

Poaceae

As in the Carex, the members of the family Poaceae have flowers that are highly specialized and, accordingly, have their own terminology:

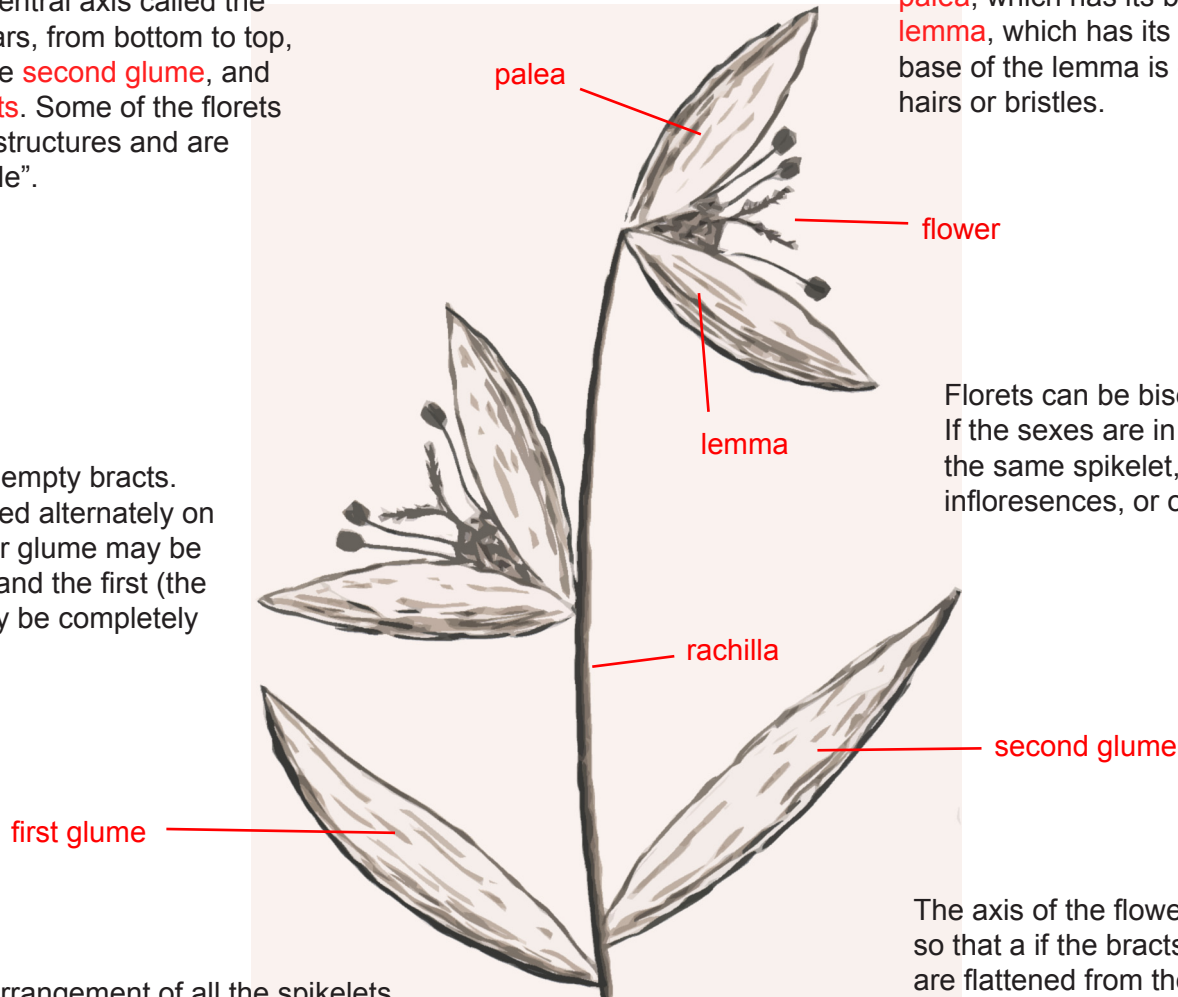
spikelet with glumes and two florets

The basic unit in the grasses is the **spikelet**; it is a modified flowering branch. It has a central axis called the **rachilla** which bears, from bottom to top, the **first glume**, the **second glume**, and one or more **florets**. Some of the florets may lack female structures and are considered “sterile”.

