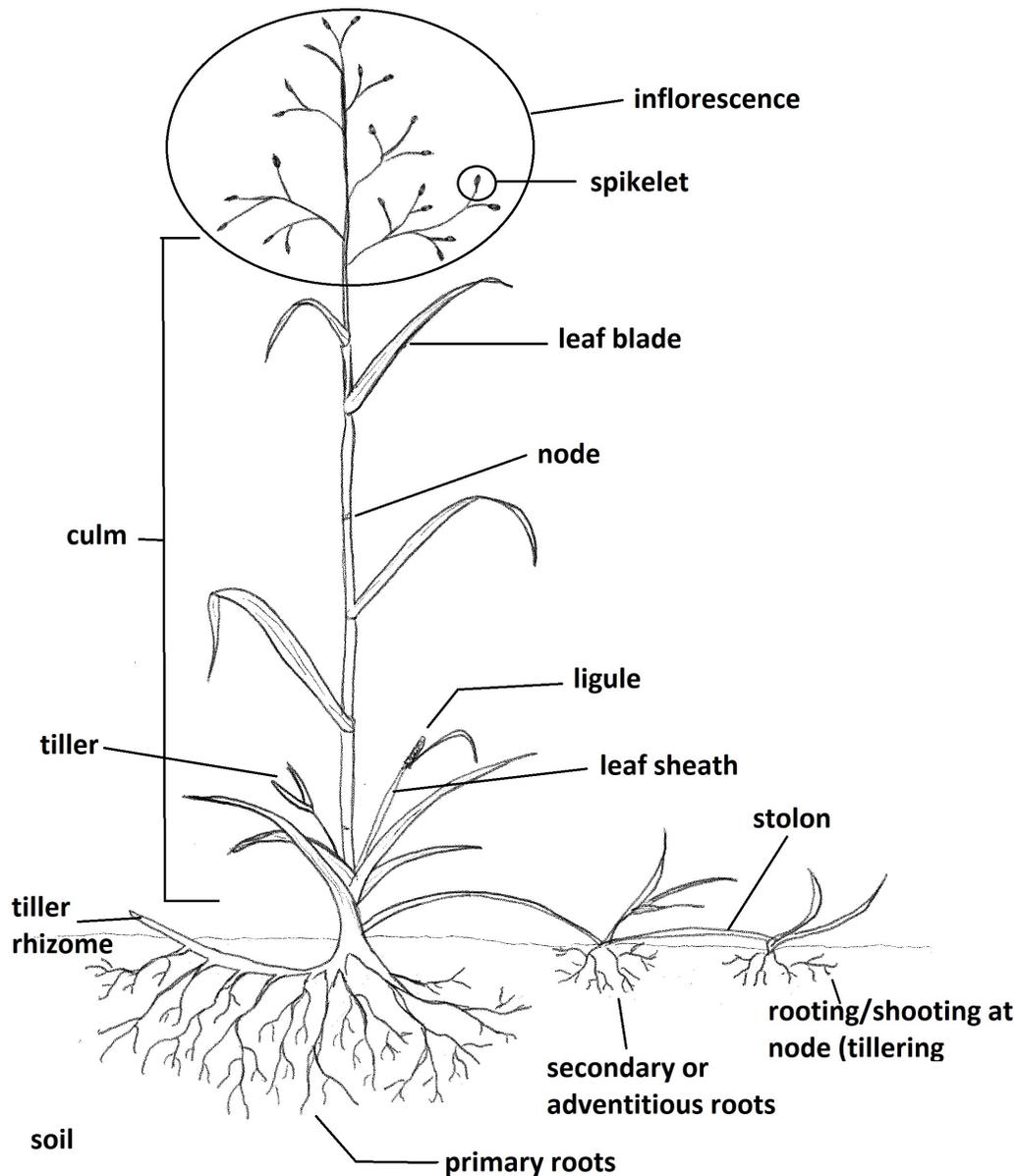


Grass Family (Poaceae)

Grass morphology

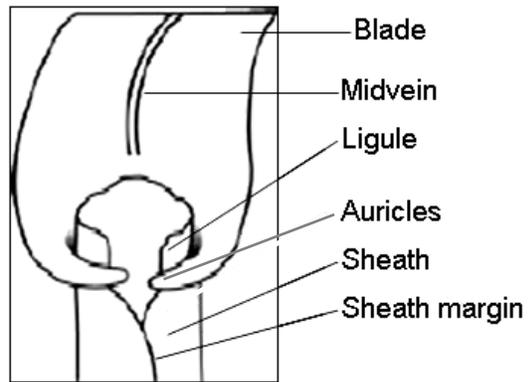
Stems (culms)

- Mostly hollow and cylindrical
- Interrupted at intervals by swollen nodes
- Rarely branching
- Some with rhizomes (spreading below ground) or stolons (spreading along the soil surface) giving rise to new shoots (tillers)

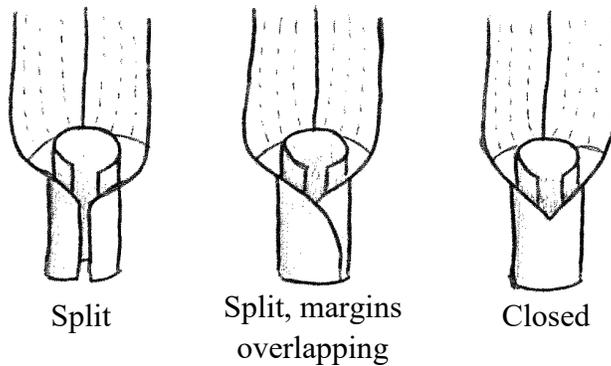


Leaves

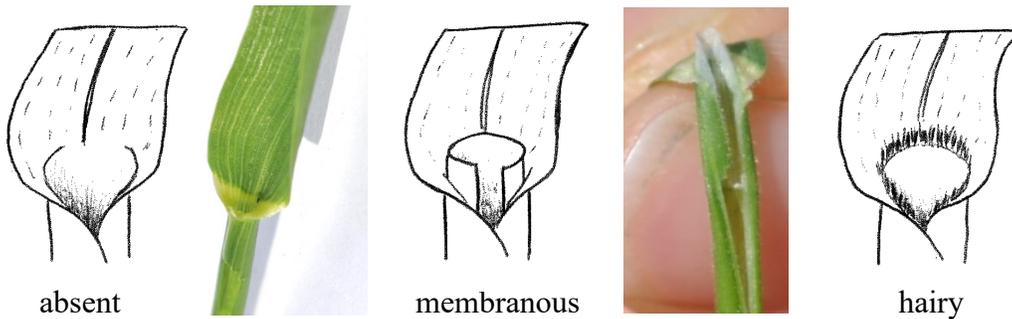
Blade: upper portion of the leaf that opens out, is flat, with parallel veins



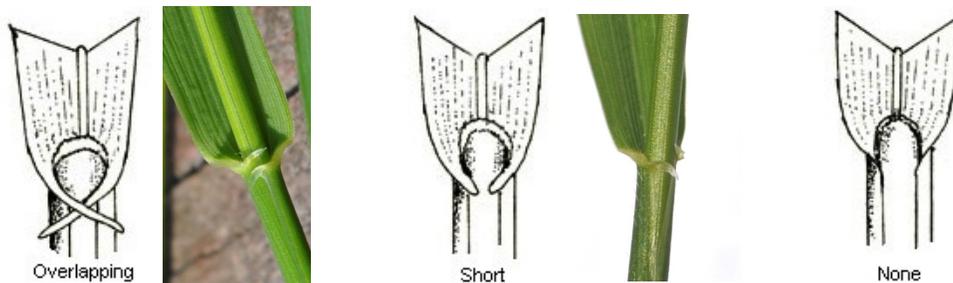
Sheath: lower portion of the leaf that encloses and protects young shoots



Ligule: small membranous flap of tissue at the junction of the sheath and blade; sometimes just a fringe of hairs or absent



Auricle: projections on either side of the ligule



Flower parts of grasses

Spikelet: all of the florets above a pair of glumes. Single to several florets are inside the spikelet. Spikelets can be attached to the stem (sessile) or with pedicels that branch away from the central axis (stalked).

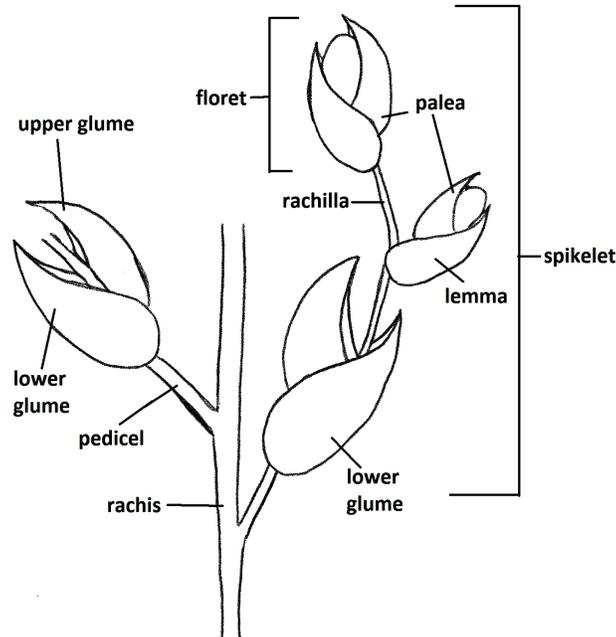
Glumes: the two bracts at the base of each spikelet. They are the outer part of the spikelet and enclose the florets and referred to as the upper and lower glume.

Floret: a single flower within the spikelet. It is subtended by two bracts, the lemma (outer) and palea (inner).

Awns: bristle-like or needle-like extension arising from lemmas or glumes. Not present on all species.



