

Descriptive Key To Oregon Penstemons

By ROBIN LODIEWICK

Penstemon, with 271 species (mostly western) is the largest genus of flowering plants native solely to North America. Oregon ranks as fifth among the states in number of species, after Utah, California, Colorado and Nevada.

This key covers the 46 Penstemon species native to Oregon (3 rare, 1 possibly a hybrid) and 2 species from other genera once included in Penstemon (*Keckiella* and *Nothochelone*). It is meant for the amateur botanist who uses a 10X magnifier and centimeter rule as aids, and cannot return weeks later for seed. Ranges and subspecies given are for Oregon. Botany manuals should be used for verification (see references at end).

General Description

The corolla is the distinguishing feature of the genus. Bell-shaped or tubular with 5 lobes (2 above, 3 below), it has a near-unique pattern of 4 stamens (each with 2 anther sacs attached at the tip) and one sterile stamen (staminode), which is usually as long as the stamens and has a slight yellowish beard at the tip; sometimes it is exerted outside the corolla mouth. Such a staminode occurs in 7 other genera, worldwide: 2 tropical, 5 (with 15 species) near relatives of Penstemon. (The relatives have stamens with hair at the base; penstemon stamens look bare at the base.)

Corolla color is mainly shades of blue-purple or red-purple, rarely red, pale yellow or white (blue-purple species may have white or pink variants). In Oregon, the corolla is usually expanded abruptly, more or less widely, from a narrow tube; sometimes it is expanded gradually, slightly; sometimes it is pleated underneath. Outside, the corolla is usually glabrous; usually it has a slight yellow or white beard, and often purplish guidelines, either within or on the lower lip.

The corolla lobes are usually 1/4-1/5 as long as the corolla, with lower lobes slightly longer than upper ones. The 5 sepals, usually 1/3-1/4 as long as the corolla, are lanceolate or sometimes ovate, often slightly scarious. A long-exserted staminode may reach the end of the corolla lobes.

Stem and inflorescence are usually leafy. The inflorescence is an indeterminate thyrse, usually of 2-5 nodes, with opposite cymes (usually determinate and 2-several flowered), or sometimes raceme-like. The inflorescence is usually at least slightly pubescent.

Penstemons may be shrubs or herbs. Species that branch between base and inflorescence are shrubs (all woody) or subshrubs (with upper branches soft and dying back); they have no basal leaves but often form mats. Most Oregon species (25) are perennial herbs (with stems soft, not branching between



P. davidsonii

base and inflorescence, and dying back to a branched woody base); they usually have basal leaves in a rosette, or tufted on short non-flowering stems.

Leaves in most species vary in shape. Usually lowest leaves are borne on petioles, upper leaves are sessile. In herbs basal leaves are usually oblanceolate or obovate, lower stem leaves oblong, upper ones lanceolate or ovate. Usually leaves are glabrous, green (sometimes grey-green or blue-grey glaucous), and sharp-tipped. Leaves are opposite except in four species (all found in Oregon) where they may be alternate, or 1-4 at a node (see 26, *deustus*, 27, *gairdneri*, *seorsus*, 14, *triphyllus*).

Classification in Penstemon is based mainly on the method of opening, shape, and pubescence of the anther sacs; to see fully open sacs, look at fading flowers. (Illus. shows sac shapes.)

Use Of The Key

The actual key consists of the words in boldface, which form contrasting couplets (i.e., 02 **Subshrub**; 02 **Herb**). The rest of the description helps identify confusing species.

A description given in the introduction, or at any level of the key, applies to all species below it unless a variation is stated. Such descriptions are not repeated unless necessary. For instance, "inflorescence usually pubescent" means that the statement is true of more than half the following species. Where a species does have a glabrous inflorescence, its description will say that (or, "herbage glabrous," or "sometimes glabrous"). In subsection Proceri, however, where all herbage is usually glabrous, "inflorescence pubescent" is said when necessary.

Note that some characteristics used in most keys are rarely mentioned here, because they are hard to see and not necessary for identification. These include pubescence on the stem, glandular (sticky or glistening) pubescence, and size of anther, seed, and capsule. (Anther sac and seed are usually less than 1.5 mm long, large in subgenera *Habroanthus* and *Saccanthera*. Seed is heavy, angular, ridged. Capsule splits at tip into four sections.)

Regard "medium size" as usual. In this key, for leaves, medium length means between 30 mm and 100 mm long; medium width, 1/5-1/7 as wide as long. Medium size corollas are between 15 mm and 25 mm long, from base of ovary to end of lobes. Large or long, small or short, mean as compared to medium. (Most measurements are made on dried plants; living plants are often slightly larger.)

