

GRASS ID BASICS

VEGETATIVE CHARACTERISTICS

To identify grasses, there are some terms you should be familiar with. The vegetative portion of the grass consists of the **stem**, also known as the **culm**. The stem is the main backbone of the grass. Stems can be smooth or hairy, and sometimes they can have a whitish powder on them, making them **glaucous**.

Grasses have leaves, but what you may think of as a traditional leaf is just one part of a grass leaf. Grass **leaves** include the **blade**, which is what we typically call a leaf, a **sheath**, which is a continuation of the leaf blade that wraps around the stem, and a **node**, which is a swelling that looks like a joint, and is located at the base of a leaf sheath. Leaf sheaths can be wrapped tightly around the stem and overlap, or they can be "open," appearing to not wrap completely around the stem.

The region where the leaf blade becomes the sheath is known as the **collar region**. This is a great first place to look when identifying a grass, because oftentimes there are structures located here that serve as key identification features when telling one grass apart from another. These structures include **ligules**, **auricles**, and **horns**.

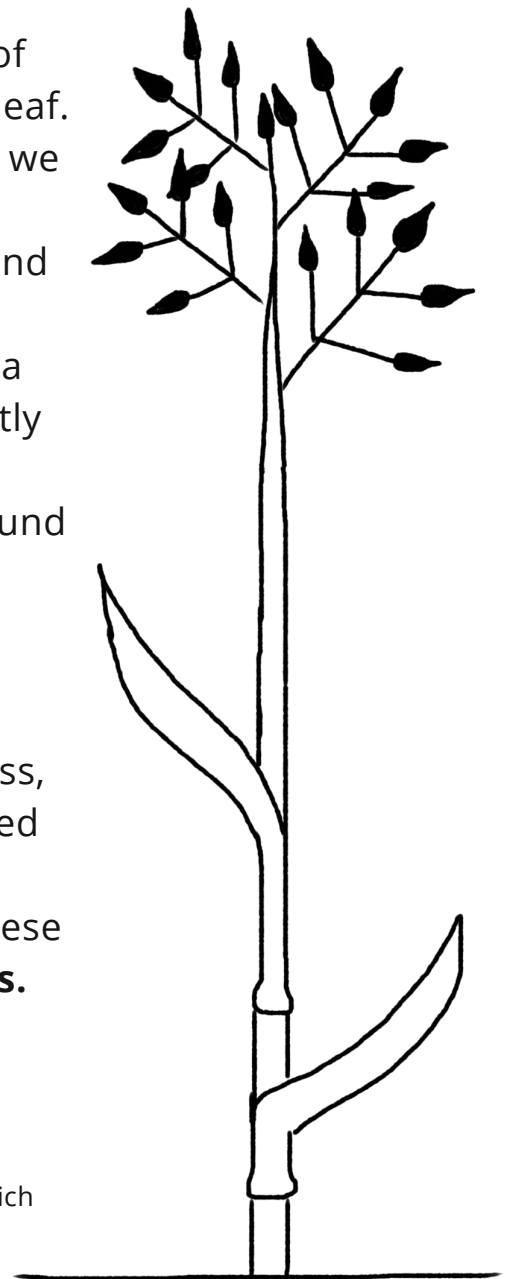


Figure 1: Sketch of a mature grass. The stem has two leaves, which consist of blades, sheaths, and nodes. The collar region occurs where the leaf blade wraps around the stem to form a sheath.

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Within the collar region of many grasses is a structure called a **ligule**. A ligule can either be a membrane or hairs located in the juncture where the leaf blade becomes the sheath. The presence or absence of a ligule, and the type of ligule present are both excellent clues when identifying a grass. Hairs can be short, stiff, and numerous, or they can be long and sparse; membranous ligules can be short or rather tall - they are typically white when the grass is young, but turn orange, yellow, or brown as the season progresses. To see the ligule, simply pull the leaf blade gently away from the stem, and look closely at the collar region.