Spikelet



Inflorescence structure

The inflorescence of grasses can be broken down into three types depending on how the spikelets are attached to the stem. The spikelets are either attached directly or indirectly (stalked to the stem with a rachis) and if the rachis branches or not.

Raceme: the spikelets are stalked, attached to the central axis, and not branched.



Panicle: the spikelets are stalked and branching. Depending on the maturity or species the panicle can be an **open panicle** (left and center) or a **closed panicle** (right).



Spike: the spikelets are not stalked and are attached directly to the central axis.



GRASS FAMILY (POACEAE)

How to distinguish grasses from sedges and rushes:

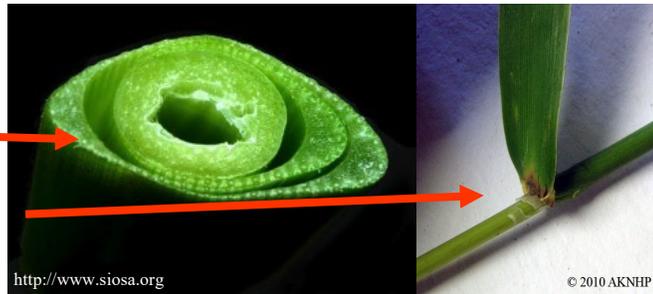
"Sedges have edges, rushes are round, grasses have nodes where the leaves are found"
Note that there are no non-native rushes in Alaska.

General morphology

- Stems with swollen nodes, hollow stems between nodes which are round in cross-section
- Leaves linear, simple, entire, and with parallel veins
- Leaves with an open sheath and a ligule (appendage) at the junction of the sheath and blade
- Inflorescence consist of florets arranged in a panicle or spike
- Flowers usually small and inconspicuous

Grasses (Poaceae)

- Stem hollow and round in cross-section
- Leaves 2-ranked
- Sheath open with a ligule



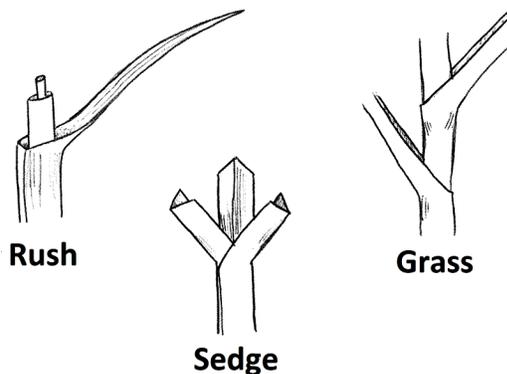
Sedges (Cyperaceae)

- Stem triangular in cross section
- Leaves 3-ranked
- Sheaths form a closed tube around the stem



Rushes (Juncaceae)

- Stems round and solid
- Leaves 3-ranked
- Sheaths closed



INTRODUCTION TO THE GRASS FAMILY

Reed canarygrass • *Phalaris arundinacea*

Invasiveness Rank: 83 points

Species Code: PHAR3

General Information:

Perennial
0.6-1.5 m tall

Description:

Roots

- Conspicuous creeping rhizomes

Leaves

- Broad, ≥ 1 cm wide
- Spread from stem at right angles

Inflorescence

- Dense
- 2+ florets per spikelet (2 sterile, 1 fertile; sterile florets may resemble tufts of hair at the base of the fertile floret)
- Glumes boat-shaped and with prominent nerve (unlike *Calamagrostis* glumes, which are not awned and are narrow)
- Lemmas without awns or a tuft of hairs at the base (unlike *Calamagrostis*)



Habitat: stream banks, wet meadows

Distribution: Pacific maritime and interior boreal; westernmost infestation is in Dillingham, northernmost infestation is in Fairbanks; outliers in Cordova and near Kennebec

Remarks: Native genotypes potentially exist at four hot springs in interior Alaska

**INFLORESCENCE A PANICLE**

Slough grass • *Beckmannia syzigachne*

General Information:

Perennial
Up to 1.2 m tall

Description:

Inflorescence

- Panicle
- More or less interrupted
- Spikelets flattened and arranged in two rows along one side of the stem
- Spikelets with one flower and forming distinct clusters



Habitat and

Distribution: wet ground in all three ecogeographic regions



Bluejoint • *Calamagrostis canadensis*

General Information:

Perennial
Up to 1.8 m tall

Description:

Leaves

- Ligules 3-6 mm long

Inflorescence

- Nodding panicles
- 1 floret per spikelet
- Lemmas with short awns and diagnostics tuft of hairs at base

Habitat and Distribution:

most open lowland habitats in all three ecogeographic regions

Remarks: This is the most common grass in Alaska.

<http://sigesplants.chicgo>



Orchardgrass • *Dactylis glomerata*

Invasiveness Rank: 53 points

Species Code: DAGL

General Information:

Perennial
Grows in tufts
0.5-1 m tall

Description:

Inflorescence

- Panicle 3-15 cm long
- Spikelets in dense, one-sided clusters
- Spikelets 5-9 mm long with 3-6 flowers
- Glumes and lemmas both keeled
- Lemmas with a short, sharp, slender point or a short awn

Habitat: meadows, roadsides

Distribution: interior boreal, including few occurrences in Anchorage and one outlier in Glennallen



INFLORESCENCE A PANICLE

GRASS FAMILY (POACEAE)

Traits of *Bromus* species in Alaska:

- Spikelets large and resembling a flattened cigar
- 2+ florets per spikelet
- Glumes shorter than the first floret
- Lemmas bifid (have two teeth at the tip), awnless, or with apical awn

Smooth brome • *Bromus inermis*
syn. Bromus inermis ssp. inermis, Bromopsis inermis

Invasiveness Rank: 62 points

Species Code: BRIN2

General Information:

Perennial
0.5-1.1 m tall

Description:

Roots

- Rhizomes

Leaves

- Sheath closed with a small v-shaped notch
- Ligules 1-2 mm long and brownish at the base (could be confused with *Calamagrostis canadensis* before flowering, but *C. canadensis* has ligules 3-6 mm long)

Inflorescence

- Lemmas smooth or very faintly hairy on nerves and at the base
- Lemmas may or may not have awns; if present are ≤ 3 mm long



Habitat: roadsides, meadows, open woods, forest clearcuts

Distribution: all three ecogeographic regions; west to the Seward Peninsula, north to Coldfoot, and south to the King Salmon area



INFLORESCENCE A PANICLE

Cheatgrass • *Bromus tectorum*

Invasiveness Rank: 78 points

Species Code: BRTE

General Information:

Annual

Culms up to 0.6 m tall

Description:

Leaves

- Ligules 5-6 mm long

Inflorescence

- Lemmas pubescent
- Lemmas with long awns, ≥ 1 cm

Habitat: roadsides, dry slopes, river banks

Distribution:

- Pacific maritime: Juneau
- Interior boreal: along the Parks Hwy, Nenana, Chena Hot Springs, Anchorage, Elmendorf Air Force Base



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INFLORESCENCE A PANICLE

Pumpelly's brome ● *Bromus pumpellianus* ssp. *pumpellianus*
syn. *Bromus pumpellianus*, *Bromopsis pumpelliana*,
Bromus inermis ssp. *pumpellianus*

General Information:

Perennial
Culms 0.5-1.2 m tall

Description:

Inflorescence

- Lemmas with awns up to 7 mm; shorter than *Bromus tectorum*, longer than *Bromus inermis*
- Lemmas distinctly hairy (unlike *Bromus inermis*)

Habitat: open lowland habitats

Distribution: widespread across Alaska

Remarks: Native *Bromus inermis* ssp. *pumpellianus* may hybridize with non-native *Bromus inermis*



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INFLORESCENCE A PANICLE

GRASS FAMILY (POACEAE)

Poa species in Alaska:

- There are many Alaska-native *Poa* species that can grow in disturbed sites alongside non-native counterparts
- All *Poa* species have leaves with a **boat-shaped** blade
- This is a difficult group to key out



Distinguishing between native and non-native *Poa pratensis* species:

Native subspecies of *Poa pratensis* have smooth flower stalks:

- *Poa pratensis* ssp. *alpigena*
- *Poa pratensis* ssp. *colpodea*

Non-native subspecies have somewhat hairy (scabrous) flower stalks:

- *P. pratensis* ssp. *pratensis*
- *P. pratensis* ssp. *irrigata*



Kentucky bluegrass • *Poa pratensis* ssp. *pratensis* syn. *Poa angustifolia*

Invasiveness Rank: 52 points

Species Code: POPR

General Information:

Perennial
30-100 cm tall
Grows in tufts

Description:

Roots

- Strongly rhizomatous, mat-forming

Stems

- Smooth, not glaucous

Leaves

- Not glaucous
- Soft, flat or folded

Inflorescence

- 3-5 branches per node, with the lowermost branches in whorls of 4-5
- Panicle 10-35 cm long
- Panicle branches are more or less scabrous
- Several to many spikelets per branch
- Spikelets crowded, each 3-6 mm long and with 3-5 flowers



Habitat: disturbed sites; lawns, waste areas; drier sites than *P. pratensis* ssp. *irrigata*

Distribution: widespread across Alaska; all three ecogeographic regions

INFLORESCENCE A PANICLE

Spreading bluegrass • *Poa pratensis* ssp. *irrigata*

Invasiveness Rank: 52 points

Species Code: POPR

General Information:

Perennial

8-30 cm tall (typically shorter than

P. pratensis ssp. *pratensis*)

Grows in tufts

Description:

Roots

- Strongly rhizomatous, mat-forming

Stems

- Somewhat glaucous (unlike *P. pratensis* ssp. *pratensis*)

Leaves and stems

- Somewhat glaucous (unlike *P. pratensis* ssp. *pratensis*)
- Leaf blades are flat