And remember Murphy's Law for Botanists: any plant you choose to examine is probably abnormal — simply because the human eye notices the unusual!

COROLLA:



pubescent,
with anthers
exserted and
lip bearded



inside view,
with staminode
exserted and
bearded



corolla
front view,
with guidelines

SEPALS:

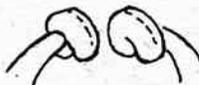


slightly scarious



scarious erose

ANTHER SACS:



unopen



wooly, unopen



wooly, open

open partway:



from inner end,
bag-shape



arrowhead-shape
hairy



from outer end,
horn-shape,
with long hair



S-shape,
with short hair

open all the way:



boat-shape



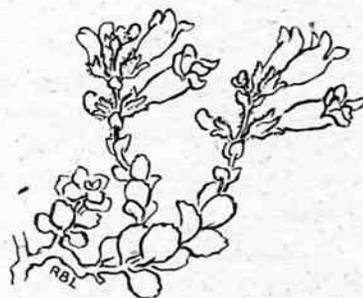
explanate



peltate-explanate

Illustrations by Robin Lodewick

- 01 **Anther sacs wooly-pubescent** (open end to end & across connective, but hidden in white fuzz)
Leaves toothed (in 2 species, sometimes entire) Corolla usually large, expanded gradually, pleated underneath, with mouth slightly closed; lobes often small, projecting; no guidelines.
(P. Subgenus *DASANTHERA* & Genus *NOTHOCHELONE*)
- 02 **Subshrub**, less than 40 cm tall (2 species, less than 10 cm)
Cyme to 1 cm long, 1-flowered (in 1 species, 1-2 flowered)
Leaves thick, broad (in 1 species sometimes narrow); upper stem leaves reduced
Staminode 1/2 length of stamens (Subgenus *DASANTHERA*)
- 03 **Inflorescence often long, 4-8 nodes**
Leaves elliptic, to 40 mm long & 2/5 as wide
Corolla rose-pink, 27-33 mm long
Anther sacs show as white spots in mouth
s Josephine Co. (as *P. cardwellii* hybrid?) *NEWBERRYI* var. *berryl*
- 03 **Inflorescence short, 1-3 nodes**
- 04 **Leaves blue-glaucous**, ovate at least above
Sepals ovate
- 05 **Cyme 1-2 flowered**; inflorescence glabrous; lower leaves obovate, to 80 mm long & 1/3 as wide; upper leaves to 35 mm & 2/3 as wide.
Calyx 5-7 mm long
Corolla pale red-purple, 25-38 mm long
Staminode not bearded
Columbia Gorge cliffs in Hood River & Wasco counties (RARE)
BARRETTIAE
- 05 **Cyme 1-flowered**
Leaves small, blunt, to 20 mm long & 2/3 as wide
Plant to 10 cm tall
Corolla rose-red, 25-36 mm long; not bearded
Staminode sometimes not bearded
high Cascade Range & Columbia Gorge *RUPICOLA*
- 04 **Leaves green, not glaucous**
Corolla blue-lavender or blue-purple (rarely, pale red-purple)
- 06 **Leaves elliptic, medium size**, usually 1/3-1/4 as wide as long
Corolla 25-40 mm long
- 07 **Leaves just below inflorescence broad at base**; lower leaves to 40 mm long
w Side of Cascade Range, Coast Range; sw OR *CARDWELII*
- 07 **Leaves just below inflorescence taper to base**; lower leaves to 60 mm long (sometimes varying to narrow, 1/4-1/7 as wide as long); leaves sometimes entire
Inflorescence often one-sided
e side of Cascade Range, c OR to n & e OR
FRUTICOSUS var. *fruticosus*
- 06 **Leaves ovate, small**
- 08 **Leaves strongly toothed**, to 25 mm long & 1/2-2/3 as wide
Plant to 20 cm tall
Corolla 30-40 mm long
e Wallowa Co. *FRUTICOSUS* var. *serratus*
- 08 **Leaves entire** (in Oregon, except hybrids), to 20 mm long & 1/2-2/3 as wide
Plant to 10 (rarely 15) cm tall *DAVIDSONII*
- 08a Corolla 34-45 mm long
Steens Mtn. *DAVIDSONII* var. *praeteritus*
- 08a Corolla 20-36 mm long
Leaves usually blunt (hybrids in Marion Co. toothed)
high Cascade Range *DAVIDSONII* var. *dauidsonii*
- 02 **Herb, 30-80 cm tall**, usually growing in woods
Cyme 1-3 cm long, 1-4 flowered, spreading away from stem
Leaves all on petiole, to 110 mm long & 1/3 as wide; no basal leaves
Corolla pubescent, pale or deep red-purple, 25-35 mm long; not bearded
Stamens & staminode hairy at base; staminode bearded most of its length
w side of Cascade Range; Coast Range *NOTHOCHELONE NEMOROSA*



