Grasses are important components of most terrestrial ecosystems around the world. Whether as community dominants, rare plants, agricultural weeds, invasive alien species of natural and semi-natural habitats, remediation vegetation, or agricultural crops, grasses are among the most important ecological and economic plants in the landscape.

Many grasses can be identified by their vegetative characteristics alone. This is useful in field studies where distinguishing species at various growth stages and conditions is important. The current key is presented to help in identifying grasses of Ontario in their vegetative state. Several identification tools have been published for Canadian grasses, including Nowosad et al. (1942), Clarke, et al. (1944) and Looman (1982). Another useful reference is that of Weishaupt (1985) for Ohio grasses.

The present key attempts to rely on characteristics observable in the field with a good hand-lens. Characteristics which are more easily used and more reliable tend to be given first in the couplets. Microscope examination of leaf blade tissues will reveal many additional characteristics useful for identification (e.g., Clifford and Watson 1977), but this is beyond the scope of this key. Grasses included in this key are primarily common introduced and native species which are often present as important components of plant communities in southern Ontario. The decision to include or exclude any particular species is, however, rather subjective. In some cases the key leads to groups which cannot be reliably identified to the species level using vegetative characteristics utilized in this key. The species contained in these groups are indicated in Table 1.

Authorities of scientific names, English common names and some common synonyms are given in Table 1. The taxonomy follows that used by the Flora of North America project. A short glossary of terms is provided and a series of illustrations is included to assist in the interpretation of character states. The drawings are taken from Looman (1982) and Aiken and Darbyshire (1983).

A few words of caution

Material must be examined carefully as not only are many characteristics inconspicuous, but growing conditions as well as disease and predation can influence the expression or condition of character states. Leaf auricles and the joining of leaf sheath margins (sheath closure) are particularly susceptible to physical damage or deterioration with age. Selecting parts that are mature but not senescent will give the best results. Examining more than one leaf or plant (if available) will also be helpful. This is not a key to grass seedlings. Plants should have at least 3
leaves and preferably more.

The key certainly has many deficiencies partly because of various constraints. Some couplets in the key will work better than others, but all should work better with increasing user experience. Many ambiguities will, however, continue to bedevil both creators and users of such keys. The author welcomes any comments or suggestions aimed at improvement.
**Glossary of terms**

**abaxial** The surface or portion of a structure facing away from the main axis of the plant part from which it arises. For leaf blades this is usually the "back" or "underside" of the leaf and is often darker in colour.

**adaxial** The surface or portion of a structure facing toward from the main axis of the plant part from which it arises. For leaf blades this is usually the "top" or "upperside" of the leaf and is often lighter in colour.

**auricle** A small expansion of the leaf at the top of the sheath and the edge of the collar (but not always present). They may be poorly developed and several leaves should be examined. See Fig. 5.

**blade** The upper (distal) portion of the leaf (above the ligule) that does not clasp the stem. They may be flat, folded or rolled. See Figs. 1, 2 & 4.

**ciliate** Having a line of hairs in one plane; usually along a margin.

**cleistogenes** Small cleistogamous flowers present singly or in small groups within the leaf sheaths at the base of the stem. These are hidden and revealed only when the sheath is removed from the stem.

**collar** The back (abaxial) side of the leaf at the junction of the blade and sheath. See Fig. 1.

**conduplicate** Folded inwardly along the central longitudinal axis so that the adaxial surfaces on either side are facing each other. Like a piece of paper folded in half. See Fig. 2A.

**convolute** Laterally rolled with the margins overlapping and each leaf completely surrounding and/or surrounded by the next one. Like a piece of paper rolled. See Fig. 2B.

**decumbent** With the lower (basal) part of the stem lying more or less prostrate and the distal end erect, or curved upwards from the base.

**distichous** Arranged in two (opposite) ranks along the axis.

**emarginate** With a shallow notch or indentation.

**entire** An uninterrupted, smooth margin (without teeth, lobes or other projections).

**glabrous** Without hairs.

**glaucous** With a whitish (or bluish-white) cast, as if frosted; usually because of a thin microscopic deposit of wax.

**internode** The region of a stem between two nodes.

**inflated** Swollen or enlarged; and then loose in the case of leaf sheaths.

**involute** The edges in-rolled towards the centre.

**keel (keeled)** A conspicuously raised portion (usually a vein) along the edge of a fold or curve. As in the keel of a boat.

**ligule** A structure on the inside (adaxial side) of the leaf at the junction of the sheath and the blade; it may consist of a ring of hairs, a short membrane topped with hairs or a thin (usually translucent) membrane. See Figs. 5 & 6.

