Glossary of Selected Botanical & Ecological Terms

Organization

Glossaries & Pronounciation Aids – Online & in Print
Glossary of Selected Botanical & Ecological Terms
A Basic Illustrated Glossary of Plant Identification Jargon (from *Extension.org*)

Glossaries & Pronunciation Aids – Online & in Print

The glossary on the following pages is not comprehensive. For additional terms, the following online sources will be helpful:

A basic illustrated glossary of plant identification jargon. Extension.org. http://articles.extension.org/pages/32635/weed-identification-tools-and-techniques#glossary [*the figures are included at the end of this document*]

Botanical Dictionary. University of North Carolina Plant Information Center. Chapel Hill, NC. http://www.ibiblio.org/pic/botanical_dictionary.htm

Glossary of botanical terms. Wikipedia, the free encyclopedia. https://en.wikipedia.org/wiki/Glossary_of_botanical_terms

Glossary of Botanical Terms. http://www.buzzle.com/articles/botany-terms-glossary-of-botanical-terms.html

Glossary. The Great Basin and Invasive Weeds. Utah State University. *This glossary includes many general botanical terms, in addition to invasive species terminology.* http://www.usu.edu/weeds/get_involved/glossary.html

Glossary of River Ecology Terms. New Hampshire Department of Environmental Services. 2006. https://www.des.nh.gov/organization/commissioner/pip/publications/wd/documents/vrap_glossary.pdf

Glossary of River Terminology. Texas Parks and Wildlife. http://www.texasthestateofwater.org/screening/html/gloassary.htm

Plant Identification Terminology: An Illustrated Glossary. Spring Lake Publishing, 2001. 216 pp. *Recommended by users. Not sure if in print but available from Amazon & elsewhere.*

Pronunciation of Biological Names. *This is a short essay on botanical latin, followed by a long list of species names showing where the accents are.* .http://www.calflora.net/botanicalnames/pronunciation.html

Glossary of Selected Botanical and Ecological Terms

abiotic – non-living. In ecology, refers to elements of the physical environment, such as climate, soil, etc.

adventitious roots – '*Adventitious'* means coming from another source and not inherent or innate; or, arising or occurring sporadically or in other than the usual location. In wetland plants, refers to roots produced by stem or (in some species) leaf tissue which lie just above saturated soil or standing water. Adventitious roots are able to function normally in an aerobic environment while a plants 'normal' roots are in an anoxic environment.

aerenchyma – an adaptation of wetland plants to waterlogged (anoxic) soil conditions. Large air spaces in roots, stems, and leaves which allow the diffusion of oxygen from the aerial portions of a plant into the roots. Unlike the natural porosity of upland plants (2-7 %), up to 60% of the plant body of wetland plants may consist of aerenchyma.

alluvial -- deposited by running water.

alluvium – stream deposits.

anadramous – Refers to fish species that spawn in fresh water, migrate to and spend some part of their lives in salt water, then return to their place of origin in fresh water to spawn. In the Pacific Northwest, five species of salmon, along with steelhead, sturgeon, and some other species, are anadramous.

anaerobic respiration – cellular respiration in the absence of oxygen. For those organisms that are capable of both aerobic and anaerobic respiration, aerobic respiration, when possible, provides far more energy at far less cost.

annual (plant) – a plant species that completes its entire life cycle in one growing season.

anoxic conditions – An environment lacking free oxygen.

anthropogenic – caused by humans.

aquatic bed – An aquatic bed is a wetland community that occurs in permanently inundated areas at the transition between emergent marshes and deeper-water environments of ponds and lakes. The plant community dominated by floating-leaved and submersed herbaceous species which are rooted in the pond bottom. Yellow pond lily (*Nuphar polysepalum*) and pondweed (*Potamogeton* species) are examples. Unrooted floating species such as duckweed (*Lemna minor*) may be present. Water depths are usually 2-3 feet at low-water.

aspect – the compass direction that a slope faces. Aspect, in combination with slope, can have a profound effect on the physical environment and biological features of a piece of terrain.

assimilation (carbon assimilation) – The process by which carbon from carbon dioxide in the atmosphere is converted into organic compounds, such as carbohydrates, in plants and algae, by photosynthesis.

autotroph – an organism capable of synthesizing its own food, as through photosynthesis. Except for thermal vent bacteria, only organisms containing chlorophyll (plants, algae, and some bacteria) can do this.

