies; open woods and meadows, along roadsides with sagebrush among openings among pinyon/juniper, oak scrub or ponderosa, spruce-aspen</p>	<p>n. WY, CO, Rocky Mts, Sangre de Cristo Mts NM</p> 	<p>zone 5</p>

<p>subglaber</p> <p>10-30"</p> <p>blue</p>	<p>June-Aug</p>	<p>large flower grows well in many environments</p> <p>referring to foliage and flowers, subglaber simply means almost, but not quite smooth (glabrous)</p> <p>the flowering bloom stalk (inflorescence) is narrow and has as many as 10 verticillasters (two little branches that hold the flowers which arise from a node on the stem) which are distinctly separated; the anthers are a rather dramatic white and stand out and are fun to look at through a x10 magnification</p> <p>one to a few stems; thick root crown</p> <p>hardy, long lived;</p> <p>open garden in small groupings cultivated in: e. WA, MT, MN, CO, NE</p>	<p>neutral –alkaline sandy-gravelly</p>	<p>in Rocky Mountain states such as Colorado, does well with water once/week in the summer</p>	<p>☀ or ☀</p>	<p>6000-10,000'</p> <p>sagebrush plains to brushy openings in canyons and foothills to fir forests; moist or dry sites</p>	<p>UT, ID, WY, CA</p> 	<p>not reported</p>
<p><i>tidestromii</i></p> <p>20"</p> <p>blue-purple</p> <p>rare and threatened</p>	<p>June</p>	<p>small flower</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>5350-8200</p> <p>sagebrush, desert scrub, pinyon/juniper</p>	<p>c. UT</p> 	<p>NA</p>
<p><i>uintahensis</i></p> <p>2-3" x 4.7"</p> <p>blue-purple, sky blue</p>	<p>July</p>	<p>large flower attractive, rare, a true alpine</p> <p>short racemes (racemes are bloom stems that have no branching and has each flower attached to it by an individual little stem called a pedicle)</p> <p>older plants bear many stems of flowers</p> <p>mats of leathery, dark green leaves</p> <p>troughs, rock garden cultivated in: e. WA, n NM, CO mountain garden in AZ; troughs in Scotland; seedlings sold by a CO nursery</p>	<p>neutral –alkaline humous rich, sandy-gravelly</p>	<p>not reported</p>	<p>☀</p>	<p>9000-12,5000</p> <p>humus rich, gravelly; quartzite tundra</p>	<p>Uintah Mts. UT</p> 	<p>zone 3</p>

<p><i>virgatus</i></p> <p>28"</p> <p>light blue-purple, white with pink or red guidelines</p>	<p>June-Sept</p>	<p>medium flower well liked;</p> <p>thyrses (densely packed bloom stalk) of 5-8 verticillasters (flowers arising at a node on the stem and composed of two cymes/ stems of a branching bloom stalk that in turn bears the flowers)</p> <p>stout stems are erect or wand-like; basal leaves are well developed and leaves on bloom stalk are long and narrow</p> <p>when grouped can be quite showy;</p> <p><u>varieties</u> v. <i>asa-grayi</i> has largest flowers (formerly was the species <i>unilateralis</i>)</p> <p>may be short-lived</p> <p>seedlings sold by NM and MI nurseries</p> <p>dryland garden; raised bed cultivated in: WA, VA, CO, Pacific Northwest if in troughs and covered in winter; seedlings sold by CO, NM and MI nurseries</p>	<p>neutral –alkaline</p> <p>sandy-gravelly</p> <p>trough in Pacific Northwest</p>	<p>v. <i>asa-grayi</i> in Rocky Mountain states such as Colorado, does well with water once/week in the summer</p>	<p>☀</p> <p>v. <i>asa-grayi</i></p>	<p>6500-8500'</p> <p>foothills or mountain meadows, pine woods</p>	<p>NM, CO</p> 	<p>to 0° F</p>
<p><i>wardii</i></p> <p>5-18"x 2.3" wide</p> <p>violet blue</p> <p>rare and threatened</p>	<p>July</p>	<p>large flower</p> <p>not widely grown so little is known about its cultivation characteristics;</p> <p>grows slowly; blooms well as a mature plant</p> <p>foliage: pubescent (hairs) tufts</p> <p>rock garden, trough</p> <p>cultivated in: Denver, CO</p>	<p>neutral –alkaline</p> <p>sandy-gravelly; given it grows in clay, may do well in garden clay also</p>	<p>in Rocky Mountain states such as Colorado, does well with water once/week in the summer</p>	<p>☀</p> <p>¼- ½ day shade</p>	<p>6,800</p> <p>clay and gypsum; pinyon/juniper foothills</p>	<p>Servier Valley c. UT</p> 	<p>zone 5</p>

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Penstemon cyaneus



Penstemon mensarum

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