**membranous** Thin, pliable, like a membrane (see ligule).

**prophyll** The highly modified first leaf of an axillary branch (usually completely hidden in the subtending sheath and with 2 distinct lateral veins).

**recumbent** Lying down, prostrate, flat on the ground.

**rhizome** An underground stem giving rise to roots and other stems. See Fig. 1.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>scabrous</td>
<td>Bearing minute prickle hairs and usually rough to the touch.</td>
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<tr>
<td>sheath</td>
<td>The lower (proximal) part of the leaf which forms a clasping (sometimes loosely) tube around the stem (at least when young). See Figs. 1 &amp; 3.</td>
</tr>
<tr>
<td>stolon</td>
<td>An aerial stem which grows more or less horizontal to the ground and giving rise to roots and other stems at the nodes. See Fig. 1.</td>
</tr>
<tr>
<td>truncate</td>
<td>An end (proximal or distal) that is in a straight plane perpendicular to the main axis. Cut off straight.</td>
</tr>
<tr>
<td>vernation</td>
<td>The arrangement and shape of leaves when young, prior to unfolding from the bud-shoot. See Fig. 2.</td>
</tr>
</tbody>
</table>
A key to the common grasses of southern Ontario by vegetative characteristics.

1. Vernation of leaf blades folded (conduplicate) in the bud-shoot (Fig. 2A) .................. 2
2. Vernation of leaf blades rolled (convolute) in the bud-shoot (Fig. 2B) .................. 15
   2. Auricles present; basal sheaths reddish at base; leaves glabrous ........... *Lolium perenne*
   2. Auricles absent; sheaths various; glabrous or pubescent .......................... 3
3. Ligules a fringe of hairs (Fig. 5E, 6D); tuft of long hairs at margins of collars (Fig. 5E); old blades strongly curved or curled; sheaths with long hairs (sometimes glabrous); plant tufted ........................................... *Danthonia spicata*
3. Ligules membranous; no long hairs at margins of collars; old blades not strongly curved or curled; sheaths glabrous or densely pubescent .......................... 4
   4. Blades conduplicate and bristle-like or sometimes flat, prominently ridged on the adaxial surface ................................................................. 5
   4. Blades folded or flat and not bristle-like, not prominently ridged on the adaxial surface . 6
5. Ligules less than 0.5 mm long or obsolete; sheaths open (Fig. 3B); leaves glaucous or blue-green; plant in dense tufts, without creeping rhizomes .......................... *Festuca* species
5. Ligules about 0.5 mm long; sheaths closed nearly to top; leaves green or dark green; plant in loose tufts, usually with creeping rhizomes .......................... *Festuca rubra*
6. Medial lines absent on the adaxial blade surface; tip of blades taper-pointed (the young basal blades may be slightly boat-shaped) (Fig. 4A) .................................................. 7
6. Median lines present on the adaxial surface (two light coloured lines running along either side of the mid-vein); tip of blades boat-shaped (Fig. 4B) ......................... 8
7. Ligules 4 to 10 mm long, white coloured or transparent, apex without minute ciliate hairs; basal sheaths glabrous, strongly compressed (flattened) and keeled; basal blades glabrous; rhizomes absent .................................................. *Dactylis glomerata*
7. Ligules 0.5 to 2 (2.5) mm long, yellowish or brownish coloured, apex minutely ciliate; basal sheaths usually pubescent (at least sparsely), weakly compressed; basal blades often pubescent with long hairs; short rhizomes usually present .................. *Schizachyrium scoparium*
8. Ligules truncate, less than 1 mm long; rhizomes present ................................... 9
8. Ligules obtuse or acute, more than 1 mm long; rhizomes present or not ............ 10
9. Sheaths keeled; ligules usually about 1 mm long, emarginate (sometimes obscurely), abaxially pubescent or with prickle hairs, finely ciliolate (the hairs sometimes sparse); blades short (2 to 10 cm), broadest at base, gradually tapering to the apex; foliage blue-green, often glaucous; minute hairs on margins of collars absent; plant not in tufts and without basal tufts of leaves .................................................. *Poa compressa*
9. Sheaths not keeled; ligules usually about 0.5 mm long, entire; blades long (5 to 30 cm), parallel-sided (not evenly tapering); foliage deep-green, not glaucous; minute hairs often present on margins of collars; plant in loose tufts with a small basal tuft of leaves .................. *Poa pratensis*
10. Rhizomes present; sheaths closed to near the top (Fig. 3C), with distinct cross-veins joining the main veins ................................................................. 11
10. Rhizomes absent; sheaths open with the margins overlapping (Fig. 3B), without evident cross-veins ................................................................. 13
11. Blades 3 to 5 mm wide; sheaths not keeled ...................................... *Glyceria striata*
11. Blades 6 to 15 mm wide; sheaths keeled ........................................... 12
12. Sheaths smooth, not minutely roughened; foliage yellow-green to bright green, not glossy
dark green; stem bases usually less than 1 cm wide. \textit{Glyceria grandis}