basalt – igneous rock formed from the rapid cooling of volcanic lava exposed at or very near the Earth's surface

base flow -- the sustained portion of stream discharge that is drawn from natural storage sources, and not affected by human activity or regulation.

benthos (*adj. benthic*) - all plants and animals living on or closely associated with the bottom of a body of water.

biennial (plant) – a plant species that requires two growing seasons to complete its life cycle. The first year is usually devoted to vegetative growth, with flowering and reproduction taking place in the second growing season. The biennial habit can be somewhat variable: at times some individuals or populations may behave as annuals, others as short-lived perennials.

biofilm – In stream ecology, a biofilm is a thin biological film of microscopic bacteria, algae, and protozoans covering solid surfaces in a streambed. Biofilms play many important roles in the stream environment, in particular as part of the food web supporting macroinvertebrates.

biological soil crust -- a thin crust made up of mosses, lichens, algae, and bacteria that forms in areas between shrubs, grasses, and flowering plants in undisturbed arid and semiarid lands of the world.

biomass -- the weight of living and dead organic matter (that is, derived from living or once-living organisms) present in a given area. A key measure of the carbon storage capacity of ecosystems.

bog – a freshwater wetland characterized by very low nutrient inputs, very slow decomposition & accumulation of partially decomposed plant material (peat). Variety of vegetation types from woody to herbaceous dominated, frequently with a conspicuous *Sphagnum* moss element. A **fen** is similar to a bog, but generally fens have more nutrient and freshwater inputs.

brackish -- water that is saltier than fresh water but less salty than sea water.

bunchgrass -- the general name for perennial grass species that tend to grow in discrete tufts or clumps rather than in sod-like carpets. Bunchgrasses tend to have deep roots and can get moisture from the soil when shallow-rooted sod-like grasses would dry out.

cambium – in woody plants, a thin cylinder of generative tissue between the bark and the wood of a stem. The cambium produces new layers of phloem on the outer surface of the cylinder and of xylem on the inner surface.

canopy (forest canopy) -- the branches and foliage of an individual tree. Also refers to the upper vegetative layer of a forest or shrubland.

Carbon assimilation – See **assimilation**.

climax, climax community – the last stage in ecological succession (before the next major disturbance starts succession over again. The modern understanding of ecological climax is as a state of **dynamic equilibrium,** where local-scale disturbances do not change the overall characteristics of the habitat.

competition – an interaction between two organisms in the same habitat for the same resources.

confluence – the place where two or more streams join.

conifer -- A tree or shrub that has needle-like leaves and produces seeds in cones; in our area Douglas fir (*Pseudotsuga menziesii*), true fir (*Abies* species), hemlock (*Tsuga* species), western redcedar (*Thuja plicata*), and others. Most conifer species are evergreen, but a few, such as the larch (*Larix* species) on the eastern slopes of the Cascades, shed all their leaves annually.

cryptobiotic crust – see 'biological soil crust.'

cultivar – A race or variety of a plant that has been created or selected intentionally and maintained through cultivation.

cutbank -- the eroding outside bank of a stream bend, often opposite a point bar.

disturbance -- a temporary change in environmental conditions that causes a change in an ecosystem or a part of an ecosystem. Disturbances may act quickly or over time, and impacts may be short-term or lasting. Flooding, wildfire, and windstorms are examples of natural disturbances that have played major roles in shaping Washington's ecosystems. Logging and the introduction of invasive species are examples of anthropogenic disturbances.

dynamic equilibrium -- A state in which change is constantly occurring but in which over time change to any net degree does not occur without the input of energy or disturbance from outside of the system.

ecological restoration -- The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed (*Society for Ecological Restoration*). Ecological restoration, in the strictest sense, implies a return to physical conditions, ecological processes, and assemblage of plants and wildlife similar to conditions that existed prior to degradation, damage, or destruction. The term is used loosely to refer to many, but not all, kinds of habitat enhancements whose goals fall short of the strict definition.

ecology -- The study of the interrelationships among and between organisms, and between organisms and the environment.

ecoregion – a geographic grouping of natural biological communities based on distinctive regional patterns of climate, landforms, soils, and hydrology.

ecosystem -- a community of organisms and its environment functioning as an ecological unit. An ecosystem includes all living organisms and the physical environment (climate, soil, water, air, and many other factors) of the place where they live, and all the interactions of the living organisms with each other and their environment. Ecosystems can be studied in terms of their structures, composition, and processes.