The floret consists of the **flower** (the ovary, style, stigma, and 3 anthers) enclosed by two bracts: the **palea**, which has its back to the rachilla, and the **lemma**, which has its back away from the rachilla. The base of the lemma is called the callus and may bear hairs or bristles.

The **glumes** are empty bracts. They are arranged alternately on the rachis. Either glume may be reduced in size and the first (the bottom one) may be completely lacking)

Florets can be bisexual (perfect), male, or female. If the sexes are in separate flowers, they may be in the same spikelet, in separate spikelets, in different inflorescences, or on separate plants



The arrangement of all the spikelets is called the **inflorescence**

The axis of the flower runs from the rachilla outward, so that a if the bracts are laterally compressed if they are flattened from the sides of this axis, or dorsally compressed if they are flattened in the direction of this axis.

Key to the Genera and Species of Poaceae

- 1a) Tall stout grasses, the stems commonly 2 m or more ... 2
- 1b) Grasses of small to moderate size, the stems commonly less than 2 m ... 4
- 2a) Spikelets of male and female flowers on separate spikes on same inflorescence ... NA
- 2b) Some or all flowers with male and female parts ... 3
- 3a) Spikelets several flowered, disarticulating above the glumes and between the florets ... *Phragmites*
- 3b) Spikelets one-flowered, disarticulating below the glumes or falling in pairs ... NA
- 4a) Spikelets concealed by spines, hooks or bony coverings ... NA
- 4b) Spikelets not concealed by spines, hooks or bony coverings ... 5
- 5a) Spikelets disarticulating above the glumes, which remain on the inflorescence ... 6
- 5b) Spikelets disarticulating below the glumes, falling singly or in pairs ... 33
- 6a) Single fertile floret, sometimes with incomplete or sterile floret above or below ... 7
- 6b) Two or more fertile florets ... 22
- 7a) Inflorescence of spikes or rames ... NA
- 7b) Inflorescence an open or dense panicle ... 8
- 8a) Floret rigid and shining ... NA
- 8b) Floret soft, papery; not shining ... 9
- 9a) Glumes minute or much shorter than floret ... 10
- 9b) At least one glume nearly as long as spikelet ... 12
- 10a) Lemma 1-veined or 3-veined ... NA
- 10b) Lemma 5-veined; floret strongly flattened laterally; aquatic or marsh grasses ... 11
- 11a) Lemma awnless; glumes reduced to a minute cupule; wild plants ... *Leersia*
- 11b) Lemma awned or awnless; "glumes" (actually sterile lemmas) about 1/3 as long as the lemma; crop plant ... NA
- 12a) One or two neutral or staminate florets present below the fertile one, all falling as a unit ... 13
- 12b) No sterile lower florets present; fertile floret solitary ... 15
- 13a) Lower floret(s) neutral, awned ... NA
- 13b) Lower floret(s) awnless ... 14
- 14a) Lower floret(s) reduced to minute scales ... *Phalaris*
- 14b) Lower floret(s) staminate, as long as the terminal one ... NA
- 15a) Spikelets U-shaped; strongly flattened; glumes equal, keeled, midrib projecting as a showt awn; panicle dense, spike-like ... NA
- 15b) Spikelets neither U-shaped nor strongly flattened; panicle various ... 16
- 16a) Rachilla prolonged behind the palea as a naked or hairy bristle ... 17
- 16b) Rachilla not prolonged ... 19