P. rupicola

- 01 **Anther sacs glabrous**, or (in 6 Oregon species) **slightly hairy-pubescent**
- 09 **Anther sacs open partway**, narrowly, remaining closed at one end; sacs toothed along edge of opening
Corolla expanded abruptly, widely (except in 1 species), often large (in 4 species sometimes small); usually not bearded
- 10 **Anther sacs open partway from inner end**, across connective; outer ends remain closed (saddlebag or arrowhead shape); hairy-pubescent in 5 species (See also 40, *globosus*, 44, *euglaucus*)
Cyme usually 1-3 cm long, 1-3 flowered, sometimes longer and many-flowered
(P. Subgenus *SACCANTHERA*)
- 11 **Leaves toothed** (in 3 species sometimes entire)
- 12 **Subshrub**, between 20 & 80 cm tall
- 13 **Leaves narrow to base, or most leaves on petiole**
Corolla pubescent; rarely, lip bearded
Staminode moderately exerted
- 14 **Upper leaves not all opposite, 1-4 at node**, often narrow, rarely entire, to 50 mm long & 1/5-1/8 as wide; lower leaves 1/2 as wide
Cymes 1-3 at a node, 1-5 flowered (sometimes to 8 cm long & 15-flowered)
Corolla expanded gradually, slightly, sometimes small, blue-lavender to violet, 13-19 mm long
ne OR TRIPHYLLUS
- 14 **Leaves opposite**
Corolla pale or bright red-purple
Cyme 1-2 flowered RICHARDSONII
- 14a **Corolla 22-32 mm long**
Staminode bearded 1/2 its length
- 14b Leaves deeply toothed, to 80 mm long & 1/3-1/5 as wide
c OR to north, Columbia Gorge, ne OR RICHARDSONII var. richardsonii
- 14b Leaves moderately toothed, often grey-pubescent, to 50 mm long & 1/2 as wide
c & nc OR RICHARDSONII var. dentatus
- 14a **Corolla 15-20 mm long**
Staminode not bearded
Leaves usually like var. *dentatus*
Wheeler & Wasco counties RICHARDSONII var. curtiflorus
- 13 **Upper leaves rounded at base, sessile**
Corolla usually with no guidelines
Inflorescence glabrous, or essentially so
Sepals often scarious erose
- 15 **Stamen-filament hairy just below anthers** (only *Penstemon* like this)
Cyme rarely to 8 cm long & 5-flowered
Leaves long, often entire, to 120 mm long & 1/4 as wide
Calyx 3-7 mm long
Corolla bright red-purple, sometimes blue-violet, 25-38 mm long; lobes ciliate-edged
ne OR VENUSTUS
- 15 **Stamen-filament glabrous**
Cyme 2-5 flowered (rarely to 6 cm long & 10-flowered)
Leaves very broad, coarse-toothed, to 90 mm long & 1/2 as wide
Calyx 5-11 mm long; sepals sometimes broad-scarious & deeply erose
Corolla blue-purple, sometimes red-purple, 16-28 mm long
Coast Range & w side of Cascade Range, from Lane Co. north
SERRULATUS
- 12 **Herb**, 40-100 cm tall
Herbage all sticky-pubescent
Leaves very long; basal leaves to 350 mm long & 1/4 as wide; upper leaves to 120 mm & 1/2 as wide
Cyme 1-2 cm long; 2-4 flowered
Corolla pubescent, dull lavender-purple, 28-40 mm long; rarely bearded
Staminode not bearded, long-exserted GLANDULOSUS