12. Sheaths usually minutely roughened (feel with lips or tongue); foliage bright green or glossy dark green (best assessed in a fresh condition); stem bases often 1 cm or more wide \textit{Glyceria maxima}

13. Blades not tapering (parallel-sided) to the abruptly pointed and boat-shaped tip, often puckered or wrinkled in places; sheaths smooth; plants annual \textit{Poa annua}

13. Blades truncate at base and tapering to a narrow boat-shaped tip, not puckered or wrinkled; sheaths usually scabrous; plants perennial \textit{Poa trivialis}

14. Blades glossy on abaxial surface; sheaths minutely roughened; stems weak and usually strongly decumbent \textit{Poa trivialis}

14. Blades not glossy on the abaxial surface; sheaths smooth; stems stiff and erect or only slightly decumbent \textit{Poa palustris}

15. Auricles present (sometimes rudimentary or deciduous) (Figs. 5A-C). Note that claw-like auricles are not always well developed on all leaves and are often deciduous; several fresh leaves in good condition should be examined \textit{Leymus mollis}

15. Auricles absent or rudimentary (Figs. 5C-D) \textit{Schedonorus arundinaceus}

16. Plants of beaches and sand dunes (unstable sands) and long rhizomes present; leaves usually glaucous; blades strongly ribbed on adaxial surface \textit{Elymus trachycaulus}

16. Either plants not of beaches and sand dunes or long rhizomes absent; plants glaucous or not; blades strongly ribbed on adaxial surface or not \textit{Hordeum jubatum}

17. Blades glossy on the abaxial surface; ligules usually entire, sometimes lacerate (Fig. 6C), but not ciliate; auricles rounded to claw-like (sometimes rudimentary) \textit{Schedonorus pratensis}

17. Blades not glossy on the abaxial surface; ligules ciliate or lacerate; auricles claw-like (sometimes rudimentary) \textit{Elymus repens}

18. Plants annual; blades smooth on the margins near the base; ligules usually 1 mm long or more \textit{Lolium multiflorum}

18. Plants perennial; blades scabrous on the margins (sometimes obscured by involute blade margins); ligules usually 0.5 mm long or less \textit{Schedonorus pratensis}

19. Auricles ciliate (sometimes sparsely) \textit{Schedonorus pratensis}

19. Auricles glabrous \textit{Schedonorus pratensis}

20. Blades somewhat stiff, bluish green or glaucous, narrow and flat or rolled \textit{Schedonorus pratensis}

20. Blades stiff or lax, usually green or bright green, broad and flat (if somewhat glaucous and rolled then blades 8 to 15 mm wide) \textit{Elymus repens}

21. Auricles usually small or rudimentary but sometimes well-formed and claw-like (sometimes absent), often only one; blades and sheaths glabrous or pubescent \textit{Elymus trachycaulus}

21. Auricles small and fragile, in pairs; blades and sheaths pubescent (at least the lower ones) \textit{Elymus repens}

22. Blades usually at least sparsely pubescent on the abaxial surface, 2 to 10 mm wide; sheaths, especially the basal ones, with short hairs; collars glabrous or pubescent \textit{Elymus repens}

22. Blades glabrous, 8 to 18 mm wide; sheaths glabrous (except sometimes on margins); collars glabrous \textit{Elymus repens}

23. Long creeping rhizomes present; collars minutely pubescent; blades with midrib not pronounced on the abaxial surface of blades and not prominently ridged on the adaxial surface, 3 to 10 mm wide; ligules 1 mm long or less \textit{Elymus repens}

23. Rhizomes absent; collars glabrous; blades with midrib conspicuous on the abaxial surface
and prominently ridged on the adaxial surface, 2 to 6 mm wide; ligules 0.5 to 1.5 mm long

24. Margins of sheaths ciliate; blades almost smooth on the abaxial surface; ligules about 1 mm long .............................................. Agropyron pectiniforme

24. Margins of sheaths glabrous or scabrous, rarely ciliate; blades scabrous on both surfaces; ligules about 0.5 mm long .......................................................... Elymus canadensis