Inflorescence

- 1-2 branches per node (less than *P. pratensis* ssp. *pratensis*)
- Panicles have 4-8 spikelets per branch (fewer than *P. pratensis* ssp. *pratensis*)
- Glumes are somewhat glaucous

Habitat: disturbed sites; lawns, waste areas; wet, sandy ground

Distribution: widespread across Alaska; all three ecogeographic regions



Rough bluegrass • *Poa trivialis*

Invasiveness Rank: 52 points

Species Code: POTR2

General Information:

Perennial
30-80+ cm tall
Grows in tufts

Description:

Roots

- Lacking rhizomes

Stems

- **Decumbent or bent abruptly at the nodes**

Leaves

- 3-5 together at the base
- Blades are flat, scabrous, 1.5-4 mm wide
- Ligules on upper leaves 3-5 mm long

Inflorescence

- Loose panicle with scabrous branches
- Spikelets have 2-3 flowers
- Glumes are narrow, the first glume is claw-like, short, and has one nerve; the second glume is longer with 3 nerves
- Lemmas have 5 nerves and a distinct tuft of cobweb hairs at the base
- Anthers 1-2 mm long

Habitat: waste areas, roadsides, yards

Distribution: Pacific maritime



Annual bluegrass • *Poa annua*

Invasiveness Rank: 46 points

Species Code: POAN

General Information:

Annual
2-20 cm tall
Grows in tufts

Description:

Stems

- Ascending
- Smooth

Leaves

- Basal leaves light green or yellowish-green, soft, smooth, flat or folded, and much shorter than stems
- 1-2 stem leaves (most leaves basal)
- Sheaths are smooth and hyaline

Inflorescence

- Spikelets purple to green to yellowish-green
- Spikelets with 3-6 flowers
- Glumes narrow, acute, unequal, and boat-shaped
- Lower glumes with 1 nerve, upper glumes with 3 nerves
- Lemmas with 5 nerves
- Lacking tuft of hairs at the base of the lemma
- Anthers <1 mm long

Habitat: lawns, waste areas, roadsides

Distribution: widespread across Alaska; all three ecogeographic regions



INFLORESCENCE A PANICLE

Canada bluegrass • *Poa compressa*

Invasiveness Rank: 39 points

Species Code: POCO

General Information:

Perennial
15-60 cm tall
Bluish-green

Description:

Roots

- Slender, creeping rhizomes

Stems

- Wiry, smooth and flattened
- Ascending or bent abruptly at the nodes

Leaves

- Short and 1-4 mm wide
- Ligules 1 mm long

Inflorescence

- Stiff panicle, 3-10 cm long
- Panicle often with short, paired branches
- Spikelets crowded, each with 3-6 flowers
- Glumes with rounded at the apex
- Lacking tuft of hairs at the base of the lemma
- Anthers 1-2 mm long



Habitat: roadsides, lawns, waste areas

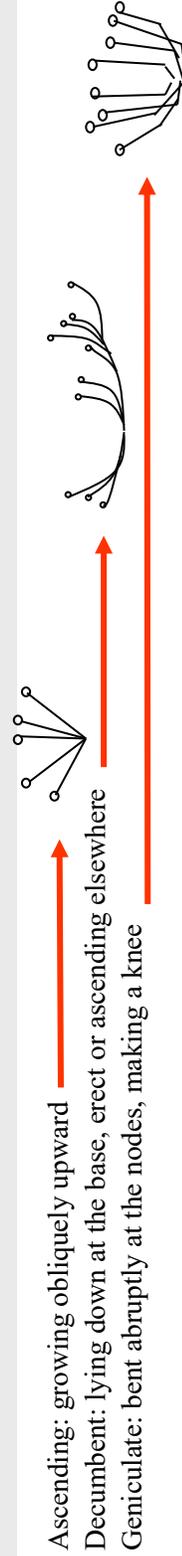
Distribution: Pacific maritime and interior boreal; widespread in southern Alaska; reported but uncommon elsewhere



INFLORESCENCE A PANICLE

Comparison of select *Poa* species:

| Longevity | Height (cm) | Growth Form | Leaves / Stems | Panicle / Flowers |
|--------------------------------------------------------------------|-------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Perennial | 30-100 | Ascending to decumbent | <ul style="list-style-type: none"> Not glaucous | <ul style="list-style-type: none"> 3-5 branches per node anthers 1-2 mm long; tufts of hairs at base of lemmas |
| <i>Poa pratensis</i> ssp. <i>pratensis</i> (Kentucky bluegrass) | | | | |
| Perennial | 8-30 | Ascending to decumbent | <ul style="list-style-type: none"> Somewhat glaucous | <ul style="list-style-type: none"> 1-2 branches per node anthers 1-2 mm long; tufts of hairs at base of lemmas |
| <i>Poa pratensis</i> ssp. <i>irrigata</i> (spreading bluegrass) | | | | |
| Perennial | 30-80 | Decumbent or geniculate | <ul style="list-style-type: none"> Scabrous; ligules on upper leaves 3-5 mm long | <ul style="list-style-type: none"> Anthers 1-2 mm long tuft of hairs at base of lowest lemma first glume narrow, curved, acute; prominent nerve |
| <i>Poa trivialis</i> (rough bluegrass) | | | | |
| Annual or biennial | 2-20 | Ascending | <ul style="list-style-type: none"> Light or yellowish green soft and much shorter than stems; mostly basal | <ul style="list-style-type: none"> Anthers <1 mm long Lacking tuft of hair at base of lemma first glume claw-like and half as long as second, with distinct nerve |
| <i>Poa annua</i> (annual bluegrass) | | | | |
| Perennial | 15-60 | Ascending or geniculate | <ul style="list-style-type: none"> Short; ligules 1 mm long culms conspicuously flattened | <ul style="list-style-type: none"> Anthers 1-2 mm long Lacking hairs at base of lemma |
| <i>Poa compressa</i> (Canada bluegrass) | | | | |



Characteristics of *Elymus* species:

- 1-2 spikelets per node
- All spikelets with 2 glumes
- Spikelets with 2+ flowers

Quackgrass • *Elymus repens*
syn. Agropyron repens

Invasiveness Rank: 59 points

Species Code: ELRE4

General Information:

Perennial
 15-60 cm tall
 Bluish-green

Description:

Roots

- Extensive creeping rhizomes

Leaves

- Constricted at the tip
- Ligule short (<1 mm) and papery
- Auricles pointed, about 3 mm long

Inflorescences

- Glumes with narrow hyaline margin and abruptly awned
- Lemmas without awns, or awns are as long as the lemma (similar to some native *Elymus* species)
- Spikelets glabrous (not distinctly hairy)
- Anthers 4-5 mm long (unlike native *Elymus* spp.)



Habitat: disturbed bare ground, roadsides; able to invade undisturbed grassy habitats

Distribution: all three ecogeographic regions; northernmost occurrence is in Coldfoot, westernmost occurrence is on the Seward Peninsula



<http://www.uni-graz.at>



<http://extension.missouri.edu>



<http://www.ruhr-uni-bochum.de>

INFLORESCENCE A SPIKE

Siberian wildrye • *Elymus sibiricus*

Invasiveness Rank: 53 points

Species Code: ELSI

General Information:

Perennial

70-120 cm tall

Grows in clumps or with runners (unlike *E. repens*)

Description:

Inflorescence

- Spikelets long (<30 cm) and drooping
- More than one spikelet per node (unlike *E. trachycaulus*)
- Lemmas with long awns, 1-3 cm (unlike *E. repens*)
- Lemmas spreading (upright in *E. glaucus*)

Habitat: eroding river banks, clearings, roadsides, waste places, sandy-gravelly soils

Distribution: limited distribution within the Pacific maritime and interior boreal ecogeographic regions; northernmost occurrence is on the Steese Hwy close to Chatanika



INFLORESCENCE A SPIKE

Alaskan wheatgrass • *Elymus alaskanus*
Slender wheatgrass • *Elymus trachycaulus*

| | |
|--------------------------------------------------------------|------------------------|
| Glumes very narrow | <i>E. trachycaulus</i> |
| Glumes rounded with very broad hyaline margin: | |
| • Glumes 3/4 to the same length as the spikelet length | <i>E. trachycaulus</i> |
| • Glumes about 1/2 to 2/3 of spikelet length | <i>E. alaskanus</i> |

General Information:

Perennial
70-120 cm tall
Grows in clumps or with runners (unlike *E. repens*)

Description:

- Roots
- No rhizomes
- Inflorescence
- Awns of lemmas shorter than the lemma body (similar to *E. repens*, when awned)
 - Anthers 1-2 mm (unlike *E. repens*, in which they are longer)

Habitat: naturally or human disturbed sites, river bars, meadows, roadsides

Distribution: widespread across Alaska

Elymus alaskanus



Elymus trachycaulus



INFLORESCENCE A SPIKE

Traits of *Hordeum* species in Alaska:

- 3 spikelets per node but the two lateral ones are often reduced to awns
- Each spikelet with one flower
- All spikelets with 2 glumes

Foxtail barley • *Hordeum jubatum*

Invasiveness Rank: 63 points

Species Code: HOJU

General Information:

Perennial
0.2-0.8 m tall

Description:

Leaves

- No auricles (unlike *H. vulgare* and *H. murinum* ssp. *leporinum*)

Inflorescence

- Turn purple to tawny and disarticulate at maturity
- Awns of lemmas are 1-6 cm long



Habitat: waste places, roadsides, river banks, lake shores, wetlands

Distribution: widespread across Alaska in all three ecogeographic regions

Remarks: Nativity of this species. Foxtail barley is most likely to have been present in eastern interior Alaska prior to European contact. However, it appears to have spread dramatically in the last half century. Regardless of nativity, it is considered a nuisance weed due to the ability of awns to become lodged in animals' noses and mouths.