ecotone – the border or transition zone between two different habitats or community types.

ecosystem services -- Positive benefits that ecosystems or their components provide to people.

emergent plant – a rooted plants that can tolerate flooded soil but not extended periods of being completely submerged.

endemic species – a species whose natural distribution is limited to a particular locality or region and is found nowhere else. The size of the area may be relatively large – for example, Douglas fir may be said to be endemic to western North America, from Mexico to southern Canada – but the term is most often applied to species restricted to small geographies.

epiphyte -- (adj. epiphytic) a plant, moss, or lichen that grows on another plant without deriving nourishment from that host.

estuary -- A body of water that is semi-enclosed, connected with the ocean, and mixes salt water with freshwater drainage from land.

evaporation – the conversion of water from a liquid to a vapor. Usually accomplished by the addition of heat.

evaporative demand – The energy which changes liquid water into water vapor at the soil and plant surfaces and transports this water vapor back into the atmosphere. Evaporative demand increases as temperature increases and as relative humidity decreases. Since evaporative demand is the sum of soil water evaporation and plant **transpiration**, it is also frequently called "evapotranspiration".

evapotranspiration -- the sum of evaporation and plant transpiration from the Earth's land and ocean surface to the atmosphere.

floodplain – A level area near a river or stream channel, constructed by the river, and that is regularly flooded during moderate flow events.

fluvial -- Of or pertaining to streams or rivers.

forb -- An herbaceous plant that is not a grass, sedge, or rush.

forest – A vegetation type dominated by trees and other woody vegetation, where the tree canopy averages 60-100% cover.

forested wetland – A wetland with a canopy of trees greater than 6 meters (20 feet) tall; a swamp.

frugivore (*adj*. frugivorous) – an animal that eats primarily fruit.

gradient – in ecology, a gradient literally means a rate of *directional* change in an environmental variable. For example, a sequence of plant communities from shrub-steppe to pine savanna to dry pine-fir forest represents a gradient in available moisture from drier to more moist.

gramnivore (*also* granivore; *adj*. gramnivorous) – an animal that eats primarily seeds.

grass – a plant of the family Poaceae (formerly Gramineae), having jointed stems, sheathing leaves, and seedlike grains. All grasses worldwide are herbaceous (although some [the bamboos] have woodlike fibers).

groundwater -- water found underground in the cracks and spaces in soil, sand and rock. Groundwater is stored in and moves slowly through geologic formations called aquifers.

headwaters -- The source of a stream or river.

hemishrub (also subshrub, dwarf shrub) – literally 'half-shrub.' Refers to short-statured perennial plants with woody bases. Hemishrubs are no more than a foot tall at maturity; many species reach no more than about six inches in height, although they may spread laterally more than that. In the Columbia Basin, hemishrubs include several species of phlox, several species of desert buckwheat, Piper's daisy, threadleaf daisy, and a number of others.

herb; herbaceous plant -- a seed-bearing plant that does not form hard woody tissue. Includes forbs as well as grasses and grass-like plants. Compare to **forb**.

heterotroph – an organism incapable of synthesizing its own food and which must eat other organisms to survive. Mammals, birds, and fish are heterotrophs.

hydric soil -- A soil that has formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anoxic conditions in the surface layers. Soil characteristics such as color, texture, mottling, and oxidized root channels indicate the presence of hydric conditions.

hydrology – The movement and distribution of surface water and groundwater. Also, the study of same.

hydrophyte (*adj*. hydrophytic) – a plant species that has developed special adaptations to the anoxic soils and other conditions of wetland environments.

hyporheic zone - the area under the stream channel and floodplain where groundwater and the surface waters of a stream are exchanged freely.

introduced (alien, exotic, etc.) species – "a species living outside its native distributional range, which has arrived there by human activity, either deliberate or accidental" [*Wikipedia 2015*].

invasive species – a nonnative species that significantly modifies or disrupts the ecosystems it colonizes, especially those capable of establishing in relatively intact ecosystems.

invertebrate -- an animal without a backbone.

lentic -- standing waters; lakes and ponds.

lichen -- a composite organism consisting of algae or cyanobacteria living within the filaments of certain species of fungi. Lichens are a symbiotic relationship in which the photosynthetic algae or cyanobacteria furnishes photosynthate to the host fungus in return for a relatively protected environment within the fungal body ('thallus').

limiting factor - a requirement such as food, cover, or another, physical, chemical, or biological factor that is in shortest supply with respect to the resources necessary to sustain or reproduce life.