25. Ligules absent; sheaths compressed, keeled; plants glabrous; plants annual ................................................................. Leersia virginica

25. Ligules present, although sometimes very short; sheaths usually round or compressed; plants pubescent or glabrous; plants annual or perennial ....................................................... Leersia virginica

26. Nodes swollen when fresh and collapsed when dry, densely pubescent with downward pointing hairs; plants rhizomatous ......................................................... Leersia virginica

26. Nodes not swollen when fresh, glabrous or inconspicuously puberulent; plants rhizomatous or not ................................................................. Leersia virginica

27. Margins of leaf blades harshly scabrous, cutting to the touch; sheaths harshly scabrous, the basal ones glabrous; rhizomes long (up to several dm), usually without imbricate scaly leaves ......................................................... Leersia virginica

27. Margins of leaf blades smooth or lightly scabrous (not harsh or cutting to the touch); sheaths not harshly scabrous, the basal ones usually sparsely pubescent sometimes glabrous (examine several leaves); rhizomes short (up to several cm), with imbricate scaly leaves ............................ Leersia virginica

28. Ligules a fringe of hairs, sometimes a short membrane fringed with longer hairs (Figs. 5E and 6D, above) ................................................................. Leersia virginica

28. Ligules membranous (sometimes very short), sometimes indistinctly puberulent-ciliate with hairs much shorter than membrane (Figs. 5A-D, 6A-C and 6D, below) ......................... Leersia virginica

29. Blades glabrous or slightly pubescent (usually long hairs) near base on the adaxial surface ................................................................. Leersia virginica

29. Blades pubescent on the adaxial surface and usually on both surfaces (sometimes sparsely on one or other surface) ................................................................. Leersia virginica

30. Plants perennial ........................................................................ Leersia virginica

30. Plants annual ........................................................................ Leersia virginica

31. Plants without rhizomes ........................................................... Leersia virginica

31. Plants with long creeping rhizomes ........................................ Leersia virginica

32. Basal leaves short, somewhat ovate and stiff, forming a rosette; ligules a loose or dense ring of hairs with at least some hairs 3 to 5 mm long; plants with short blades usually less than 5 cm long ......................................................... Dichanthelium acuminatum

32. Basal leaves long, lax and similar to the stem leaves, not forming a rosette; ligules a dense ring of hairs up to 2 mm long; plants with large blades usually 10 to 40 cm long ................................................................. Dichanthelium acuminatum

33. Plants loosely tufts, without a dense tuft of basal leaves; basal sheaths without scattered hairs; sheath margins and collars pubescent with long hairs ................................................................. Sporobolus cryptandrus

33. Plants densely tufted, with leaves in a dense basal tuft; basal sheaths usually with scattered hairs; sheath margins and collars mostly glabrous ......................................................... Sporobolus heterolepis

34. Basal leaves with blades much shorter than sheaths (sometimes minute); basal sheaths usually not overlapping (nodes usually exposed), blades acute, to 30 mm wide, usually flat ................................................................. Phragmites australis

34. Basal leaves with blades about as long as to longer than sheaths; basal sheaths usually strongly overlapping (nodes rarely exposed); blades long acuminate, to 15 mm wide, usually
rolled or involute (sometimes flat) .................................................. 35

35. Leaves more or less strongly distichous, not coarse (somewhat fleshy); basal sheaths often wrinkled (more evident on fresh material); rhizomes and rhizome scales with large air spaces .......................................................... Spartina alterniflora

35. Leaves not strongly distichous, coarse and hard in texture; basal sheaths not wrinkled; rhizomes and rhizome scales without large air spaces .................................................. 36

36. Stems 3 to 10 mm in diameter basally, erect and rarely branched; blades 5 to 15 mm wide, involute or flat; ligules 1 to 3 mm long ............................................. Spartina pectinata

36. Stems 1 to 2 mm in diameter basally, usually decumbent or procumbent and branched; blades 1 to 4 mm wide, mostly involute; ligules 0.5 to 1 mm long ........ Spartina patens

37. Sheaths often conspicuously inflated, margins usually not over-lapping; cleistogenes usually present in basal sheaths (plants often appearing vegetative); lower margins of blades often with scattered glands and/or long hairs with pustulate bases (usually varying on different leaves of the same plant) .......................................................... Sporobolus species

37. Sheaths not or scarcely inflated, margins usually over-lapping; cleistogenes absent; lower margins of blades without glands or scattered long hairs with pustulate bases .................. 38