- 12a Leaves strongly toothed
ne OR *GLANDULOSUS* var. *glandulosus*
- 12a Leaves entire, or nearly so
n Hood River & Wasco counties *GLANDULOSUS* var. *chelanensis*
- 11 **Leaves entire** (see also 12, *glandulosus*, 14, *triphyllus*, 15, *venustus*)
Subshrub, mainly between 20 & 50 cm tall
Corolla shades of blue-purple (rarely, red-purple or pink); pale or white
guidelines show as 2 dots at lip; bud often yellow
Inflorescence bare-looking, with long internodes (except in 2 species)
Staminode usually not bearded
- 16 **Corolla with lip bearded**, 13-20 mm long
Staminode bearded
Leaves to 100 mm long & 1/8-1/10 as wide, often arched, folded; grasslike
Plant to 70 cm tall
Cyme sometimes to 5 cm long & 7-flowered
s Lake Co. *GRACILENTUS*
- 16 **Corolla lip not bearded**
Anther sacs hairy at inner end (in 15 species) or glabrous (in 1 species)
- 17 **Herbage glabrous, blue-glaucous**
Upper leaves very broad, 1/2 as wide as long; lower leaves 1/4 as wide
Calyx 3-6 mm long
Staminode rarely slightly bearded
- 18 **Corolla 20-30 mm long**
Leaves to 60 mm long
sw OR *AZUREUS* var. *azureus*
- 18 **Corolla 14-20 mm long**
Leaves often short, to 35 mm long
Plant to 35 cm tall
sw OR *PARVULUS*
- 17 **Herbage pubescent, grey-green or grey**
Leaves medium width or narrow, 1/6-1/10 as wide as long
- 19 **Corolla pubescent**
- 20 **Herbage densely grey-pubescent**
Anther sacs glabrous
Inflorescence leafy
Corolla purple or blue-purple, 15-22 mm long
Leaves to 50 (sometimes 80) mm long, often folded, arched
s Malheur Co. *KINGII*
- 20 **Herbage moderately pubescent, grey-green**
Corolla blue-violet with blue lobes
- 21 **Anther sacs narrow at top**, arrow-shape
Corolla 20-30 mm long
Leaves to 70 mm long, 1/8 as wide as long
sw OR *LAETUS* var. *sagittatus*
- 21 **Anther sacs broad at top**, saddlebag-shape
Corolla 14-24 mm long
Leaves to 70 mm long, 1/6 as wide as long
Wheeler Co. south to sw OR *ROEZLII*
- 19 **Corolla glabrous**, blue-violet or pink-lavender, 15-25 mm long
Inflorescence leafy; cyme sometimes to 4 cm long & 5-flowered
Herbage slightly pubescent, grey-green
Leaves to 70 mm long, often not quite opposite
Sepals sometimes slightly erose
Baker Co. to e & se OR *CUSICKII*
- 10 **Anther sacs open partway from outer end**; inner ends remain closed, or rarely open narrowly across connective (horn-shape); sacs hairy-pubescent in 1 species
Corolla bright blue, slightly narrowed at mouth; lobes spreading; no guidelines
Leaves entire, thick, firm; basal leaves very long, often narrow; upper leaves long or broad
Inflorescence often long; cyme 1-2 cm long, mainly 2-4 flowered
(P. Subgenus *HABROANTHUS*)

- 22 **Upper leaves very broad**, 1/2 as wide as long
- 23 **Anther sacs pubescent with short stiff hair, S-shape**
 Basal leaves to 250 mm long & 1/7 as wide; upper leaves to 90 mm
 Corolla 25-35 mm long
 Plant 20-60 cm tall
 Staminode bearded
 n Wallowa Co. PENNELLIANUS
- 23 **Anther sacs glabrous, straight**
 Basal leaves to 160 mm long & 1/4-1/6 as wide; upper leaves to 70 mm
 Calyx 5-6 mm long
 Corolla 18-28 mm long
 Plant 10-70 cm tall
 Staminode sometimes bearded
 Wallowa Mtns. PAYETTENSIS
- 22 **Upper leaves medium width or narrow**, to 100 mm long & 1/5-1/8 as wide; basal leaves to 150 mm & 1/7 as wide
 Anther sacs glabrous, S-shape
 Corolla 25-38 mm long
 Calyx 4-8 mm long (rarely to 13 mm); sepals slightly scarious erose, sometimes with long narrow tip
 Herbage sometimes grey-pubescent
 Plant sometimes very short, 5-90 cm tall
 Staminode rarely bearded
 e of Cascade Rang to e & s OR SPECIOSUS
- 09 **Anther sacs open all the way** end to end & across connective, narrowly (boat-shape) or becoming flat (explanate) (except in 40, *globosus*, 44, *euglaucus*)
 (P. Subgenus *PENSTEMON* & Genus *KECKIELLA*)
- 24 **Shrub or subshrub**
 Corolla pubescent
 Leaves in 3 species sometimes not opposite
- 25 **Corolla pale yellow or white**, usually small; usually with dark guidelines
 Leaves toothed (in 1 species sometimes entire)
- 26 **Shrub, with stems bare-looking**, 15-150 cm tall
 Corolla pale yellow, expanded widely to gaping mouth, 10-14 mm long; upper lobes hooded, tinged brown, lower lobes reflexed; not bearded
 Leaves ovate, very broad, to 60 mm long & 1/2-1/3 as wide
 Cyme 3-4 cm long, 1-4 flowered (sometimes longer & many-flowered)
 Calyx 4-7 mm long
 Stamens & staminode hairy at base; staminode dense-bearded 1/2 its length, long-exserted
 s Jackson Co. (RARE) KECKIELLA LEMMONII
- 26 **Subshrub, with stems usually leafy**, mainly 20-60 cm tall (sometimes, as in se OR, bare-looking with few leaves)
 Corolla white or pale yellow, often tinged brown or lavender, glistening within, usually expanded gradually, slightly; upper lobes very small, lower lobes spreading
 Cyme short, to 1 cm long & 1-4 flowered (rarely longer & 5-8 flowered); inflorescence long, narrow, of 3-9 clusters
 Leaves often leathery, varying on different plants, either lanceolate or ovate; lower leaves sometimes obovate, blunt
 Calyx 2-6 cm long
 A variable species DEUSTUS
- 26a **Staminode densely bearded**
 Corolla 8-10 (rarely 12) mm long; guidelines sometimes deep purple, crowded
 Leaves either lanceolate, coarse-toothed, sharp-tipped, to 60 mm long & 1/3-1/4 as wide, or ovate, nearly entire, often blunt, to 30 mm & 1/2-1/3 as wide
 Plant very woody at base
 sw OR DEUSTUS var. *suffrutescens*
- 26a **Staminode not, or only slightly, bearded**
 Corolla more than 10 mm long