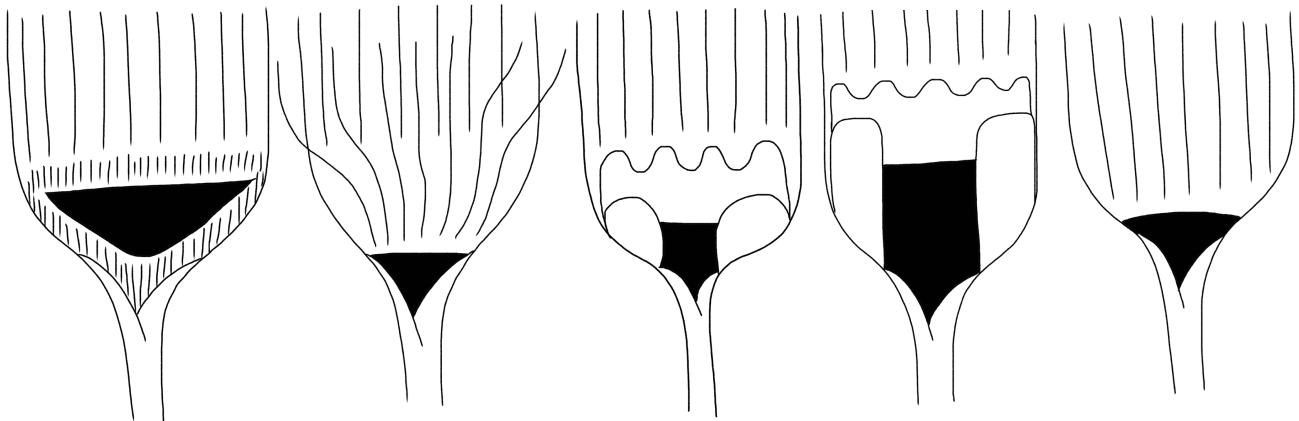


Figure 2: Sketches of ligules in the collar regions of grasses. From left to right: a short hairy ligule; a ligule with long, sparse hairs; a short, membranous ligule; a tall, membranous ligule; no ligule.

Figure 3: Ligules in the collar regions of grasses. From left to right: a short hairy ligule; a ligule with long, dense hairs, extending onto the base of the leaf blade; a tall, membranous ligule; a short, membranous ligule; a short membranous ligule turned brown with age; no ligule.



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Auricles are extra leafy material found at the base of leaf blades that look like arms, and hug, or wrap around the stem. As you pull back the leaf blade to look at the ligule, you will see the auricles open and unwrap.

Horns are stiff, u-shaped plant material in the collar region.