38. Margins of the collars (auricle position) with a conspicuous tuft of long hairs (Fig. 5E); blades 1 to 2 mm wide; the margins usually involute .................. Eragrostis pectinacea

38. Margins of the collars glabrous or hairs not in a tuft; blades usually wider than 2 mm; the margins usually not involute .................................................. 39

39. Stems usually not erect from the base (recumbent, decumbent or somewhat trailing), zigzagging at the nodes; basal part of sheaths often reddish ........... Panicum dichotomiflorum

39. Stems erect from the base, straight and not zigzagging; basal part of sheaths usually green .................. 40

40. Margins of sheaths glabrous; blades sparsely pubescent at base on the adaxial surface, the hairs long, twisted and flexuous; collars glabrous ......................... Setaria pumila

40. Margins of sheaths pubescent; blades glabrous; base of collars fringed with hairs .......................................................... Setaria viridis

41. Margins of the blades with small raised glands which have a central depression and appear somewhat crater-like, often glands are also present on the sheaths, especially the mid-vein (the glands are small requiring magnification to see properly and may be hidden when the margins are involute); blades and sheaths usually with scattered long hairs (some leaves may be glabrous) .......................... 42

41. Margins of the blades and the sheaths without small raised glands (sometimes long hairs have swollen bases); hairs on blades and/or sheaths dense .................................................. 43

42. Blades 2 to 8 mm wide; sheaths usually with scattered glands (especially near top); reputed to have a disagreeable odour (not always detectable) .......... Eragrostis cilianensis

42. Blades 1 to 4 mm wide; sheaths usually without glands or with glands only on the mid-vein .......................................................... Eragrostis minor

43. Blades with long hairs only on the adaxial surface; sheaths pubescent on the distal margins, elsewhere glabrous .......................................................... Setaria faberi

43. Blades with long hairs on both surfaces (sometimes glabrous); sheaths glabrous or pubescent .......................................................... 44

44. Ligules 0.5 to 1.5 mm long; young sheaths usually reddish .................. Panicum capillare

44. Ligules 1 to 3 mm long; young sheaths usually greenish .................. Panicum miliaceum

45. Sheaths closed to near the top (Fig. 3C) .................................................. 46

45. Sheaths open (margins usually overlapping) at least half way (Fig. 3A, B) .......................... 50
46. Sheath margins hyaline, joined to top and continuous with ligule margins which are joined in front forming a tube around the stem. Initially there is simply a longitudinal strip of hyaline tissue at the front of the sheath where the margins would normally be. The tissue is very delicate and easily splits with age, often with a few oblique transverse fibres temporarily remaining before complete separation.  
\[ \text{Schizachne purpurascens} \]

46. Sheath margins hyaline or not, not joined to the top and continuous with ligule margins to form a tube.  

47. Long creeping rhizomes present; sheaths and blades mostly glabrous (western genotypes usually at least partly pubescent).  
\[ \text{Bromus inermis} \]

47. Rhizomes absent; sheaths and blades pubescent.  

48. Plants perennial; ligules 0.5 to 1 mm long, truncate  
\[ \text{Bromus ciliatus} \]

48. Plants annual; ligules 1 to 5 mm long, acute  

49. Basal part of sheaths reddish (sometimes the whole plant with a reddish colour), hairs on sheaths straight and retrors; ligule 1 to 5 mm long  
\[ \text{Bromus tectorum} \]

49. Basal part of sheaths green, hairs on sheaths usually somewhat wavy and spreading or retrors; ligule 1 to 2 mm long  
\[ \text{Bromus japonicus} \]

50. Rhizomes usually shallow and with hardened, closely imbricate scaly bracts; plants perennial.  

50. Rhizomes present or absent, but if present without hardened, closely imbricate scaly bracts; plants annual or perennial.  

51. Ligules a truncate membrane, usually less than 2 mm long (sometimes to 2.5 mm long), the lateral margins not hardened or confluent with the sheath margins; leaves mostly on branching stems; fibres in the vascular bundles tough, when the leaf blade is transversely torn fibres pull out from the adjacent blade portion resulting in a “hairy fringe” up to about 2 mm along the torn edges (Fig. 7); prophyll about as long as surrounding sheath; leaf blades 2 to 7 mm wide; nodes glabrous.  
\[ \text{Muhlenbergia species} \]

51. Ligules 2 to 6 mm long, the lateral margins hardened and similar to the sheath tissue so as the sheath margins appear to form upward projections past the collar; leaves mostly in a basal tuft; fibres in the vascular bundles brittle, no “hairy fringe” is visible on transversely torn leaf blade edges; prophyll much shorter than surrounding sheath; leaf blades 5 to 10 mm wide; nodes pubescent (sometimes sparsely).  
\[ \text{Sorghastrum nutans} \]

52. Lower leaf sheaths usually compressed (flattened) and keeled (sometimes not), loose and only partly clasping the stem (margins not overlapping less than half the sheath length); lower sheaths and stems often purplish-red, especially near nodes; plants perennial; root stalk woody and tough; short rhizomes sometimes present.  