26b **Leaves strongly toothed, opposite, mainly broad**, lanceolate, mainly to 60 mm long & 1/4-1/6 as wide, or ovate, to 40 mm & 1/2-1/4 as wide

26c **Corolla with upper lobes pale yellow or white**, 12-18 mm long (in ne Or, corolla often pure white with no guidelines)

Leaves coarse-toothed (sometimes narrow, to 75 mm long & 1/7 as wide)

w & e slopes of Cascade Range; ec & ne OR *DEUSTUS* var. *deustus*

26c **Corolla with upper lobes tinged brown**, 10-15 mm long from c OR south, corolla only slightly glistening)

Leaves fine-toothed

Plant usually not over 40 cm tall

Deschutes Co. to s & se OR

DEUSTUS var. *pedicellatus*

26b **Leaves slightly toothed at outer end, or entire; leaves usually not all opposite, 1-4 at node, narrow**, to 50 mm long & 1/7-1/10 as wide

Cymes 1-3 at node, 2-5 flowered; inflorescence short

Corolla 10-15 mm long

Staminode sometimes not bearded

c & nc OR

DEUSTUS var. *variabilis*

25 **Corolla pink-lavender or blue-violet**, narrow, 13-23 mm long; sometimes no guidelines

Leaves entire, linear, sometimes not opposite, often crowded & heathlike

Plant between 10 & 40 cm tall, matforming

Herbage grey-pubescent

Cymes short, 1 cm long, 1-2 at a node, 1-2 flowered

Staminode with short beard most of its length

27 **Corolla with lobes large** (1/3 length of corolla), spreading; beard slight

GAIRDNERI

27a Leaves alternate, 1 to a node, often small, to 35 mm long & 1/10 as wide

Usually 1 cyme to a node

Crook Co. to north; se OR

GAIRDNERI var. *gairdneri*

27a Leaves sometimes not opposite, to 50 mm long & 1/15 as wide

ne OR

GAIRDNERI var. *oreganus*

27 **Corolla with lobes medium size** (1/4 length of corolla), often projecting

Leaves sometimes not opposite, to 50 mm long & 1/15 as wide

s Harney & Jefferson counties

SEORSUS

24 **Herb**, with basal leaves often tufted (in 2 species, no basal leaves)

28 **Staminode with long, dense, golden beard** most of its length, usually long-exserted (in 2 Oregon var. sometimes not exserted)

Corolla pubescent; lower lobes reflexed

Inflorescence dense; cyme 1-2 cm long, 2-6 flowered

Herbage mainly grey-pubescent

Leaves toothed at least near tip, or entire

(*P.* section *AURATOR*)

29 **Corolla with long narrow tube** (at least 1/3 of corolla length), **deeply 2-lipped**, dull purple or blue-violet

Basal leaves to 60 mm long & 1/4 as wide; upper leaves to 40 mm & 1/5-1/6 as wide

30 **Staminode tip coiled**

Corolla sometimes large, 18-28 mm long; tube & lips each 2/5 of corolla length

Plant 8-25 cm tall

s Harney Co.