INFLORESCENCE A SPIKE

Common barley • *Hordeum vulgare*

Invasiveness Rank: 39 points

Species Code: HOVU

General Information:

Annual
1.0-1.5 m tall

Description:

Leaves

- With well-developed auricles, <6 mm (unlike *H. jubatum* or *H. brachyantherum*)

Inflorescence

- Does not disarticulate at maturity (unlike *H. murinum* ssp. *leporinum* or *H. jubatum*)
- Awns absent on sterile florets
- Awns of lemmas, when present, are long, 3-18 cm (typically longer than *H. murinum* ssp. *leporinum* and *H. brachyantherum*)

Habitat: disturbed roadsides, agricultural fields; contaminant of straw

Distribution:

- Interior boreal: near Anchorage, Palmer, Healy, Delta, Fairbanks
- Arctic-alpine: western Alaska at checkpoints along the Iditarod Trail



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INFLORESCENCE A SPIKE

Leporinum barley • *Hordeum murinum* ssp. *leporinum*

Invasiveness Rank: 60 points

Species Code: HOMUL

General Information:

Annual
Up to 1.1m tall

Description:

Annual
Leaves

- With well-developed auricles, <8 mm (unlike *H. jubatum* and *H. brachyantherum*)

Inflorescence

- Spikelets disarticulate at maturity (unlike *H. vulgare*)
- Lemmas <2 mm wide (narrower than *H. vulgare*)
- Awns of lemmas are long, 2-4 cm (typically shorter than *H. vulgare*)

Habitat: associated with areas of human disturbance

Distribution: interior boreal only; restricted to locations in the Mat-Su Valley and Talkeetna area

**INFLORESCENCE A SPIKE**

Meadow barley • *Hordeum brachyantherum***General Information:**

Perennial
Up to 95 cm tall

Description:

Leaves

- Lacking auricles (unlike *H. vulgare* and *H. murinum* ssp. *leporinum*)

Inflorescence

- Awns of lemmas <1 cm long (typically shorter than non-native species)

Habitat: meadows, upper shorelines; often weedy

Distribution: mainly Pacific maritime but sporadic in interior boreal regions

**A comparison of some *Hordeum* species:**

| | Longevity | Auricles | Length of awns on lemmas | Awns disarticulate at maturity? |
|-----------------------------------------------------------------------|-----------|----------|--------------------------|---------------------------------|
| <i>Hordeum jubatum</i> (foxtail barley) | Perennial | None | 1-6 cm | Yes |
| <i>Hordeum vulgare</i> (common barley) | Annual | <6 mm | Absent or 3-18 cm | No |
| <i>Hordeum murinum</i> ssp. <i>leporinum</i> (leporinum barley) | Annual | <8 mm | 2-4 cm | Yes |
| <i>Hordeum brachyantherum</i> (meadow barley) | Perennial | None | <1 cm | Yes |

Timothy grass • *Phleum pratense*

Invasiveness Rank: 54 points

Species Code: PHPR3

General Information:

Perennial
Up to 1.5 m tall

Description:

Leaves

- Sheath of the upper leaf on the stem not inflated (unlike native *P. alpinum*)

Inflorescence

- Long, cylindrical, spike-like panicle (unlike native *P. alpinum*, which has a shorter, ovoid panicle)
- Glumes with awns (unlike *Alopecurus* species)

Habitat: meadows and roadsides

Distribution: widespread across all three ecogeographic regions; northern and westernmost infestations are on the Seward Peninsula; also recorded near Dillingham and Fairbanks



INFLORESCENCE A SPIKE

Meadow foxtail • *Alopecurus pratensis*

Invasiveness Rank: 52 points

Species Code: ALPR3

General Information:

Perennial
30-50 cm tall

Description:

Stems

- Erect

Inflorescence

- Long, cylindrical, spike-like panicle (unlike native *A. alpinus*, which is shorter and ovoid)
- Glumes not woolly, lacking awns (unlike *Phleum* species)
- Lemma is awned from the middle
- Anthers 2-4 mm long (unlike *A. aequalis* and *A. geniculatus*, which have anthers 1-1.5 mm long)

Habitat: meadows and roadsides

Distribution: Pacific maritime and interior boreal ecogeographic regions; northernmost occurrence is in Coldfoot, westernmost occurrence is on the Kenai



INFLORESCENCE A SPIKE

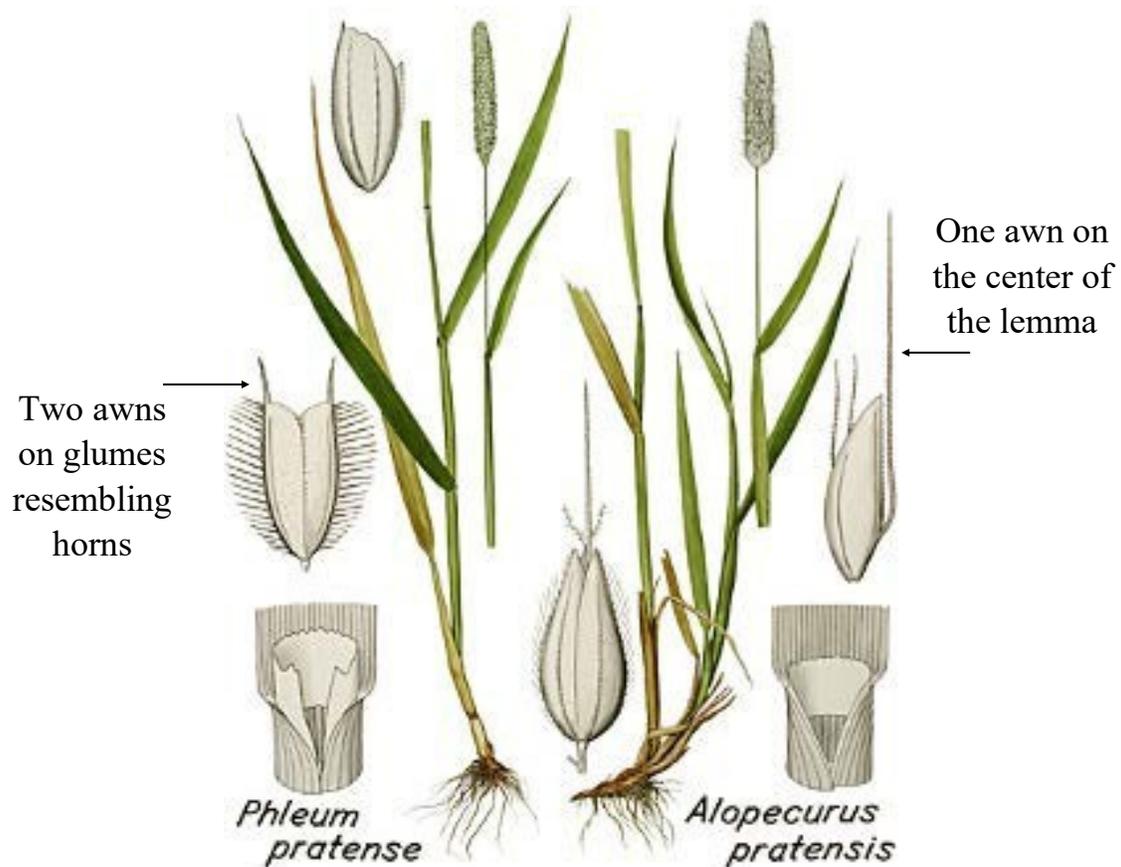
Distinguishing *Alopecurus* species and *Phleum* species:

Similarities between *Alopecurus* and *Phleum* species:

- Spikelets stalked but stalks are so short that the inflorescence appears spike-like
- 1 floret per spikelet

Differences between *Alopecurus* and *Phleum* species:

- *Alopecurus*: glumes do not have awns; awn emerges from center of lemma, resembling a horn
- *Phleum*: glumes have awns, resembling two horns



Water foxtail • *Alopecurus geniculatus*

Invasiveness Rank: 49 points

Species Code: ALGE2

General Information:

Perennial
15-50 cm tall
Grows in tufts

Description:

Stems

- Decumbent (unlike *A. pratensis*, which is erect)

Inflorescence

- Short, cylindrical, spike-like panicle, <3 cm long
- Lemmas with bent or twisted awns that may exceed the lemma by 2-4 mm
- Glumes without no awns (unlike *Phleum* species)
- Glumes or lemmas pubescent
- Anthers 1-2 mm long and yellow-violet

Habitat: meadows, stream banks, shores, shallow water

Distribution: scattered throughout all three ecogeographic regions

**INFLORESCENCE A SPIKE**

Shortawn Foxtail • *Alopecurus aequalis***General Information:**

Perennial
15-60 cm tall
Grows in tufts

Description:

Stems

- Erect or decumbent

Inflorescence

- Slender, cylindrical, spike-like panicle 2-7 cm long
- Lemmas with straight or slightly geniculate awns
- Awns barely exceeding glumes (<1.5 mm)
- Glumes or lemmas pubescent
- Anthers up to 0.5 mm long



Habitat: riparian zones, shallow water, newly deposited sediment

Distribution:

- Pacific maritime – southwest to Amchitka Island and throughout
- Interior boreal - north to Fort Yukon and west to the Seward Peninsula

Remarks: *A. aequalis* can potentially co-occur with *A. geniculatus*, as it grows in similar habitats. Native *A. aequalis* can be distinguished by:

- Awns of lemmas not exceed the lemma tip, or exceed the tip only by < 1.5 mm (longer in *A. geniculatus*)
- Anthers are <1 mm long (longer in *A. geniculatus*)



INFLORESCENCE A SPIKE

Comparison of *Alopecurus pratensis* and *Alopecurus geniculatus*:

Alopecurus pratensis

Long, cylindrical inflorescence (>3 cm)

Lemma with a straight awn emerging from the middle

Erect to geniculate lower stems

Alopecurus geniculatus

Short, cylindrical inflorescence (<3 cm)

Lemma with bent or twisted awns

Decumbent lower stems



Perennial ryegrass • *Lolium perenne*
syn. Lolium perenne ssp. perenne

Invasiveness Rank: 52 points

Species Code: LOPEP

General Information:

Annual to perennial
 Up to 0.9 m tall

Description:

Leaves

- Young shoots with folded leaf blades

Inflorescence

- **Spikelets directly attached to stem, edgewise**
- Lemmas lacking awns, or with very short awns, (<1 mm)
- **Upper glume missing!** Glumes equal to or shorter than spikelet
- ≤10 florets per spikelet

Habitat: roadsides, waste places

Distribution: scattered throughout the Pacific maritime and interior boreal regions

Remarks: There are no native *Lolium* species in Alaska.