- 17a) Lemma awned ... 18
- 17b) Lemma awnless; beach grass of Atlantic coast ... NA
- 18a) Awn attached at tip of lemma, 2-3 x length of lemma; callus hairs minute ... NA
- 18b) Awn attached to back of lemma, geniculate; callus hairs long and abundant ... *Calmagrostis*
- 19a) Floret with a conspicuous tuft of long straight hairs on the callus ... NA
- 19b) Floret not conspicuously hairy on the callus ... 20
- 20a) Lemma 1-veined, awnless; caryopsis gelatinizing when wet ... NA
- 20b) Lemma 3- or 5-veined, awned or awnless; caryopsis not gelatinizing ... 21
- 21a) Lemma conspicuously 3-veined; awn from tip of the lemma ...NA
- 21b) Lemma faintly 5-veined; awn, if present, from back of lemma ... *Agrostis*
- 22a) Inflorescence an open or dense panicle ... 23
- 22b) Inflorescence one or more spikes or rames ... NA
- 23a) Glumes nearly as long as entire spikelet ... NA
- 23b) Glumes much shorter than spikelet ... 24
- 24a) Lemmas with 3 conspicuous veins ... 25
- 24b) Lemmas with 5 to many usually conspicuous veins ... 29
- 25a) Florets 2; veins of the lemma parallel up to blunt summit; plants of cold wet places ... NA
- 25b) Florets 3 or more; veins of lemma converging distally ... 26
- 26a) Lemmas more or less pubescent ... NA
- 26b) Lemmas hairless ... 27
- 27a) Mature spikelets stiff, with large protruding bottle-shaped grains ... NA
- 27b) Mature spikelets various but not as above, grains neither protruding nor bottle-shaped ... 28
- 28a) Palea shorter than lemma; rachilla usually not disarticulating, the lemmas and glumes falling from it ... *Eragrostis*
- 28b) Palea longer than lemma; rachilla disarticulating ... NA
- 29a) Sheaths with the edges united at least half their length (i.e. closed) ... 30
- 29b) Sheaths with free (i.e. open) margins except at the very base ... NA
- 30a) Panicles with a few stiff branches; spikelets sessile in dense clusters ... NA
- 30b) Panicles with numerous branches; spikelets pedicellate ... 31
- 31a) Lemmas awned ... NA
- 31b) Lemmas awnless ... 32
- 32a) Upper lemmas of spikelet convolute, forming a club-shaped rudiment; glumes mostly 3- to several-veined; terrestrial ... NA
- 32b) Upper lemmas normal, not convolute; glumes 1-veined; aquatic or wet places ... *Glyceria*
- 33a) Spikelets falling separately, without attached stalks or internodes ... 34
- 33b) Spikelets falling with attached stalks, rachis-internodes, or bristles, or in clusters of 2-many ... NA

- 34a) Spikelets interspersed with stiff elongate bristles that partly conceal them; panicle dense, spike-like ... NA
- 34b) Spikelets not interspersed with bristles; panicles various ... 35
- 35a) Tall aquatic grasses; all spikelets unisexual ... NA
- 35b) Land or marsh grass; some or all of spikelets with bisexual flowers ... 36
- 36a) Spikelets 2- to many-flowered ... NA
- 36b) Spikelets with only one bisexual flower, sometimes with neutral or male flowers above or below the bisexual one ... 37
- 37a) Inflorescence an open or dense panicle ... 38
- 37b) Inflorescence 1-many spikes or racemes ... NA
- 38a) Spikelets laterally compressed ... NA
- 38b) Spikelets dorsally compressed ... 39
- 39a) Spikelets awned or awn-tipped; densely clustered; ligules absent ... NA
- 39b) Spikelets awnless; ligules present ... 40
- 40a) Plants bearing terminal panicles and solitary large subterranean spikelets on rhizomes; rare on sandy coastal plains ... NA
- 40b) Plants with aerial panicles only ... 41
- 41a) Second glume inflated; fertile floret shorter than the outer bracts; panicle dense, cylindrical; paludosal plants ... NA
- 41b) Second glume not inflated; fertile floret as long as bracts; panicles various; plants mostly of drier places ... 42
- 42a) Fertile floret hard; edges of lemma inrolled ... 43
- 42b) Fertile floret leathery, edges of lemma flat and exposed ... NA
- 43a) Blades of basal and cauline leaves similar and elongate; winter-rosette not formed; primary and secondary panicles similar or nearly so, their primary branches simple at base; spikelets all fertile; annual or perennial ... NA
- 43b) Blades of basal and cauline leaves usually different in shape, the former closely crowded and forming a winter-rosettes (2 spp excepted); primary panicles born on simple culms early in summer, their branches normally forked at the very base, their spikelets tending to be open-pollinated but often or usually sterile; culms later usually freely branched, bearing numerous reduced panicles (often concealed by the leaves) with fertile cleistogamous spikelets; perennial ... *Dichanthelium*