52. Lower leaf sheaths not compressed or keeled (except for annual species of Digitaria), more or less tightly clasping the stem more than half the sheath length; lower sheaths and stems usually green, sometimes with purplish-red pigments; plants perennial or annual; root stalk not particularly woody and tough; rhizomes present or not.  

53. Blades usually 5 to 10 mm wide; blade mid-ribs abaxially distinct and prominent, usually yellowish in colour (at least basally) and much wider than other major veins.  
\[ \text{Andropogon gerardii} \]

53. Blades usually 2 to 6 mm wide (sometimes wider); blade mid-ribs not abaxially distinct or prominent, usually whitish- or greyish-green and only slightly wider than other major veins.  
\[ \text{Schizachyrium scoparium} \]
54. Sheaths (at least basal ones) usually pubescent; blades mostly pubescent (at least on adaxial surface and basally); collars with long hairs (except *Hordeum jubatum*) ................. 55
54. Sheaths glabrous (sometimes slightly scabrous); blades usually glabrous or scabrous (except with short retrorse hairs on basal margins in *Phleum pratense* and the basal sheaths and blade margins of *Avena fatua*); collars glabrous ............................................. 59
55. Sheaths compressed (flattened); auricle region with crinkly hairs; ligules entire (crenate but not ciliate); plants annual ................................................................. 56
55. Sheaths not compressed; auricle region glabrous or with straight hairs; ligules minutely ciliate; plants perennial ........................................................................ 56
56. Sheaths with long hairs; blades pubescent, 4 to 10 mm wide ...... *Digitaria sanguinalis*
56. Sheaths (at least the basal ones) usually sparsely pubescent; blades glabrous except for crinkly hairs near base (adaxial surface), 1 to 4 mm wide (rarely to 6 mm) ................................................................. *Digitaria ischaemum*
57. Long hairs on margins of collars; ligules about 2 mm long; blades usually yellow-green or bright green, broad and flat; foliage coumarin scented when crushed. *Anthoxanthum odoratum*
57. Margins of collars glabrous; ligules 0.5 to 1 mm long; blades bluish green, glaucous, narrow and flat or rolled; not scented when crushed ................................................................. 58
58. Auricles, if present, small or rudimentary, often only one ...... *Elymus trachycaulus*
58. Auricles, if present, small and fragile, in pairs .................. *Hordeum jubatum*
59. Blades less than 1.5 mm wide, soft, usually rolled (or involute) and thread-like especially when dry; plants tufted, without rhizomes ................................................................. *Agrostis scabra*
59. Blades more than 1.5 mm wide, flat, rolled or involute, plants with or without rhizomes .. 60
60. Ligules less than 1.5 mm long, truncate .................................................. 61
60. Ligules more than 1.5 mm long ................................................................. 63
61. Basal leaf blades 30 to 90 cm (much longer than twice the sheath length), recumbent, evergreen (persisting through the winter), gradually narrowed to a more or less stiff and twisted base (mature blades are oriented "upside down"), opposite surfaces distinctly different in colour, the upper (abaxial) surface glossy dark green, the lower (adaxial) surface glaucous ........................................................................ *Oryzopsis asperifolia*
61. Basal leaf blades less than 30 cm long (less than twice as long as leaf sheath), erect of lax but not recumbent, not evergreen, not gradually narrowed to a stiff and twisted at base, surfaces similar in colour, not glossy dark green, sometimes glaucous ................................................. 62
62. Blades 1.5 to 3.5 mm wide, never glaucous; auricles absent; plant with short rootstocks or stolons .................................................................................. *Agrostis capillaris*
62. Blades 3 to 8 mm wide, sometimes glaucous; auricles rudimentary or absent; plant caespitose . ................................................................. *Elymus trachycaulus*
63. Foliage strongly smelling of coumarin when crushed, a dark lustrous green colour when fresh; long white creeping rhizomes ..................................................... *Hierochloë odorata*
63. Foliage not smelling of coumarin when crushed, not a deep lustrous green colour when fresh; rhizomes present or absent ........................................................................ 64
64. Margins of collars with retrorse hairs; ligules with a prominent notch at either side, abaxially glabrous; stem often with a swollen corm-like base .................. *Phleum pratense*
64. Margins of collars glabrous; ligules without a notch at either side (sometimes lacerate), abaxially minutely pubescent; stem without a swollen corm-like base, except rarely in some varieties of *Arrhenatherum elatius* ......................................................... 65
65. Sheaths keeled; nodes usually puberulent ..........................  *Arrhenatherum elatius*
65. Sheaths not keeled; nodes glabrous ........................................ 66