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INFLORESCENCE A SPIKE

Italian ryegrass • *Lolium multiflorum*
 syn. *Lolium perenne* ssp. *multiflorum*

Invasiveness Rank: 41 points

Species Code: LOPEM2

General Information:

Annual to short-lived perennial

Up to 1.2 m tall

Description:

Leaves

- Young shoots with rolled leaf blades

Inflorescence

- **Spikelets directly attached to stem, edgewise**
- Lemmas with awns >1 mm long
- **Upper glume missing!** Glumes equal to or shorter than spikelet
- 10-20 florets per spikelet

Habitat: roadsides, waste places

Distribution: scattered throughout Pacific maritime and interior boreal regions

Remarks: There are no native *Lolium* species in Alaska.

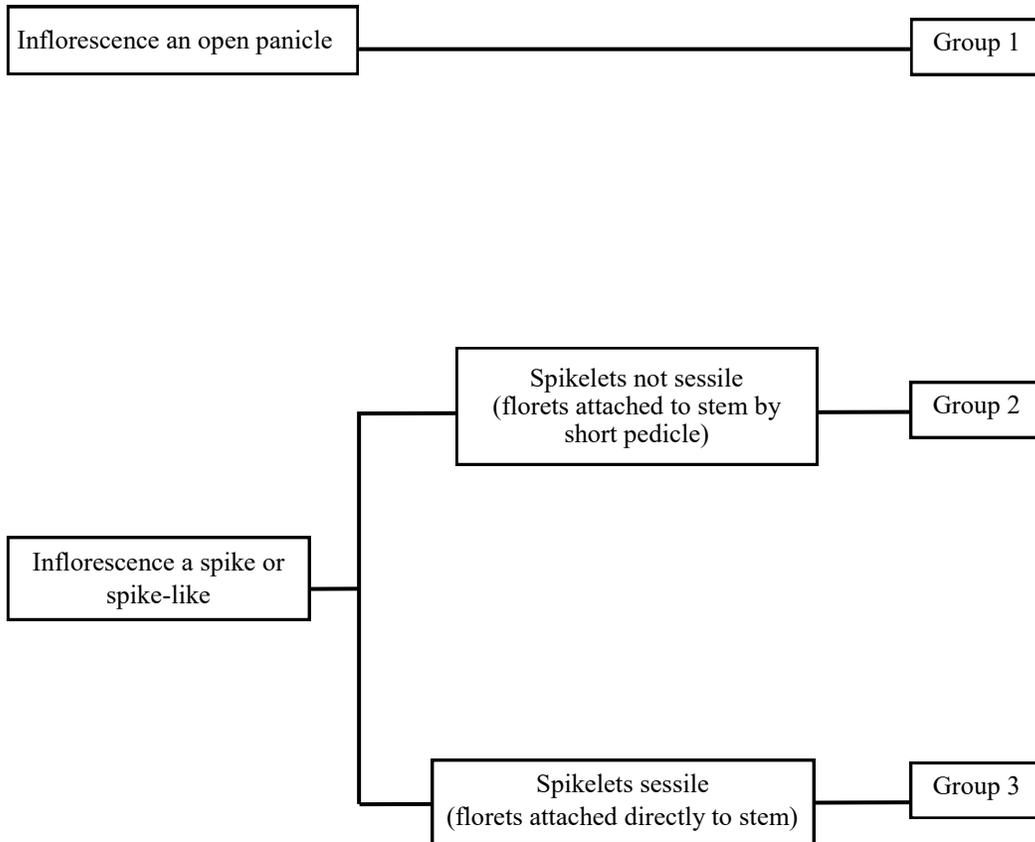
Lolium perenne readily hybridizes with *Lolium multiflorum* and hybrids may exhibit a range of characteristics from both species making identification difficult.

Common ryegrass (*Lolium* species) is a commercial mixture of ryegrass species frequently used in revegetation projects, which is comprised mostly of *Lolium multiflorum* but usually contains a substantial percentage of *Lolium perenne* and *Lolium multiflorum* x *perenne* hybrids.



INFLORESCENCE A SPIKE

GRASS FAMILY (POACEAE)

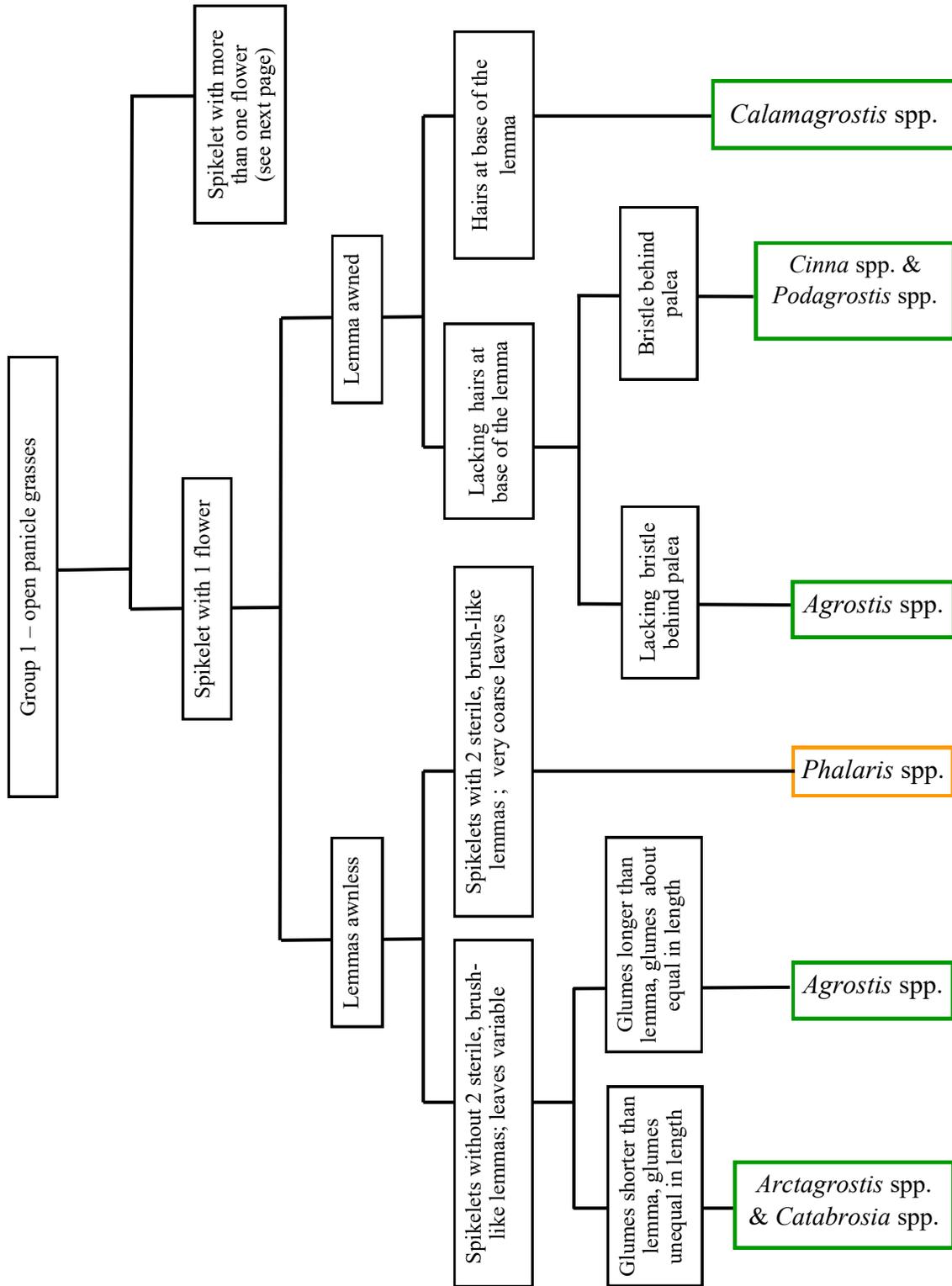


- = native to Alaska
- = not native to Alaska
- = disputed native status OR large genus with some species native and some not native to Alaska