JANISHIAE

30 **Staminode tip straight**, moderately exserted

Corolla 14-22 mm long; tube & lips each 1/3 of corolla length

Plant 10-40 cm tall

Baker & n Malheur counties

MISER

29 **Corolla with short broad tube** (1/5 of corolla length)

Basal leaves long, to 120 mm long, with upper leaves to 70 mm; leaves usually all narrow, 1/7-1/10 as wide as long (sometimes vary to all broad, 1/4 as wide)

Calyx 6-13 mm long; lobes narrow

Plant 10-40 cm tall

(Staminode long-exserted, except in OR)

ERIANTHERUS



P. deustus



P. janishiae

- 29a Anther sacs 2/3-1/2 as wide as long, wide at connective
Corolla sometimes large, pink-lavender to violet, 15-27 mm long
Staminode sometimes not exerted; tip coils
e Wallowa Co. *ERIANTHERUS* var. *redactus*
- 29a Anther sacs 1/2-2/5 as wide as long, narrow at connective
Corolla red-purple to blue-purple, 18-23 mm long
Staminode with slight beard 1/2 its length, tuft at tip, not exerted
nc OR *ERIANTHERUS* var. *argillosus*
- 28 **Staminode with pale yellow or white beard** at least at tip, or sometimes not bearded (see also 29, *eriantherus*)
- 31 **Leaves toothed** (or, in 3 species, sometimes entire); basal leaves long, on long petiole
Cyme sometimes long & many-flowered
Stem in 1 species often bare-looking
Corolla pubescent, sometimes large (in 2 species) or small (in 4 species)
(mainly *P.* section *HUMILES*)
- 32 **Cyme spreading away from stem**, 2-5 cm long, 2-7 flowered
(sometimes longer, to 10 cm & 20-flowered)
Leaves altogether toothed, mainly lanceolate; upper leaves broad, 1/3-1/4 as wide as long
Corolla expanded abruptly, widely, with lobes large
Plant 30-100 cm tall
- 33 **Staminode long-exserted**
Leaves coarse-toothed; basal leaves tapered to petiole, 1/5 as wide as long
Corolla pale or deep red-purple; lower lobes projecting, long
- 34 **Corolla usually large, 24-30 mm long**
Basal leaves very long, to 250 mm long, upper leaves to 90 mm
Cyme sometimes long
Plant 30-120 cm tall
Staminode with tuft of long hair at tip
Coast Range & w side Cascade Range, from c OR south
RATTANII var. *rattanii*
- 34 **Corolla sometimes small, 13-18 mm long**, sometimes not bearded
Basal leaves to 150 mm long, upper leaves to 60 mm
Cyme often long
Plant 20-90 cm tall
Staminode sometimes not bearded
Crater Lake to sw OR *ANGUINEUS*
- 33 **Staminode not** (or only slightly) **exserted**
Basal leaves narrowed abruptly to petiole, often ovate, sometimes blunt, to 150 mm long & 1/3 as wide; upper leaves to 100 mm
Corolla blue or blue-purple, sometimes small, 15-23 mm long
Calyx 3-5 mm long
Plant 30-100 cm tall
- 35 **Leaves coarse-toothed, pubescent**
Cyme sometimes long
Multnomah Co. *OVATUS*
- 35 **Leaves usually fine-toothed** (rarely coarse toothed or entire), **usually glabrous**
Cyme often long
ne OR *WILCOXII*
- 32 **Cyme held close to stem**, 1-3 cm long, 2-4 flowered
Leaves toothed at outer end, or sometimes entire, moderately broad to narrow
Sepals sometimes scarious erose
Corolla expanded gradually moderately
- 36 **Plant 30-80 cm tall**, stem & inflorescence often bare-looking with long internodes
Basal leaves very long, to 200 mm long & 1/7 as wide; upper leaves to 60 mm & 1/4 as wide
Cyme rarely to 6 cm long & 10-flowered
Corolla often small, blue to blue-purple, 11-18 mm long
n Hood River Co. *SUBSERRATUS*



P. rattanii

36 **Plant 10-30 cm tall**

Basal leaves to 100 mm long & 1/7 as wide; upper leaves to 50 mm & 1/6 as wide

Corolla blue-violet to red-violet, 15-20 mm long; no guidelines
n Wallowa Co.