Agrostis

- 1a) Palea 1/2 to 2/3 as long as lemma ... 2
- 1b) Palea missing or reduced, definitely less than 1/2 as long as lemma ... 4
- 2a) Panicle branches all naked toward the base; ligules up to about 2 mm ... NA
- 2b) Some of the panicle branches bearing spikelets to the base; larger ligules 2.5-6.0 mm ... 3
- 3a) With rhizomes; leaves 3-8 mm wide; inflorescence triangular-ovoid, with widely spreading branches, usually reddish-purple ... *A. gigantea*
- 3b) Without rhizomes, tho sometimes stoloniferous; inflorescence narrower, with more ascending branches, usually straw-colored ... NA
- 4a) Perennial; lemma awned or awnless ... 5
- 4b) Annual; lemma usually with a long (to 10 mm) flexible awn from just below the tip ... NA

- 5a) Lemma awnless or with short, nearly straight awn near tip ... 6
- 5b) Lemma with a geniculate awn inserted at or near the middle, 1-2 x length of lemma ... NA
- 6a) Pannicle branches forking near or below middle; leaves 2-6 mm wide ... NA
- 6b) Panicle branches mostly forking well above middle; leaves 1-2 mm wide ... *A. scabra*

Calmagrostis

- 1a) Hairs on callus of lemma longer than lemma ... NA
- 1b) Hairs on callus of lemma short to about as long as lemma ... 2
- 2a) Inflorescence dense; branches erect, paralleling the stem ... NA
- 2b) Inflorescence loose, its branches somewhat spreading ... 3
- 3a) Callus hairs half as long as lemma ... NA
- 3b) Callus hairs about as long as lemma ... *C. canadensis canadensis*

Dichanthelium

- 1a) Leaves crowded toward the base ... NA
- 1b) Leaves not crowded toward the base ... 2
- 2a) Leaves at the base numerous; plants branching only at the base ... NA
- 2b) Leaves at base forming a rosette of short, broad leaves, which are conspicuously shorter than those on the stem ... 3
- 3a) Pubescence on sheaths and internodes of two intermingled types: short, soft, stiff hairs and longer, straight hairs ... NA
- 3b) Pubescence not as above, hairs in any area more or less uniform ... 4
- 4a) Ligule a band of 2-5 mm hair, conspicuously protruding from sheath ... NA
- 4b) Ligule minute or none ... 5
- 5a) Main stem leaves distinctly heart-shaped at base; spikelets hairy ... 6
- 5b) Main stem leaves rounded or narrowed at base ... NA
- 6a) Spikelets ellipsoidal or egg-shaped, 1.9-5.2 mm long ... 7
- 6b) Spikelets nearly spherical, 1.3-1.9 mm long ... NA
- 7a) Primary veins of leaf (except for midvein) little differentiated from smaller veins; spikelets 1.9-3.4 mm ... NA
- 7b) Primary veins raised above the lower surface of the blade and sharply differentiated from smaller veins; spikelets 2.5-5.2 mm ... 8
- 8a) Spikelets 2.5-3.7 mm long; nodes not more densely hairy than sheaths and internodes ... 9
- 8b) Spikelets 3.8-5.2 mm long; nodes densely bearded with hairs ... NA
- 9a) Sheaths, at least some of them, definitely covered with stiff hairs and small bumps ... *D. clandestinum*
- 9b) Sheaths hairless or with soft hairs ... NA