KEY TO GRASSES OF DISTURBED HABITATS IN ALASKA

Adapted from Hultén 1968

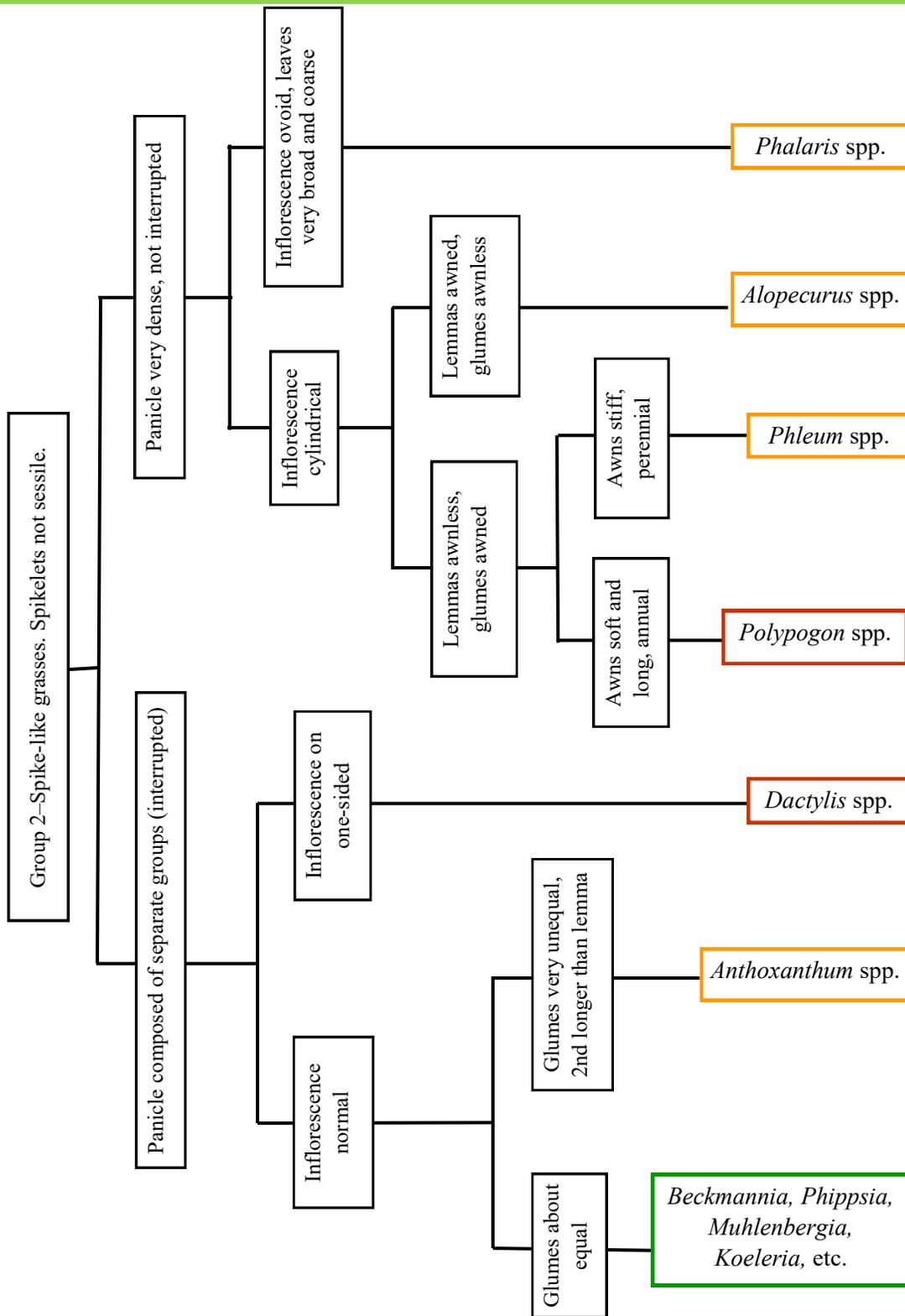
GRASS FAMILY (POACEAE)



KEY TO GRASSES OF DISTURBED HABITATS IN ALASKA

Adapted from Hultén 1968

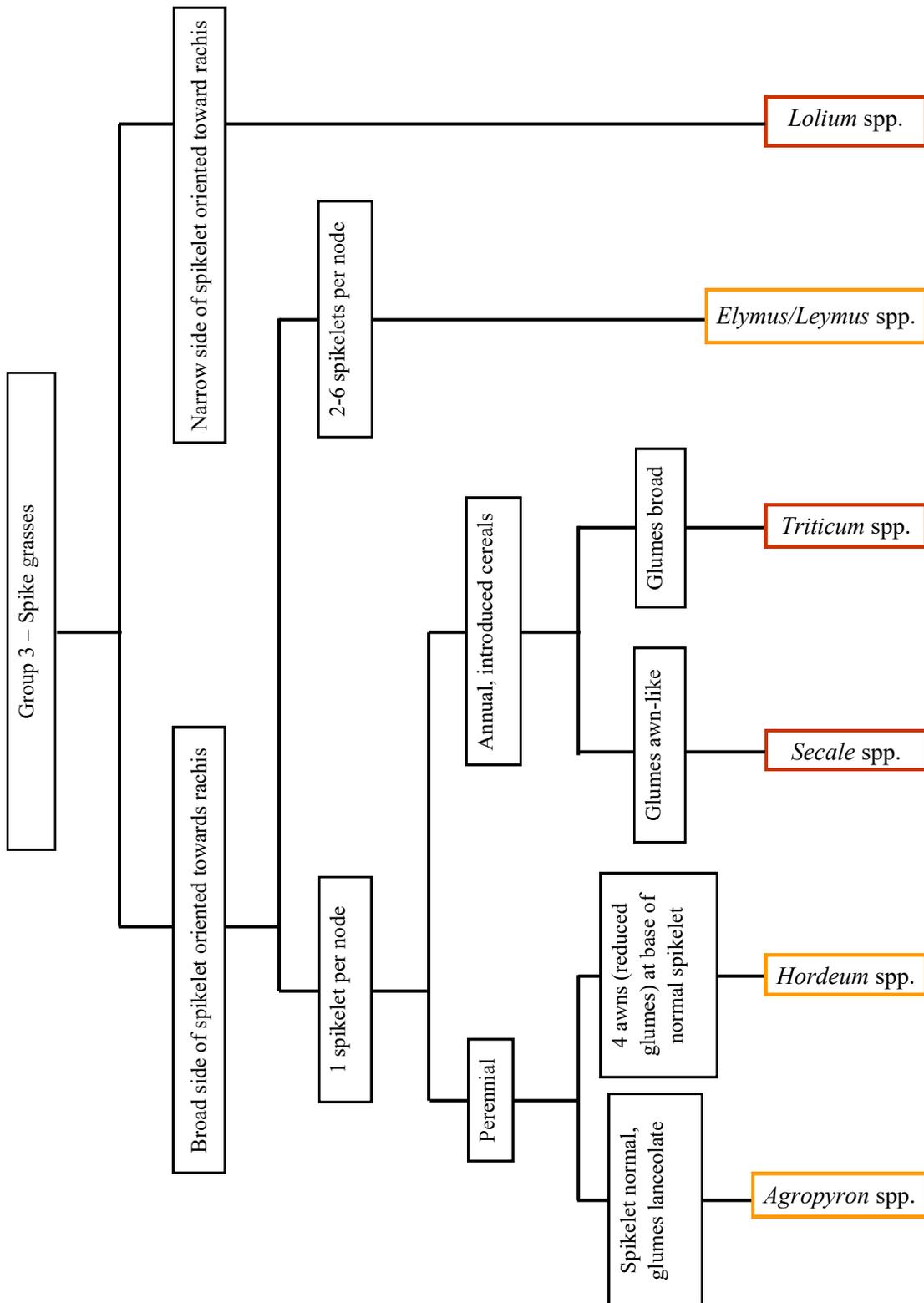
GRASS FAMILY (POACEAE)



KEY TO GRASSES OF DISTURBED HABITATS IN ALASKA

Partial key to Alaska grasses, part 2; consult Hultén (1968) or Welsh (1974) for more information

GRASS FAMILY (POACEAE)



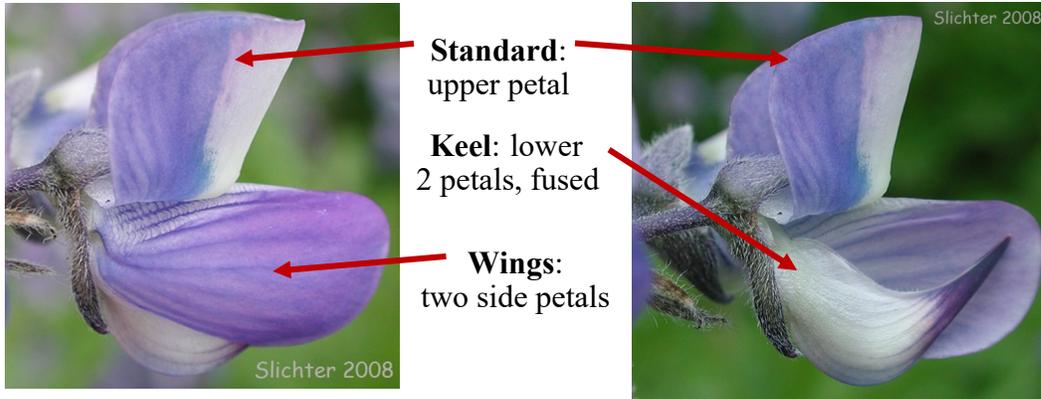
KEY TO GRASSES OF DISTURBED HABITATS IN ALASKA

Partial key to Alaska grasses, part 2; consult Hultén (1968) or Welsh (1974) for more information

Legume Family (Fabaceae)

- Includes herbs, shrubs, vines and trees; only herbs and shrubs represented in Alaska
- Roots with nitrogen-fixing bacterial nodules
- Leaves compound
- Flowers composed of 5 sepals, 5 petals, 10 stamens and 1 style
- Fruit a legume (e.g. peanuts, beans, peas, lentils, alfalfa)

Parts of the legume flower



Types of compound leaves



Trifoliate: 3 leaflets



Pinnate: leaflets arranged like a feather



Palmate: leaflets radiate from a central point

Pinnate with tendrils and/or stipules



Tendrils: modified, thread-like, terminal leaflets



Stipules: leaf-like appendages at the base of the leaf

White sweetclover • *Melilotus albus*
syn. Melilotus alba, Melilotus officinalis

Invasiveness Rank: 81 points

Species Code: MEAL2

General Information:

Biennial
 1-1.5 m tall

Description:

Leaves

- Compound with 3 leaflets
- Toothed margin extends two-thirds the way down the leaf (unlike *Medicago* species which are toothed only at the tip; see following pages for comparison)

Inflorescence

- White, fragrant

Fruit

- Black when ripe



Habitat: human and naturally disturbed areas with fine grained mineral soil, such as roadsides and roadside dust shadows, waste areas, glacial river bars and recently burned habitats.