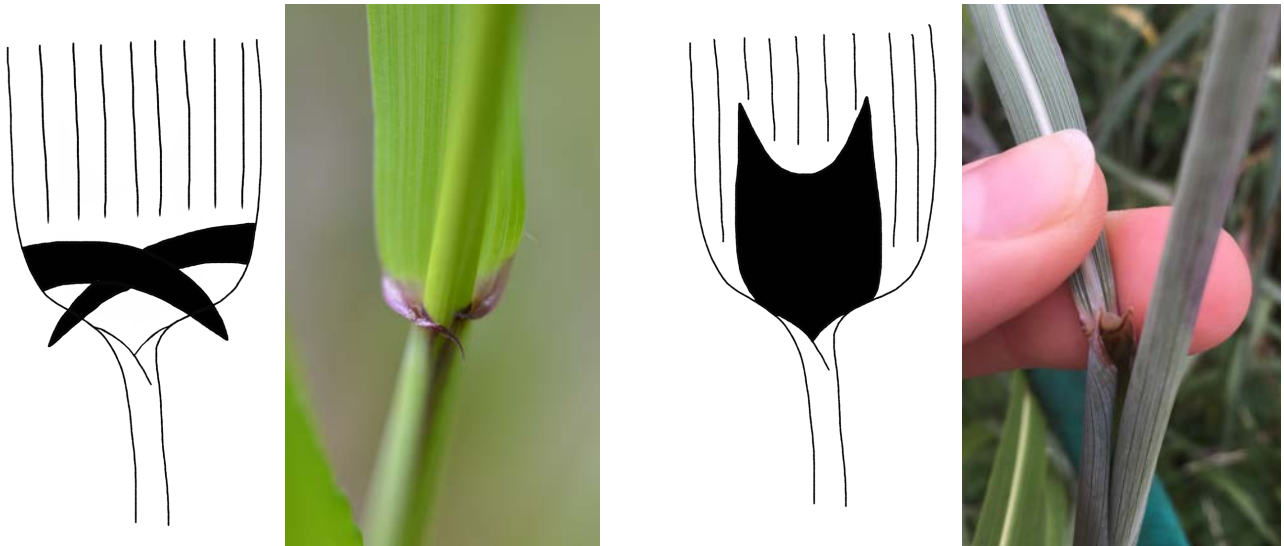


Figure 4: From left to right: sketch and picture of auricles in the collar regions of grasses; sketch and picture of u-shaped horns in the collar region.

FLOWERING CHARACTERISTICS

The flowering head of a grass is called the **inflorescence**. Here the stem becomes the **rachis**, which is the main axis of the inflorescence. The rachis can be branched or unbranched. The flowering unit of a grass is called a **spikelet** - this is where the grass flowers develop and then form seeds. Spikelets can be directly attached to the rachis, or they can be held on stalks called **pedicels**.

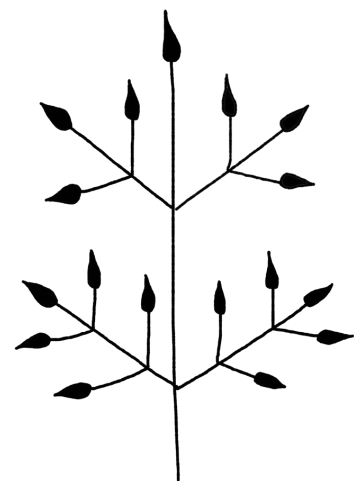


Figure 5: Sketch of a grass inflorescence. The stem of the grass becomes the rachis, which is branched and has spikelets held on pedicels.

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There are three main types of inflorescences, and being able to identify which type of inflorescence you have can help you narrow down what type of grass you are looking at. We can distinguish between the three types by asking a few simple questions:

Does the rachis branch?

- Yes: The inflorescence is a **panicle**. A panicle is an inflorescence that has a branched rachis. The spikelets can either be held on pedicels or be directly attached to the branches.

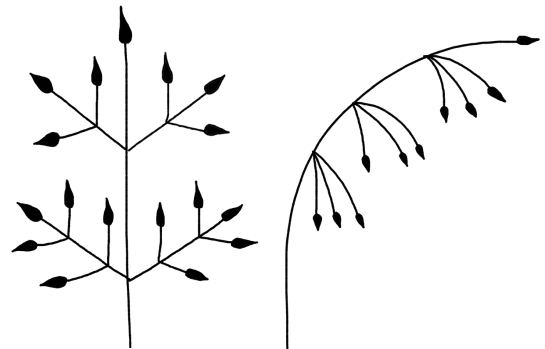


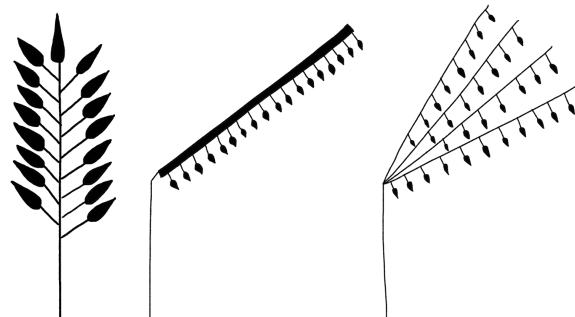
Figure 6: Sketch of a typical openly branched panicle (left) and sketch of a curved panicle (right).