ELEGANTULUS

31 **Leaves entire** (see also 29, *janishiae* to *eriantherus*; 35, *wilcoxii*; 36, *subseratus*, *elegantulus*)

Inflorescence usually bare-looking with long internodes & 1-many dense separate clusters

Cyme usually short, often many-flowered

Corolla small (in 5 species, sometimes medium size), usually glabrous; shades of blue-purple (or, in 3 species, yellow, white, or pink); lower lobes long, often project; no guidelines (except in 2 species)

Herbage essentially glabrous (except, in 5 species, both inflorescence & corolla pubescent)

Herb, mainly between 10 & 70 cm tall

37 **Stem stout** (to 10 mm diameter in inflorescence)

Leaves ovate, thick, green-glaucous; upper leaves & lower bracts very broad, to 70 mm long & 1/2 as wide; lower leaves to 150 mm & 1/7 as wide

Cyme to 1 cm long, 3-5 flowered, often hidden in bract; inflorescence very long, 5-15 clusters

Sepals usually not scarious

Corolla blue or blue-lavender

Staminode with stubbly beard at tip, or not bearded

ACUMINATUS

37a Corolla medium size, 15-20 mm long

Upper bracts to 10 mm long & as wide

Calyx 5-11 mm long

Columbia Gorge near Hood R.

ACUMINATUS var. *acuminatus*

37a Corolla 10-15 mm long

Upper bracts to 10 mm long & 15 mm wide

Calyx 4-7 mm long

se OR

ACUMINATUS var. *latebracteatus*

37 **Stem slender** (less than 4 mm in diameter in inflorescence)

Cyme 0.5-2 cm long (in 2 species, rarely longer), 2-5 or many-flowered

Sepals usually scarious erose

38 **Leaves broad or medium width**; basal leaves usually many, often tufted, or matlike

39 **Upper leaves large or medium size, with stem often leafy**; leaves to 80 (rarely 120) mm long & 1/3-1/4 as wide; basal leaves long, to 170 mm & 1/4-1/6 as wide (see also 46, *humilis*, 47, *rydbergii*, *procerus*)

40 **Inflorescence crowded, with one large cluster** (15-25 flowered, often globe-shape), rarely 1-2 smaller clusters below; cyme rarely to 5 cm long

Leaves ovate or oblong

Calyx 5-10 mm long

Corolla expanded moderately, blue-purple or blue, 13-22 mm long

Anther sacs pouch-shape, open partway, narrowly, remain closed at outer ends

ne OR

GLOBOSUS

40 **Inflorescence bare-looking with long internodes, 3-7 medium-size clusters**, reduced above; inflorescence pubescent; cyme rarely to 8 cm long (held close to stem) & 12-flowered