Distribution: all three ecogeographic regions. Gravel bars on the Stikine River (Tongass National Forest), Nenana and Matanuska Rivers in south central Alaska; intersection of the Yukon River and Dalton Highway. Northern limit is Coldfoot; western limit is Galena and near Dillingham.



TRIFOLIATE LEAVES, INFLORESCENCE ELONGATE

Yellow sweetclover • *Melilotus officinalis*
syn. Melilotus albus, Melilotus alba

Invasiveness Rank: 69 points

Species Code: MEOF

General Information:

Annual or biennial
 1-1.5 m tall

Description:

Leaves

- Compound with 3 leaflets
- Toothed margin extends two-thirds the way down the leaf (unlike *Medicago* species which are toothed only at the tip)

Inflorescence

- Yellow

Fruit

- Wrinkled pod
- Yellow-brown when ripe

Habitat: similar to *M. albus* but is not known to colonize river bars or burned areas

Distribution: similar range as *M. albus* but much less common; not yet recorded in western Alaska

Remarks: *Melilotus albus* and

M. officinalis are sometimes lumped together under the accepted name of *M. officinalis* (PLANTS Database). Morphologically, these species are differentiated by color of flowers and ripe fruits. However, because *M. alba* appears to be more invasive in Alaska, particularly within riparian zones, we treat the species separately.



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Yellow alfalfa • *Medicago sativa* ssp. *falcata*
syn. Medicago falcata

Invasiveness Rank: 64 points

Species Code: MESAF

General Information:

Perennial, but plants escaped from cultivation behave as annuals
 Up to 0.9 m tall

Description:

Stems

- Decumbent or erect

Leaves

- Trifoliate and toothed at the tip

Inflorescence

- Yellow
- Globular clusters
- 10-13 mm diameter

Fruits

- Pods sickle-shaped or nearly straight
- 2-5 seeds per pod

Habitat: roadsides, waste places, near cultivated fields

Distribution: few populations in the Pacific maritime and interior boreal regions. Absent from southeast Alaska. Present around Fairbanks, the vicinity of Tok, Gakona, Fort Yukon, Anchorage, and Mat-Su Valley.



TRIFOLIATE LEAVES, INFLORESCENCE GLOBULAR

Alfalfa • *Medicago sativa* ssp. *sativa*
*syn. *Medicago sativa**

Invasiveness Rank: 59 points

Species Code: MESAS

General Information:

Annual or perennial
<1 m tall

Description:

Stems

- Decumbent or erect

Leaves

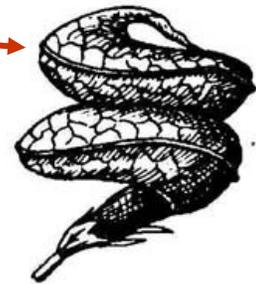
- Trifoliate and toothed at the tip

Inflorescence

- Purple
- Globular clusters
- <1 cm diameter

Fruits

- Pods spirally coiled loosely 2-3 times



Habitat: roadsides, disturbed sites, near cultivated fields

Distribution: few locations in Pacific maritime and interior boreal regions, including Anchorage, Fort Yukon, Dalton Hwy south of Prospect Creek, southeast and south coastal Alaska.

Black medick • *Medicago lupulina*

Invasiveness Rank: 48 points

Species Code: MELU

General Information:

Summer or winter annual

Prostrate stems up to 40 cm long

Description:

Stems

- Hairy and trailing

Leaves

- Leaflets broad and round (unlike the elongate leaflets of other *Medicago* species; leaves similar to *Trifolium* species but are different in that the apical leaflet has a distinctly longer stem than the lateral two leaflets)

Inflorescence

- Yellow
- In globular clusters 16 mm wide and 6 mm tall (smaller than flowers of *Medicago sativa* ssp. *falcata*)

Fruits

- Pods ridged, 1-seeded
- Black when ripe

Habitat: roadsides, lawns, cultivated crops

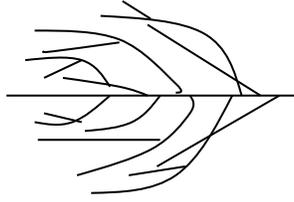
Distribution: scattered across the Pacific maritime and interior boreal regions,



Differences between *Melilotus* and *Medicago* species:

Growth Habit

Erect



Semi-erect,
often creeping



Pods

Ovoid



Coiled or curved



Inflorescence

Elongated



Short



Leaves

Leaflets are toothed for two-thirds of their length



Elongate leaflets are toothed only at the tip (*M. sativa* subspecies)



Melilotus
species

Medicago
species

TRIFOLIATE LEAVES

White clover • *Trifolium repens*

Invasiveness Rank: 59 points

Species Code: TRRE3

General Information:

Perennial
Approx. 15 cm tall
Prostrate stems up to 30 cm long

Description:

Stems

- Creeping and rooting at nodes

Leaves

- Leaflets often with V-shaped marks, but not always

Inflorescence

- White to pinkish-white

Habitat: waste areas, lawns, ditches, disturbed sites

Distribution: widespread across the state in all three ecogeographic regions



TRIFOLIATE LEAVES, INFLORESCENCE GLOBULAR

Alsike clover • *Trifolium hybridum*

Invasiveness Rank: 57 points

Species Code: TRHY

General Information:

Perennial
15-60 cm tall

Description:

Stems

- Upright and does not root at nodes (unlike *T. repens*)

Inflorescence

- White to pinkish

Habitat and distribution: similar to *Trifolium repens*



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Red clover • *Trifolium pratense*

Invasiveness Rank: 53 points

Species Code: TRPR2

General Information:

Perennial
15-60 cm tall

Description:

Stems

- Upright and does not root at nodes (unlike *T. repens*)

Leaves

- 3 leaflets immediately below the flowering head (unlike *T. repens* and *T. hybridum*)
- Leaflets often with v-shaped marks

Inflorescence

- Reddish-pink flowers

Habitat: cultivated fields, roadsides, lawns, gardens, meadows

Distribution: Pacific maritime and interior boreal regions



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TRIFOLIATE LEAVES, INFLORESCENCE GLOBULAR

How are these three similar or different?

White clover • *Trifolium repens* Red clover • *Trifolium pratense* Alsike clover • *Trifolium hybridum*

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TRIFOLIATE LEAVES, INFLORESCENCE GLOBULAR

Bird's foot trefoil • *Lotus corniculatus*

Invasiveness Rank: 65 points

Species Code: LOCO6

General Information:

Perennial
0.6-0.9 m tall

Description:

Leaves

- Divided into 5 oval-linear leaflets
- Center 3 leaflets are large (appearing as a trifoliate or trefoil leaf)
- Lower 2 leaflets resembling stipules

Inflorescence

- Yellow globular clusters on a long stalk

Fruits

- Pods brown-black, cylindrical, resembling a bird's foot



Habitat: in other states *Lotus corniculatus* is known to occur on pastures, roadsides, wetlands, disturbed grasslands, and riparian areas

Distribution:

- Pacific maritime: southeast Alaska in logged areas and along roads
- Interior boreal: recorded along the Dalton Hwy and in Anchorage



5 LEAFLETS APPEARING AS 3, INFLORESCENCE GLOBULAR

Crownvetch • *Securigera varia*
syn. Coronilla varia

Invasiveness Rank: 68 points

Species Code: SEVA4

General Information:

Perennial
Up to 0.9 m tall
Trailing stems up to 2 m long

Description:

Leaves

- Pinnately compound with a terminal leaflet

Inflorescence

- Pink-white

Fruits

- Pods linear

Habitat: roadsides; used for revegetation outside of Alaska

Distribution: interior boreal; Fairbanks and along greenbelts in Anchorage



Bird vetch • *Vicia cracca* ssp. *cracca*

Invasiveness Rank: 73 points

Species Code: VICRC

General Information:

Perennial
Climbing stems up to 2 m long

Description:

Stems

- Climbing or trailing
- Not winged (unlike native *Lathyrus* species)

Leaves

- 8-10 pairs of leaflets
- Branched tendrils (unlike *Coronilla varia*)

Inflorescence

- Blue-violet
- Dense, one-sided clusters of 20-50 flowers

Fruits

- Seed pod not constricted

Habitat: roadsides, forest edges and openings, thickets

Distribution: all three ecogeographic regions



Winter vetch • *Vicia villosa*

Invasiveness Rank: 53 points

Species Code: VIVI

General Information:

Annual or biennial
0.3-0.9 m tall

Description:

Similar to *Vicia cracca* ssp. *cracca*, but *V. villosa* can be distinguished by the following characteristics:

- Plant very hairy
- Flowers distinctly two-toned (purple and white, red and white)

Habitat and distribution: reported from one site in Anchorage and a community garden in Juneau



PINNATE LEAVES, INFLORESCENCE ELONGATE OR IN LEAF AXIL

Garden vetch • *Vicia sativa* ssp. *nigra*
syn. Vicia angustifolia

Invasiveness Rank: not yet ranked

Species Code: VISAN2

General Information:

Perennial

Stems up to 2 m long

Description:

Smooth to hairy

Leaves

- Pinnate with 5-7 pairs of leaflets per leaf
- Leaflets rounded or with a shallow notch, and with a needle-like tip
- Tendrils well-developed and branched
- Stipules 3-8 mm long, deeply toothed or arrow-shaped