Eragrostis

- 1a) Plants mat-forming ... NA
- 1b) Plants not mat-forming ... 2
- 2a) Perennials ... NA
- 2b) Annuals ... 3
- 3a) Seed with a longitudinal furrow extending its whole length ... NA
- 3b) Seed without such a furrow ... 4
- 4a) Leaves with scattered warty glands along margins; lemma rounded on back but with keel ... NA
- 4b) Leaves without marginal glands; lemmas "V-shaped" in cross section ... 5
- 5a) Most paleas deciduous with lemma; first glume less than 1/2 x length lowest lemma; panicle-branches of lowest node(s) whorled ... NA
- 5b) Paleas persistent on rachilla after lemmas have fallen; first glume more than 1/2 length lowest lemma; panicle branches solitary or paired ... 6
- 6a) Lateral branches of pedicels erect, rarely diverging from main stem more than 20 degrees ... *E. pectinaceae pectinaceae*
- 6b) Lateral branches mostly spreading widely at maturity ... *E. frankii*

Glyceria

- 1a) Spikelets linear-cylindric, or becoming flattened at maturity, 10-40 mm long, 8-16 florets; joints of the rachilla 1-4 mm long ... 2
- 1b) Spikelets ovoid or oblong, somewhat flattened, 3-10 mm long, 3-10 florets; joints of rachilla less than 1 mm long ... 5
- 2a) Lemma blunt or rounded, palea not projecting more than 0.5 mm beyond it ... 3
- 2b) Lemma sharp pointed, palea projecting 1.5-3.0 mm beyond it ... NA
- 3a) Lemmas hairless, shining between veins ... NA
- 3b) Lemmas rough-hairy, dull between veins ... 4
- 4a) Rachilla joints 1.1-1.8 mm; lemmas 3.7-5.3 mm ... *G. septentrionalis*
- 4b) Rachilla joints 1.9-2.5 mm; lemmas 5.4-7.0 mm ... NA
- 5a) Panicle stiff and erect; ligule less than 1 mm ... NA
- 5b) Panicle lax; ligule 1-6 mm ... 6
- 6a) spikelets 3-4 mm wide; veins of lemma visible but not raised; palea less than twice as long as wide ... NA
- 6b) Spikelets 2.0-2.5 mm wide; veins of lemma prominently raised; palea 3-5 times as long as wide ... 7
- 7a) Spikelets mostly 2.5-4.0 mm; glumes blunt-tipped, minute, the first 0.5-1.0 mm, the second 0.8-1.3 mm ... *G. striata*
- 7b) Spikelets mostly 4.0-6.5 mm; glumes sharp-tipped, the first 1.2-1.9 mm, the second 1.5-2.4 mm ... *G. grandis*

Leersia

- 1a) Panicle enclosed in sheath, branches erect or spreading slightly ... NA
- 1b) Panicle somewhat enclosed in sheath or branches spreading ... 2
- 2a) Spikelets elliptical to linear, at least twice as long as wide ... 3
- 2b) Spikelets rounded, less than twice as long as wide ... NA
- 3a) Panicle branches 2 or more at some nodes ... *L. oryzoides*
- 3b) Panicle branches 1 per node ... NA

Phalaris

- 1a) Perennial with rhizomes; panicle 7-25+ cm, lobed ... *P. arundinaceae*
- 1b) Annual; panicle 1.5-6.0 cm ... NA

Phragmites

- one species ... *P. australis*