Leaves lanceolate, taper to long tip

Calyx 4-7 mm long; sepals taper to long tip, sometimes not erose

Corolla pubescent, blue (with dark buds), blue-violet, white or pale yellow

Plant 30-90 cm tall

ne OR

ATTENUATUS

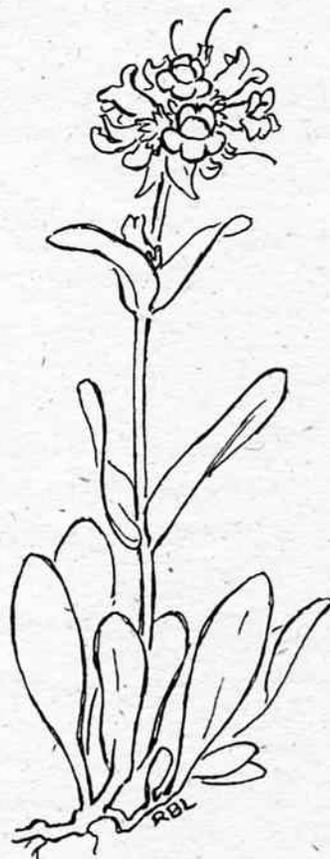
40a Corolla 14-22 mm long

ATTENUATUS var. *attenuatus*

40a Corolla 7-14 mm long

wetlands

ATTENUATUS var. *palustris*



P. globosus

- 39 **Upper leaves reduced &/or few, upper stem usually bare-looking**
with long internodes
Basal leaves mainly medium size, to 100 mm long & 1/4-1/6 as wide
(rarely varying to 20 or 150 mm long, or 1/2-1/7 as wide)
- 41 **Corolla pale yellow or white** (see also 40, *attenuatus*, 48, *peckii*)
- 42 **Corolla pale yellow**, 8-12 mm long, narrow, drooping
Sepals erose at sides, with long narrow tip; calyx 3-5 mm long
Bracts often scarious erose
Inflorescence often long, 2-10 clusters
ne OR; n Sherman Co. CONFERTUS
- 42 **Corolla white**, expanded slightly, 11-15 mm long
Sepals usually erose at outer end; calyx 4-8 mm long
Staminode bearded 1/2 its length
Steens Mtn. eastward PRATENSIS
- 41 **Corolla shades of blue-purple**, white within showing abruptly in
lower lip
- 43 **Leaves blue-glaucous**, 1/4-1/5 as wide as long
Calyx 3.5-6 mm long
Corolla 11-15 mm long
- 44 **Sepals ovate, narrowed abruptly to long tip**, sometimes not
erose
Leaves mainly elliptic, to 110 mm long
Corolla expanded moderately; guidelines
Plant 15-50 cm tall
Anther sacs rarely not open all the way to outer end, pouch-like
Cascade Range from c OR north EUGLAUCUS
- 44 **Sepals lanceolate, taper to tip**, not erose
Leaves ovate, to 60 mm long
Plant 30-35 cm tall
Staminode sometimes not bearded
Gearhart Mtn., Lake Co. (RARE) GLAUCINUS
- 43 **Leaves green** (or, in 1 species, often grey-green pubescent)
- 45 **Corolla pubescent**, expanded moderately; lobes spreading
Inflorescence pubescent
- 46 **Corolla with large lobes** (1/3 its length), blue-purple, 10-17 mm
long
Plant 5-60 cm tall (short at high elevations)
Basal leaves vary between 20 & 100 mm long; upper leaves not
always reduced; leaves often grey-green pubescent
Sepals not erose
A variable species
e OR south to Ca HUMILIS var. humilis
- 46 **Corolla with small lobes** (1/5 its length), blue-violet, 10-13 mm
long; with guidelines
Plant 10-25 cm tall
Basal leaves broad, often blunt, to 60 mm long & 1/3 as wide;
leaves green
high in Wallowa Mtns. SPATULATUS
- 45 **Corolla glabrous**
Upper leaves sometimes not reduced
- 47 **Corolla 10-14 mm long**
Basal leaves long, to 150 mm long & 1/7 as wide
Inflorescence of 1-6 clusters
Calyx 3-9 mm long RYDBERGII
- 47a Sepals broadly scarious, deeply erose, flat-ended or with short
tip
Steens Mtn. & ne OR RYDBERGII var. rydbergii
- 47a Sepals moderately scarious, usually erose, tapering to long tip
e of Cascade Range & Multnomah Co.
RYDBERGII var. oreocharis
- 47 **Corolla 6-11 mm long**, deep blue-purple (in Oregon), drooping
PROCERUS

47b **Basal leaves medium size**, tapered to petiole, to 50 mm long & 1/5 as wide (rarely to 100 mm & 1/7 as wide)

47c Calyx 3-6 mm long; sepals lanceolate, narrowed abruptly or tapered to long tip

Basal leaves few; stem leafy

Inflorescence short, 1-3 clusters

ne OR

PROCERUS var. *procerus*

47c Calyx 1.5-3 mm long; sepals ovate with abrupt short tip

Basal leaves many; stem bare-looking

Plant to 35 cm tall

Cascade Range

PROCERUS var. *brachyanthus*

47b **Basal leaves short, broad**, narrowed abruptly to petiole, to 20 mm long & 1/2-1/3 as wide (sometimes vary to 30 mm &

1/4-1/5 as wide, near CA); upper leaves 1/5 as wide

Calyx 1.5-3 mm long; sepals diamond-shape, erose on upper edges

Plant 5-12 cm tall

Inflorescence short, usually one cluster

Staminode usually not bearded

Wallowa, Blue, Strawberry, Steens Mtns.

PROCERUS var. *formosus*

38 **Leaves very narrow**, linear; lower leaves crowded; **no basal leaves**

Inflorescence sometimes long, 2-7 clusters

48 **Corolla pubescent, pink, blue-violet, or white**, 8-10 mm long, drooping

Inflorescence pubescent

Lower leaves to 70 mm long & 1/14 as wide

Plant 25-70 cm tall

foothills, Deschutes Co. (RARE)

PECKII

48 **Corolla glabrous, blue-purple**, 6-10 mm long

Leaves arched, folded; lower leaves to 60 mm long & 1/10 as wide, crowded

Plant 15-40 cm tall

foothills e side of Cascade Range, from Deschutes Co. South

CINICQLA



P. cinicola

References

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The author thanks Peter Zika, Dr. David Wagner, and the several other botanists without whose constructive criticism this key would not have reached its present form; also Kenneth Lodewick for advice, and Dee Strickler for an added taxon.