Inflorescence

- In the leaf axils (not hanging)
- Longer or equal to the length of leaflets
- Style densely bearded at the tip

Habitat: disturbed ground, yards, roadsides

Distribution: low elevations; Fairbanks, Dawson and the Yukon Territory



PINNATE LEAVES, INFLORESCENCE ELONGATE OR IN LEAF AXIL

Giant vetch • *Vicia gigantea*

- Inflorescence shorter than compound leaf (unlike *Vicia cracca* ssp. *cracca*)
- Only found in southeast Alaska



American vetch • *Vicia americana*

- Flowers on all sides of the raceme (unlike the one-sided raceme of *V. cracca* ssp. *cracca*)
- Only found in southeast and south coastal Alaska (Wrangles, Talkeetna Mountains)



LEGUME FAMILY (FABACEAE)

Native Fabaceae genera resembling invasive *Vicia* species:

Lathyrus species

- Sometimes has winged stem
- Fewer leaflets per leaf, <12
- Leaflets distinctly narrow and long or rounded
- Sometimes has tendrils



Oxytropis species

- No tendrils
- Pod is not constricted between seeds
- Keel is tipped with a sharp point



Hedysarum species

- Erect stems
- No tendrils
- Pod is constricted between seeds



Astragalus species

- Erect stems
- No tendrils
- Pod is inflated and not constricted or flattened
- Keel is not tipped with a sharp point



PINNATE LEAVES, INFLORESCENCE ELONGATE OR IN LEAF AXIL

Marsh pea • *Lathyrus palustris*

General Information:

Perennial
Vine stems 45-120 cm long

Description:

Stems

- Winged

Leaves

- 2-3 pairs of leaflets
- Tendrils



Habitat and distribution: wet meadows, moist forest understories, disturbed sites; Pacific maritime and interior boreal regions

Beach pea • *Lathyrus japonicus*

General Information:

Perennial
Stems 15-30 cm long

Description:

Stems

- Not winged

Leaves

- Leaflets are broadly ovate
- Sometimes with tendrils



Habitat and distribution: sandy soils along the coast

Alpine sweetvetch • *Hedysarum alpinum*

General Information:

Perennial
20-70 cm tall

Description:

Stems

- Erect, not climbing or trailing

Leaves

- Pinnate with a terminal leaflet (no tendrils)
- Leaflets broadly lanceolate or oblong

Fruits

- Pod constricted between seeds



Habitat: roadsides, rocky slopes, gravel bars, spruce forests

Distribution: Pacific maritime and interior boreal regions

PINNATE LEAVES, INFLORESCENCE ELONGATE OR IN LEAF AXIL

Siberian pea shrub • *Caragana arborescens*

Invasiveness Rank: 74 points

Species Code: CAAR18

General Information:

Shrub
<3 m tall

Description:

Leaves

- 8-12 leaflets per leaf
- Leaflets oblong to elliptic
- Spiny stipules

Inflorescence

- Yellow
- Borne singly

Habitat and distribution: ornamental;
planted in towns and villages throughout
south central and interior Alaska



SHRUBS WITH BRIGHT YELLOW, MOSTLY SINGLE FLOWERS

Scotch broom • *Cytisus scoparius*

Invasiveness Rank: 69 points

Species Code: CYSC4

General Information:

Perennial, evergreen shrub
2-4 m tall

Description:

Stems

- Strongly 5-angled
- Green

Leaves

- Lower leaves trifoliolate, upper leaves simple (unlike *Caragana arborescens*, which has pinnately compound leaves)

Inflorescence

- Bright yellow
- 1-3 in leaf axils

Fruits

- Pods dark brown to black
- Pods flat with hairy margins

Habitat: found mostly in urban settings and along roadsides

Distribution: southeast Alaska; Funny River Road and Kasilof Transfer Station on the Kenai Peninsula



SHRUBS WITH BRIGHT YELLOW, MOSTLY SINGLE FLOWERS

Bigleaf lupine • *Lupinus polyphyllus* ssp. *polyphyllus*

Invasiveness Rank: 71 points

Species Code: LUPOP2

General Information:

Perennial
0.4-1.0 m tall

Description:

Leaves

- Palmately compound
- 10-18 leaflets per leaf (more than native lupines)
- Basal leaves 15-20 cm in diameter (larger than native lupines) and have long stalks

Inflorescence

- Blue to violet
- Long, dense clusters up to 40 cm tall
- Fragrant

Fruits

- Hairy pods up to 5 cm long

Habitat: meadows, gravel bars, shaded forest understories, disturbed sites, roadsides

Distribution: Pacific maritime and interior boreal ecogeographic regions; Fairbanks to the Kenai Peninsula, Glennallen and vicinity, Copper River Delta, southeast Alaska

Remarks: The nativity of this species is suspect. Alaska-specific flora consider it introduced to Alaska; however, several collections have been made in remote locations, where introduction by humans is unlikely, including the Copper River Delta, Glacier Bay National Park, near Yakutat Bay and Katalla.



PALMATE LEAVES

Arctic lupine • *Lupinus arcticus*

Nootka lupine • *Lupinus nootkatensis*

Description:

Leaves

- Leaves with a smaller diameter than *L. polyphyllus*
- <10 leaflets per leaf, fewer than *L. polyphyllus*

L. arcticus:

- The basal leaf petiole is two times as long as the diameter of the compound leaf
- Found on dry and damp slopes, gravel bars, solifluction soils, roadsides, and mountainous areas
- Found in all three ecogeographic regions but is most common in the interior boreal region

L. nootkatensis:

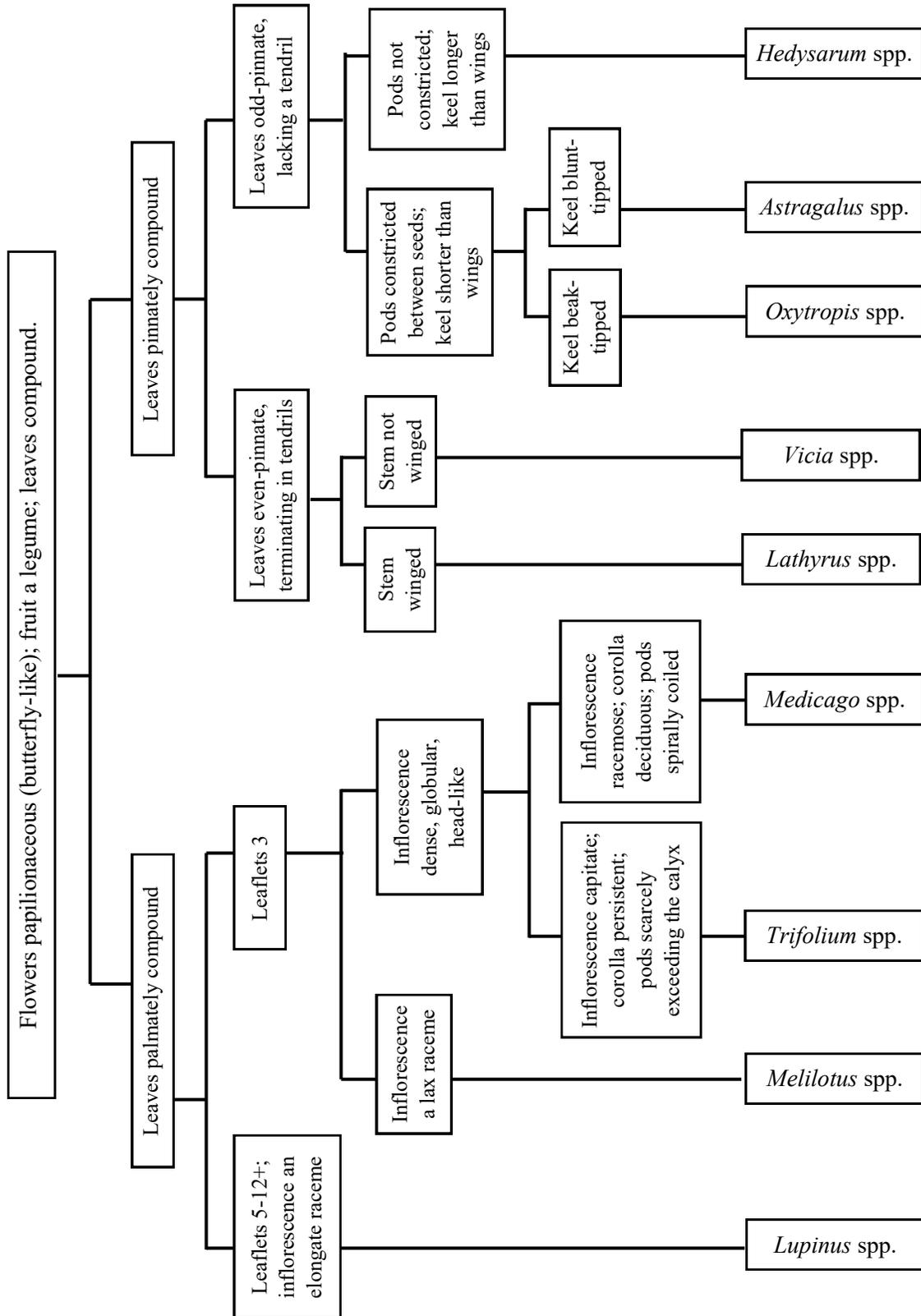
- The basal leaf petiole is not longer than the diameter of the leaf
- Found on dry slopes and gravel bars
- Found only in the Pacific maritime ecogeographic region

Remarks: Native and non-native lupines may co-occur as seen in the photo below.

Note the non-native *Lupinus polyphyllus* with larger (darker green in photo) leaves and the native *Lupinus nootkatensis* with smaller leaves.



LEGUME FAMILY (FABACEAE)



KEY TO THE FABACEAE GENERA OF ALASKA