66. Rhizomes absent (or if present, short and non-creeping, plants being loosely caespitose) 67
66. Rhizomes present (plants not caespitose) ................................. 70

67. Plants annual; basal sheaths glabrous or with scattered long hairs; young blades with long hairs along basal margins ........................................  *Avena fatua*
67. Plants perennial; basal sheaths glabrous; young blades without long hairs on margins .... 68

68. Stolons and rhizomes absent; blades 1 to 20 mm wide, usually about 10 mm, widest near the middle and gradually tapering toward both ends; ligules 2 to 10 mm long, usually about 5 to 8 mm; stems erect; plants usually of forests ............................  *Cinna latifolia*
68. Stolons or rhizomes usually present; blades less than 8 mm wide, widest near the base and gradually tapering toward the apex; ligules less than 4 mm long; stems usually decumbent at base; plants usually of open or semi-open habitats .......................... 69
68. Stolons absent, short non-creeping rhizomes often present (loosely caespitose); stems more or less erect; blades 3 to 8 mm wide; ligules on basal leaves 1.5 to 2.5 mm long, truncate ............................  *Alopecurus pratensis*
68. Stolons present, leafy, prostrate, rooting at nodes; stems usually decumbent or recumbent; blades usually less than 3 mm wide; ligules on basal leaves 2 to 4 mm long, rounded or obtuse ........................................  *Agrostis stolonifera*

70. Stems stiffly erect from base; new shoots dark brownish, stiffly erect and long attenuate (subulate); base of stems with reduced scaley leaves that are hard and sharp; sheaths glabrous or sometimes pubescent ............................  *Calamagrostis canadensis*
70. Stems erect, decumbent or recumbent; new shoots pale or light brown, erect or decumbent, acute but not long attenuate; if reduced leaves present at the base of stems, then not hard and scaley; sheaths glabrous ........................................ 71

71. Large robust plants, usually in moist areas; base of the stems 3 to 8 mm wide; blades 5 to 15 mm wide; ligules white, papery, 2 to 8 mm long, acute or obtuse; sheaths often with cross veins visible (especially on older sheaths) .............................  *Phalaris arundinacea*
71. Plants various; base of stems 1 to 3 mm wide; blades 1.5 to 7 mm wide; ligules translucent, thin membranous, 1.5 to 4 mm long, rounded or acute; sheaths with cross veins rarely visible 72

72. Stolons absent; long creeping underground rhizomes; leaf blades usually more than 3 mm wide .........................................................  *Agrostis gigantea*
72. Stolons present, leafy, prostrate, rooting at nodes; leaf blades usually less than 3 mm wide .........................................................  *Agrostis stolonifera*
Figure 1. Plant habit and leaf parts.
Figure 2. Leaf vernation. A. Leaf folded; B. Leaf rolled.

Vernation types:  
A - Leaf folded in the bud-shoot.  
B - Leaf rolled in the bud-shoot.
Figure 3. Sheath types. A. Sheath open, margins not joined and not over-lapping; B. sheath open, margins not joined but overlapping; C. Sheath closed, margins joined.

*Sheath type: A - Split. B - Split to near base with margins overlapping. C - Closed.*
Figure 4. Leaf blade tips. A. Leaf blade tapering to a sharply pointed apex; B. Leaf blade curved at the tip into a "boat-shaped" or prow-like apex.

Figure 5. Auricle types and leaf blade vestiture on adaxial surface. A. Auricles claw-like, blade scabrous (above); B. Auricles rounded, blade pubescent (above); C. Auricles rudimentary; D. Auricles absent, blade glabrous (above); E. Auricles with a tuft of hairs, blade with scattered long hairs.
Figure 6. Ligule types. A. Ligule entire, rounded (below) or acute (above); B. Ligule notched; C. Ligule lacerate; D. Ligule composed of hairs (above), a ciliate membrane (below).

Figure 7. Torn leaf blade of *Muhlenbergia frondosa*.