lithosol -- a shallow soil that consists mainly of partially weathered rock fragments.

loess – a fine-grained soil that is formed by the accumulation of wind-blown sediments.

lotic -- moving waters; rivers and streams.

macroinvertebrates – insects, insect larvae, and other organisms that lack a backbone and live underwater in our streams and rivers. Macroinvertebrates are small but can be seen by the naked eye (that's the 'macro-' part). Macroinvertebrates perform many functions in freshwater ecosytems, including the breakdown of coarse wood and leaf material, and are important sources of food for fish. Because macroinvertebrates are sensitive to the presence of pollutants, excessive sedimentation, and other factors associated with stream health, the presence and abundance of 'intolerant' macroinvertebrates can be used as indicators of water quality.

marsh – a wetland dominated by herbaceous vegetation.

meander - the winding of a stream channel, usually in an erodible alluvial valley.

mesic - moderately wet.

microbiotic crust -- see 'biological soil crust.'

moss – one of many species of small, spore-producing bryophytes common in most terrestrial ecosystems. Mosses possess chlorophyll and conduct photosynthesis, but lack xylem and phloem, distinguishing them from the vascular plants.

mycorrhizae – a usually mutualistic association between a soil fungus and the roots of a vascular plant in which the fungus colonizes the host plant's root tissues and assists the host plant in the acquisition and transport of moisture and nutrients while the fungal partner receives photosynthate from the host.

native plant – a plant species that occurs naturally in a particular region, ecosystem, or habitat without direct or indirect human intervention. [*U.S. National Arboretum*]

naturalized species – an introduced species that is reproducing successfully in a habitat in which it is not native.

nearshore environment -- the intertidal portion of an estuary or marine shoreline that encompasses the tidally influenced portions of rivers and streams. Nearshore habitats include kelp and eelgrass beds, marshes, sandflats and mudflats, and other areas.

noxious weed – legal term for any invasive, non-native plant that threatens agricultural crops, local ecosystems or fish and wildlife habitat [WA Noxious Weed Control Board 2015]. Noxious weeds are designated and regulated by state law.

open water wetland – what it sounds like. May be without vascular plants or may have rooted or unrooted floating-leaved vegetation like duckweed, pond lilies, etc. (this is sometimes referred to as an '**aquatic bed**').

overstory -- the upper vegetative layer of a shrubland or forest (see **canopy**).

peat - partially decomposed plants and other organic material that build up in poorly drained wetland habitats.

perennial plant – a plant that persists for multiple growing seasons (generally more than two; compare to **biennial**).

perennial stream – a stream that flows continuously.

pH – literally, powers of hydrogen. A measure of the hydrogen ion activity in the water, or, in general terms, the acidity of the water.

phenology – the relationship between annual cycles of plant and animal life and environmental changes and the calendar year.

photosynthesis -- the process by which plants make sugars (carbohydrates) from atmospheric carbon dioxide and water in the presence of light. The foundation of all food webs (except for those deep-sea volcanic vents!). Photosynthesis takes place only in cells containing chlorophyll, the green pigment.

phloem -- a specialized conducting tissue present in all vascular plants. Phloem transports the products of photosynthesis from the leaves to other plant organs.

plant community -- a basic unit of plant assemblage on the landscape. "A plant community is an assemblage of plant populations sharing a common environment and interacting with each other, with animal populations, and with the physical environment. Most of these assemblages tend to occur repeatedly in the landscape under similar environmental conditions. However, no two examples of a community type are identical in their species composition or in their physical environment." [*Pennsylvania Dept. of Conservation and Natural Resources*]

point bar -- the convex side of a meander bend that is built up due to sediment deposition.

pool -- a reach of stream that is characterized by deep, slow water and a smooth surface.

prairie – a non-forested ecosystem dominated by grasses, forbs, and shrubs, usually in temperate regions with low-moderate rainfall. Prairies of the Willamette Valley, Puget Trough, and Georgia Basin (in Canada) are quite different ecologically from the great prairies that once dominated the Midwest.

productivity (biological productivity) – The quantity of organic matter or its equivalent in dry matter, carbon, or energy content, which is accumulated during a given period of time. The biological productivity of ecosystems is the foundation of food webs and other habitat factors. **Primary production** refers to the productivity of plants through photosynthesis.

reach -- a section of stream between two different points.

