

Key to the *Juncus* of Oregon

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Sources:

This key is built from observations by *Carex* Working Group members, from the published sources below, and from unpublished information provided by Peter Zika, especially about the *Juncus tenuis* group of sedges.

- Brooks, R. E., and S. E. Clemants. 2000. Juncaceae. pp. 211 – 255 in Volume 22 of Flora of North America Editorial Committee. Flora of North America North of Mexico. Oxford University Press, New York.
- Dennis, LaRea J., and Richard R. Halse. 2008. Aquatic and Wetland Plants of Oregon with Vegetative Keys. Uncial Press, Aloha, Oregon.
- Snogerup, Sven, Peter F. Zika, and Jan Kirschner. 2002. Taxonomic and nomenclatural notes on *Juncus*. Preslia 74: 274-266.
- Zika, Peter F. 2003. The native subspecies of *Juncus effusus* (Juncaceae) in western North America. Brittonia 55: 150-156.
- Zika, Peter F. 2006. A key to *Juncus* section *Juncotypus* in British Columbia. Botanical Electronic News No. 358. <http://www.ou.edu/cas/botany-micro/ben/ben358.html#2>
- Zika, Peter F. 2008. Juncaceae. Manual for the Jepson Herbarium Public Program 18-20 July 2008. University of California at Berkeley Herbarium, Berkeley, California.

Key to Subgenera

1. Annuals
 2. Leaves not all basal; plants 3 – 40 cm tall **J. subg. *Poiophylli*: *J. bufonius***
 - 2' Leaves all basal; plants less than 6 cm tall **J. subg. *Graminifolii***
- 1' Perennials
 3. Involucral bract appearing as a continuation of the culm; leaves all reduced to sheaths, these occasionally with a bristle-like vestige of a blade **J. subg. *Genuini***
 - 3' Involucral bracts flat or channeled, not appearing as a continuation of the culm; basal leaves with blades and/or cauline leaves present
 4. Culms and leaves filiform, floating; heads often producing bulblets **J. subg. *Septati***
 - 4' Culms and leaves not filiform, not floating; heads not producing bulblets
 5. Leaf blades laterally flattened with one edge turned towards the culm, septa incomplete **J. subg. *Ensifolii***
 - 5' Leaf blades not laterally flattened, or if flat, then with the flat side towards the culm
 6. Leaf blades septate, terete or semi-terete
 7. Septae complete; capsules 1.9 – 5 (5.7) mm long; seeds tailed or not **J. subg. *Septati***
 - 7' Septae incomplete; capsules 3 – 5 mm long; seeds tailed **J. subg. *Alpini*: *J. triglumis* var. *albescens***
 - 6' Leaf blades not septate, flat
 7. Flowers borne singly in panicles or cymes **J. subg. *Poiophylli***
 - 7' Flowers in heads
 8. Leaves with distinct blade and sheath, with auricles (which may be tiny) at summit of sheath, leaves basal and/or cauline, leaves not red toward base; stamens 3 or 6 **J. subg. *Graminifolii***
 8. Leaves with sheath very short or indistinct, lacking auricles, leaves all basal, leaves red toward base; stamens 3 **J. subg. *Cephloxys* (*J. planifolius*)**

ALPINI*J. triglumis* var. *albescens***CEPHLOXYS***J. planifolius* (introduced)**ENSIFOLII**

Taxonomy in this group is messy because many of the taxa are connected by intermediate forms. Oregon records of *J. phaeocephalus* usually refer to *Juncus nevadensis* var. *inventus*, which was named as a var of *J. phaeocephalus* but is something else entirely.

This key is modified from the Jepson Manual:

1. Anthers inconspicuous, usually shorter than or equal to the filaments, capsule short-tapered, acute to obtuse below the beak, 2.7 – 3.8 mm long] *J. ensifolius* s.l.
Intermediates are common between the two taxa which may be recognized within *J. ensifolius*.
2. Stamens 3; inflorescences darker and more congested, with fewer heads; leaf sheath appendages lacking or inconspicuous *J. ensifolius* (= *J. e.* var. *ensifolius*)
2. Stamens 6; inflorescences paler and more open, with more heads; leaf sheath margins membranous, prolonged into small ear-like appendages *J. saximontanus* = *J. ensifolius* var. *montanus*
1. Anthers, large, conspicuous, much longer than the filaments; capsule gradually tapered, 3.3 – 5.6 mm long
4. Perianth usually less than 4 mm long, 2.5 – 3.2 mm long; capsule longer than the perianth *J. oxymeris*
4. Perianth usually more than 4 mm long, 3.3 – 4.8 mm long; capsule shorter than or as long as the perianth (reported from Oregon in error, but present in coastal CA and perhaps in Oregon) *J. phaeocephalus*