Looman, J. 1982. Prairie grasses identified and described by vegetative characters. Agriculture Canada Publ. 1413. 244 pp. See also: http://archive.org/details/prairiegrassesid00loom


<table>
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<tr>
<th>Name and Authority</th>
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<th>Common synonyms and comments</th>
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<tr>
<td><em>Agropyron pectiniforme</em> Roem. &amp; Schult.</td>
<td>crested wheatgrass</td>
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<td>browntop</td>
<td><em>Agrostis tenuis</em> Sibth.</td>
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<td>redtop</td>
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<td>meadow foxtail</td>
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<td><em>Andropogon gerardii</em> Vitman</td>
<td>big bluestem; turkey foot</td>
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<td><em>Bromus japonicus</em> Murray</td>
<td>Japanese brome</td>
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<td><em>Bromus tectorum</em> L.</td>
<td>downy brome, hairy brome</td>
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<td>Canada blue joint</td>
<td><em>Calamagrostis langsdorffii</em> (Link) Trin.</td>
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<td><em>Dichanthelium acuminatum</em> (Sw.) Gould &amp; Clark</td>
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<td><em>Panicum lanuginosum</em> Elliot; <em>Panicum acuminatum</em> Sw.</td>
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<td><em>Digitaria ischaemum</em> (Schreber) Muhl.</td>
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<td>dropseed</td>
<td>including: <em>Sporobolus neglectus</em> Nash, <em>Sporobolus vaginiflorus</em> (A. Gray) A.W. Wood</td>
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Glossary - alternate formatting

abaxial: The surface or portion of a structure facing away from the main axis of the plant part from which it arises. For leaf blades this is usually the "back" or "underside" of the leaf and is often darker in colour.
adaxial: The surface or portion of a structure facing toward from the main axis of the plant part from which it arises. For leaf blades this is usually the "top" or "upperside" of the leaf and is often lighter in colour.
auricle: A small expansion of the leaf at the top of the sheath and the edge of the collar (but not always present). They may be poorly developed and several leaves should be examined. See Fig. 5.
blade: The upper (distal) portion of the leaf (above the ligule) that does not clasp the stem. They may be flat, folded or rolled. See Figs. 1, 2 & 4.
ciliate: Having a line of hairs in one plane; usually along a margin.
cleistogamous: Small cleistogamous flowers present singly or in small groups within the leaf sheaths at the base of the stem. These are hidden and revealed only when the sheath is removed from the stem.
collar: The back (abaxial) side of the leaf at the junction of the blade and sheath. See Fig. 1.
conduplicate: Folded inwardly along the central longitudinal axis so that the adaxial surfaces on either side are facing each other. Like a piece of paper folded in half. See Fig. 2A.
convolute: Laterally rolled with the margins overlapping and each leaf completely surrounding and/or surrounded by the next one. Like a piece of paper rolled. See Fig. 2B.
decumbent: With the lower (basal) part of the stem lying more or less prostrate and the distal end erect, or curved upwards from the base.
distichous: Arranged in two (opposite) ranks along the axis.
emarginated: With a shallow notch or indentation.
entire: An uninterrupted, smooth margin (without teeth, lobes or other projections).
glabrous: Without hairs.
glaucous: With a whitish (or bluish-white) cast, as if frosted; usually because of a thin microscopic deposit of wax.
internode: The region of a stem between two nodes.
inflated: Swollen or enlarged; and then loose in the case of leaf sheaths.
involute: The edges in-rolled towards the centre.
keel (keeled): A conspicuously raised portion (usually a vein) along the edge of a fold or curve. As in the keel of a boat.
ligule: A structure on the inside (adaxial side) of the leaf at the junction of the sheath and the blade; it may consist of a ring of hairs, a short membrane topped with hairs or a thin (usually translucent) membrane. See Figs. 5 & 6.
membranous: Thin, pliable, like a membrane (see ligule).
recumbent: Lying down, prostrate, flat on the ground.
rhizome: An underground stem giving rise to roots and other stems. See Fig. 1.
scabrous: Bearing minute prickle hairs and usually rough to the touch.
sheath: The lower (proximal) part of the leaf which forms a clasping (sometimes loosely) tube around the stem (at least when young). See Figs. 1 & 3.
stolon: An aerial stem which grows more or less horizontal to the ground and giving rise to roots.
and other stems at the nodes. See Fig. 1.

**truncate**: An end (proximal or distal) that is in a straight plane perpendicular to the main axis. Cut off straight.

**vernation**: The arrangement and shape of leaves when young, prior to unfolding from the bud-shoot. See Fig. 2.