- No: If we have an unbranched rachis, we move to the next question.

Are the spikelets held on pedicels or directly attached to the rachis?

- Spikelets held on pedicels: The inflorescence is a **raceme**. A raceme is an inflorescence with an unbranched rachis whose spikelets, or collection of spikelets held together collectively, are held on a pedicel.

Figure 7: From left to right: sketch of a typical raceme with spikelets attached to the rachis with pedicels; sketch of a collection of spikelets attached to the rachis by a single pedicel; sketch of several collections of spikelets attached to the rachis by individual pedicels.



- Spikelets directly attached to the rachis: The inflorescence is a **spike**. A spike is an inflorescence that has an unbranched rachis with spikelets directly attached to the rachis.

Figure 8: Sketch of a typical spike with spikelets directly attached to the rachis.



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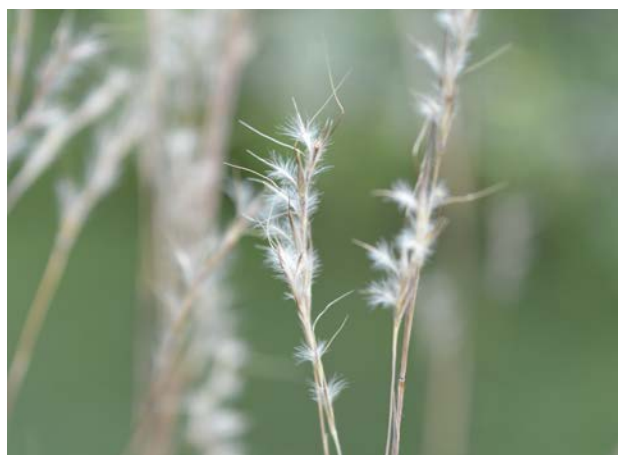


Figure 9: Three different inflorescence types. Top row: panicle inflorescences; middle row: raceme inflorescences; bottom row: spike inflorescences.

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Spikelets of grasses can have structures called **awns** or **bristles**, which can serve as identifying features. An **awn** is a bristle-like extension of the spikelet that emerges from the tip of the spikelet. Awns can take many shapes and sizes.

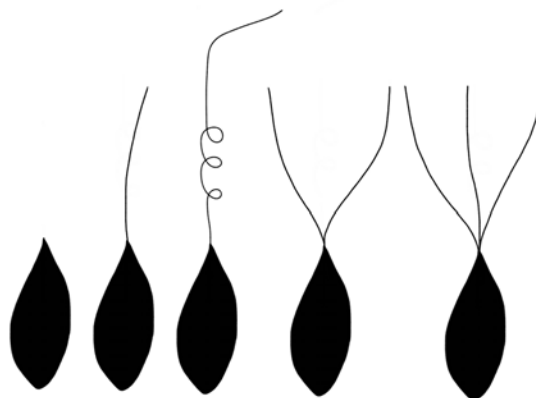


Figure 10: Top right: sketch of different types of awns. Awns can be short or long, can twist as they dry, and can appear in pairs or trios from the tip of a single spikelet. Bottom: three examples of awns of different lengths and colors.

Bristles are external structures that surround the base of a spikelet, but do not emerge from the spikelet itself. You can remove the bristles from the spikelet while keeping the spikelet intact.

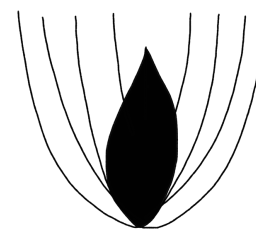


Figure 11: Top right: sketch of bristles surrounding the base of the spikelet. Bottom left: a grass with bristles surrounding the spikelets; bottom right: a close-up of bristles as an external structure that surround a spikelet.

Developed by Erin Garrett

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