GENUINI

1. Culms arising singly along the rhizomes
2. Culms slender, about 1 (to 1.5) mm in diameter *J. filiformis*
- 2' Culms stout, 1 – 3 mm in diameter, averaging over 1 mm in diameter
3. Culms usually arching; perianth 5 – 8 mm long; coastal *J. breweri*
- 3' Culms erect; perianth 2.5 – 5.5 (-6) mm long; widespread *J. arcticus* s.l.
4. Sheaths not bearing blades; inflorescences tending to be smaller ; widespread *J. balticus* (= *J. a.* var. *balticus*)
- 4' Distal 1 or 2 sheaths with obvious blades; inflorescences tending to be larger; southern, perhaps in SW Oregon but no good specimens *J. mexicanus* (= *J. a.* var. *mexicanus*)
- 1' Culms arising in a dense cluster
5. Flowers usually 1 – 4 (-7) per stem; involucre bract usually less than 5 cm long; plants alpine to subalpine
6. Uppermost of the basal sheaths with a well-developed blade usually 2 – 7 cm long; capsules acute *J. parryi*
- 6' Uppermost of the basal sheaths bladeless or with a blade scarcely 1 cm long; capsules retuse *J. drummondii*
- 5' Flowers usually 8+ per stem; involucre bract usually more than 5 cm long; plants growing at diverse elevations
7. Bract usually longer than the culm itself, so the inflorescence appears to be located at less than half the height of the culm; stamens 6 *J. filiformis*

- 7' Bract shorter than the culm itself so the inflorescence appears to be located above the midway point on the culm; stamens 6 (*J. patens*) or 3
8. Stamens 6; culms grayish to bluish-green; culm 1.5 – 2.5 mm wide *J. patens*
- 8' Stamens 3; culms usually bright to dark green; culms 0.8 – 5 mm wide
9. Upper sheath apex strongly asymmetrical on fruiting stems (check several)
10. Fruiting culms stout, 2.2 – 4.9 mm thick just above upper sheath apex; sheath apex thickened, with a raised rim; sheath usually dark brown to black (sometimes lighter brown, especially from S. Douglas County southward); tepals usually pale to medium brown; widespread *J. effusus* subsp. *pacificus*
- 10' Fruiting stems slender, 0.8 – 2.0 mm thick just above upper sheath apex; sheath apex thin with broad wings, lacking a rim; sheath green (fresh) to pale or medium brown (dried); tepals with dark brown to black stripes; coast and coast range mountains *J. hesperius*
9. Upper sheath apex essentially symmetrical on fruiting stems.
11. Fruiting stems slender, 0.8-2.0 mm thick just above upper sheath apex; native
12. Upper cataphylls dark brown or chestnut, thickened, highly glossy, smooth, the veins inconspicuous *J. laccatus*
- 12' Upper cataphylls green, pale brown with age, thin and membranous, dull or slightly shiny, never highly glossy, smooth or minutely papillose (30X), veins conspicuous; west Cascades *J. exiguus*
- 11' Fruiting stems stout, 2.2-4.9 mm thick just above upper sheath apex; widespread introductions
13. Sheath margins on fruiting stems overlapping 2-4 cm from apex, open less than a third of the way to the base, clasping the stem when mature; sheaths of fertile stems usually 6-14 cm long, upper sheath margins usually with dark marginal band; tepals spreading or curving away from mature capsule *J. effusus* subsp. *effusus*
- 13' Sheath margins on fruiting stems not overlapping in the upper 4 cm, often open more half way to base, loose, flattened, or unrolled and not clasping stem when mature, ; longer sheaths of fertile stems usually 15-27 cm long, upper sheath margins usually lack dark marginal band; tepals erect or appressed to mature capsule *J. effusus* subsp. *solutus*

NOTE: *Juncus usitatis* L. A. S. Johnson is a *J. effusus*-like plant introduced from Australia to California including Butte, Merced, Stanislaus, Tehema, and Yuba counties. Distinguished by its blunt (or acute, or mucronate) tepals that are notably shorter than the hardened, globose capsule. Stems are narrow (to 2 mm wide). Pith is chambered. Could come out between leads 8 and 9, because the ones below have acuminate tepals that are = or > capsules and continuous pith (except that sometimes *J. effusus solutus* growing in water may have chambered pith).

GRAMINIFOLII

Note: Seed tails are distinctive when seen, but seeds are unavailable in immature and many overmature specimens. Therefore, seed tails are presented as an early lead, but all species come out under the alternate lead. Unfortunately, seeds are required for the identification of certain species, so the seed tail trait appears again later in the key.

1. Plants perennial, short to tall
 2. Seeds tailed
 3. Auricles absent or nearly so; anthers 1 – 1.5 (-1.8) mm long *J. regelii*
 - 3' Auricles 1 – 3 mm long, rounded to acutish; anthers 1.8 – 2.6 mm long *J. howellii*
 - 2' Either seeds not tailed, or mature seeds not present
 4. Stamens 3; inflorescence with (2)5 – 200 heads; tepals 1.8 – 3.2 mm long *J. marginatus*
 - 4' Stamens 6; inflorescence with 1 – 12 heads; tepals 3 – 6.5 mm long
 5. Capsule longer than perianth; perianth segments 3 – 4 mm long [tepals broad, slightly scabrous] *J. covillei*
 6. Perianth parts and capsules dark brown; capsule 1+ mm longer than perianth *J. c. var. covillei*
 - 6' Perianth parts and capsules pale brown; capsule barely longer than perianth *J. c. var. obtusatus*
 - 5' Capsule shorter than perianth; perianth segments 4 – 6.5 mm long
 7. Auricles 1 – 3 mm long
 8. Seeds tailed, the tails 0.2 – 0.4 mm long; elevation 4000 – 7000 feet *J. howellii*
 - 8' Seeds not tailed; elevation usually lower
 9. Tepals brown with green midstripe; range east of Cascades *J. longistylis*
 - 9' Tepals brown; range widespread (no mature Oregon specimens yet) *J. orthophyllus*
 - 7' Auricles absent or less than 1 mm long
 10. Plants coastal, 1 – 2 (3) dm tall; seeds obpyriform, 0.5 mm long *J. falcatus*
 - 10' Plants inland, 1 – 5 dm tall; seeds oval with a small point or a tail at each end
 11. Tepals brown with green midstripe; seeds tailed; anthers 1 – 1.5 (-1.8) mm long; heads with (8) 10 – 30 flowers *J. regelii*
 - 11' Tepals brown; seeds not tailed; anthers 1.5 – 2.4 mm long; heads with 5 – 10 flowers *J. orthophyllus*
- 1' Plants small annuals less than 6 cm tall (leaves all basal)
 12. Flowers solitary; seeds not striate
 - 13 Perianth shiny, dark brown to black, longer than the capsule *J. bryoides*
 - 13' Perianth dull, greneish or reddish, usually a little shorter than the capsule
 14. Involucral bract solitary, sheathing; stamens usually 3 *J. uncialis*
 - 14' Involucral bract, if present, not sheathing; stamens usually 2 *J. hemiendytus*
 - 12' Flowers usually 2 or more per culm; seeds more or less striate
 15. Perianth longer than the capsule; plants from Harney County *J. capillaris*
 - 15' Perianth equal to or shorter than the capsule
 16. Perianth and capsule green or pink-tinged *J. tiehmii*
 - 16' Perianth and capsule becoming dark reddish-brown *J. kelloggii*

POIOPHYLLI

1. Plant annual, with flowers borne all along the stem, including near the base *J. bufonius*
- 1' Plants perennial, flowers not borne near the base
 2. Tepal tips obtuse; capsules chestnut brown or darker (probably introduced)
 3. Habitat coastal salt marshes; rhizomatous and forming extensive colonies; anthers 2 – 4 times as long as the filament, 1.2 – 1.5 mm long; capsule usually nearly equal to the perianth *J. gerardii*
 - 3' Habitat diverse but usually alkaline or saline and not known from the coast; short rhizomatous or appearing cespitose; anthers 1 – 2 times as long as the filament, 0.6 – 1 mm long; capsule usually longer than the perianth *J. compressus*
- 2' Tepals acute to acuminate; capsules tan or light brown
 4. Auricles hard and thick (plastic-like), shiny, rounded, yellowish *J. dudleyi*
 4. Auricles soft and thin (membranous or scarious), dull, rounded or acute to acuminate, dirty white to translucent
 5. Capsules 3-celled, with straight partitions united except at very apex
 6. Tepals equal or subequal, with heavy mid-brown stripes flanking the green midvein, with broad scarious margins, tips acute; inflorescence generally dense and small, 1-2 (2.5) cm long, not including infl bract; *J. confusus*
 6. Tepals unequal, the outer tepals usually much longer than inner, more nearly concolorous, greenish to pale brown, with slender scarious margins, tips inrolled acuminate-acicular; inflorescence generally open, 2.5-9 cm *J. brachyphyllus*
 5. Capsules 1-celled, with concave partitions (placenta) separated except at base
 7. Auricles less than 1 mm long (to 1.5 mm), rounded to acutish (bracteoles acute to acuminate or awned)
 8. Fruit strongly ridged distally, usually truncate or slightly notched at apex; tepals with dark brown stripes flanking the green midvein; auricles entirely thin and scarious to translucent; range west of Cascades *J. occidentalis*
 8. Fruit weakly or not ridged distally; usually acute to blunt at apex; tepals paler; auricles usually two-textured, the base usually thicker and more opaque than the thin apical margin; range east of Cascades *J. interior*
 7. Auricles to 5 (8) mm long, (easiest to find on young shoots); acute to acuminate, entirely thin and scarious to translucent; base of plant gen green to brown; bracteoles usually acute; stem ridges mostly weak or absent, 0-1 (rarely 2) strong stem ridges in tenuis (4-6 in anthelatus from BC & CA) (Fruit weakly or not ridged distally; usually acute to blunt at apex; bracteoles usually acute)
 9. Capsules < 2.5 mm long; inflorescence and tepals usually with orange-red color; anthers 0.6-0.8 (rarely 1.0) mm; capsules < 75% length of tepals (0.50-0.67 in Washington); coarse plants [54] 70-90 cm tall with large inflorescence [6-12 cm in CA] c. 15-21 cm long; individual flowers < internodes in inflorescence; stems with 2-6 strong ridges visible; rare introduction from eastern North America *J. anthelatus*
 9. Capsules gen > 2.5 mm long; inflorescence and tepals green; anthers 0.4-0.6 (rarely 0.8) mm; capsules > 75% length of tepals; more delicate plants usually < 50 cm tall with small inflorescence usually < 10 cm long; individual flowers often > internodes in inflorescence; stems with 0-1 (rarely 2) strong ridges visible; common in moist disturbed sites; possibly introduced from eastern North America *J. tenuis*

SEPTATI

Note: Seed tails are distinctive when seen, but seeds are unavailable in immature and many overmature specimens. Therefore, seed tails are presented as an early lead, but all species come out under the alternate lead. Unfortunately, seeds are required for the identification of certain species, so the seed tail trait appears again later in the key.

A. Seeds tailed

B. Seeds 1.8 – 2.6 mm long, including tails *J. canadensis*

B' Seeds 0.7 – 1.2 mm long, including tails *J. brevicaudatus*

A' Either seeds not tailed, or mature seeds not present

1. Plants usually decumbent and rooting at the nodes and/or with bulb-like bases; plants often submerged in early spring and if so then producing filiform, floating leaves and culms; heads often producing bulblets as well as normal flowers; plants with 3 – 9 heads/inflorescence (except sometimes *J. articulatus* – which comes out down the other lead anyway)

2. Capsule obtuse *J. bulbosus*

2' Capsule acute to acuminate

3. Capsule 1-loculed, 3.2 – 6.1 mm long *J. supiniformis*

3' Capsule imperfectly 3-loculed, 2.8 – 4 mm long *J. articulatus*

1' Plants usually erect, bases not bulb-like, never both decumbent and submerged; plants not producing filiform early leaves and culms; heads not producing bulblets; plants with 1 – 70 heads/inflorescence

4. Flowers not in heads, 1 – 2 (3) per node *J. pelocarpus*

4' Flowers in heads with 2 – 1000 flowers/head

5. Heads spheric or nearly spheric, (2-) 15 – 60 (-100)-flowered

6. Stamens 3 (some flowers may have 6)

7. Plant rhizomatous, with swollen nodes on the rhizomes; heads 1 – 8, dense, each with 40 – 70 flowers *J. bolanderi*

7' Plant caespitose; heads 3 – 50, less dense, each with 5 – 50 flowers

8. Range widespread, including the coast; seeds not tailed; cataphylls 1 – 2, gray, with acute apex; anther 1/3 as long as filaments; capsule straw-colored, 1-locular, ellipsoid to narrowly ovoid, 2.8 – 3.5 (4) mm long; heads (2) 5 – 20-flowered *J. acuminatus*

8' Range coastal (where introduced); seeds tailed; cataphylls 0 (-2), if present straw-colored, with rounded apex; anthers 1/2 as long as filaments; capsule chestnut brown, imperfectly 3-locular, lanceoloid, 3.3 – 4.5 mm long; heads 5 – 50-flowered *J. canadensis*

6' Stamens 6

9. Capsule 1.9 – 3.7 mm long, obtuse or rounded below the beak, abruptly contracted to the beak; tepals dark brown, purplish, or blackish, acute and mucronate to +/- acuminate; head 1(2) or in 1 dense cluster; rhizomes lacking swollen nodes; habitat montane or coastal

10. Habitat montane wetlands; head 1 (2) *J. mertensianus*

10' Habitat wet, stabilized coastal sands; heads 5 – 8 in a dense cluster

..... *J. nevadensis* var. *inventus*

9' Capsule 3.2 – 5.7 mm long, lance-subulate, tapering gradually to the beak; tepals greenish to straw-colored, acuminate; heads (1) 2 – 25, separated; rhizomes with swollen nodes; habitat lowlands east of the Cascades

11. Tepals (3.7) 4 – 5 mm long; widely distributed in lowlands east of the

Cascades *J. torreyi*

11' Tepals 2.4 – 4.1 mm long; known from Washington near the Oregon border *J. nodosus*

5. Heads obconic or hemispheric (2-) 3 – 15-flowered

12. Auricles 0.5 – 1 mm long; heads in terminal panicles of 3 – 50 heads, each head 3 – 10-flowered
13. Seeds not tailed; anthers 6, as long as their filaments; auricles 0.5 – 1 mm long; tepals 1.8 – 3 mm long; plants rhizomatous to nearly caespitose *J. articulatus*
- 13' Seeds tailed; anthers 3(6), as long as or much shorter than their filaments; auricles 0.5 – 3 mm long; tepals 2.5 – 3.2 mm long; plants caespitose .. *J. brevicaudatus*
- 12' Auricles averaging over 1 mm long
14. Head 1(2); habitat montane wetlands *J. mertensianus*
- 14' Heads 2 – 50; habitat various
15. Plants rhizomatous; stamens 6; anthers longer than filaments *J. nevadensis*
16. Heads 2 - many, usually separated (sometimes in 2+ clusters) mostly less than 8 mm side; tepals pale to dark brown; anthers slightly to much longer than filaments; widespread *J. nevadensis* var. *nevadensis*
- 16' Heads 5 – 12 in a single dense cluster, each 8 – 12 mm wide; tepals dark brown; anthers slightly longer than filaments; habitat stabilized sands at the coast, mainly Lane and Lincoln Counties *J. nevadensis* var. *inventus*
- 15' Plants caespitose; stamens 3 (occasionally 6); anthers as long as the filaments or less (to as long as filaments in *J. brevicaudatus*)
17. Range widespread, including the coast; seeds not tailed; leafless basal sheaths 1 – 2, gray; capsules straw-colored, 1-locular, 2.8 – 3.5 (4) mm long; heads with (2) 5 – 20 flowers *J. acuminatus*
- 17' Range coastal (where introduced); seeds tailed; leafless basal sheaths 0 – 2, straw-colored; capsules chestnut brown, imperfectly 3-locular, 3.2 – 4.8 mm long; heads with 2 – 50 flowers
18. Seeds 0.7 – 1.2 mm long; auricles 0.5 – 3 mm long; inflorescence 1 – 12 cm long; heads with 2 – 8 flowers; tepals 2.3 – 3 mm long; anther $\frac{1}{4}$ as long as to equalling the filament *J. brevicaudatus*
- 18' Seeds 1.1 – 1.9 mm long; auricles 1 – 1.2 mm long; inflorescence 2 – 20 cm long; heads with 5 – 50 flowers; tepals 2.7 – 3.8 mm long; anthers $\frac{1}{2}$ as long as the filaments *J. canadensis*