reclamation – The aim of reclamation is typically to stabilize a landscape feature, such as a mine site or spoils pile, rather than to restore ecological processes or species assemblages.

rehabilitation – differs from restoration in emphasizing the restoration of ecological structure and processes and not assemblages of species.

revetment - a facing of stone, bags, blocks, pavement, etc., used to protect a bank against erosion.

rhizome -- a perennial underground stem that usually grows horizontally through the soil. Rhizomes may function as roots but are derived from stem tissue, which is distinctly different from root tissue. Rhizomatous plants spread vegetatively through spreading rhizomes.

riffle - a reach of stream that is characterized by shallow, fast-moving water broken by the presence of rocks and boulders.

riparian – The transition zone between terrestrial and aquatic environments such as rivers, streams, and lakes.

root – Specialized plant organ typically derived from the radicle of the seedling embryo. Roots are usually underground (or, at least, in soil or a similar rooting medium) and typically grow downward or laterally, or both. The principle function of roots is the uptake of moisture and nutrients from soil, but they may also be important in structural support, especially in woody plants.

sagebrush – a woody plant species in the genus *Artemisia*. Herbaceous members of this genus are generally referred to as 'wormwood,' not sagebrush.

sagebrush-obligate -- A species that has very specific habitat requirements. Such a species cannot persist without an adequate amount of intact shrub-steppe habitat.

salmon – a group of species of fish in the family Salmonidae. Pacific salmon include chinook (aka. king salmon), coho (silver), sockeye (red), chum (humpie), pink (dog), and steelhead. Under natural conditions, most salmon are **anadramous**.

salmonid – salmon, steelhead, trout, and their relatives in the family Salmonidae.

savanna – A grassland with trees, the trees being sufficiently widely spaced so that the canopy does not close. The open canopy allows sufficient light to reach the ground to support an unbroken herb layer usually dominated by grasses. Tree canopy cover averages 5-25%.

scrub-shrub wetland – A wetland dominated by shrubs or stunted trees less than 6 m (20 feet) tall.

sediment - Soil or mineral material transported by water or wind and deposited in streams or other bodies of water.

sere (*adj*. seral) – term referring to any of several stages in ecological succession.

shrub -- A woody perennial variously defined as less than 6 (or 8) meters tall (20 or 26 ft.). Shrubs can be either single-stemmed or multi-stemmed. The division of woody perennials into trees and shrubs is useful but artificial. A number of important Pacific Northwest woody plants (e.g., Pacific hazelnut, red-osier dogwood) are described in guidebooks as 'a large shrub or small tree'.

silviculture – the technical practice of growing tress for commercial or ecological purposes.

sinuosity - The ratio of channel length to direct down-valley distance. Also may be expressed as the ratio of down-valley slope to channel slope.

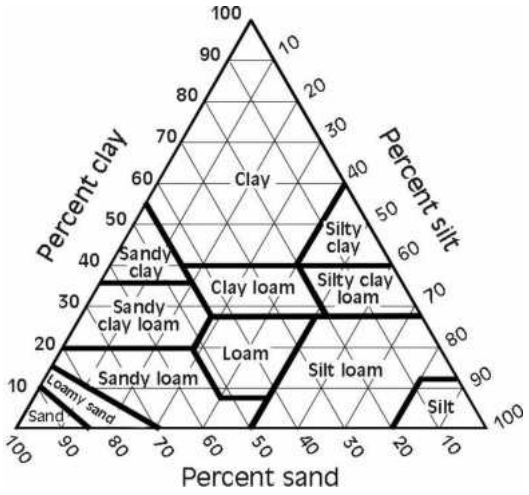
slope – the incline of a piece of terrain. The degree of slope, in combination with aspect, can have a profound effect on the physical environment and biological features of a piece of terrain.

slough (pronounced "slew") -- a shallow swamp, often a backwater to a river, lake, or bay. Sloughs often form along old river channels.

snag – A standing dead tree, important wildlife habitat features in forest habitats.

soil texture – A physical property of mineral soils defined by the size (diameter) of soil particles and their relative abundance in a sample. Soil texture characterizations recognize three principle particle sizes: sand (the coarsest; particle diameters from 0.05 – 2.0 mm); silt (intermediate; 0.002 – 0.05 mm); and clay (less than 2.0 mm). Larger particles (gravel, cobbles, and boulders) are not part of the classification system but are included in soil descriptions. Soils can have any combination of sand, silt, and clay. A textural chart (see below) is used to describe soil types based on the proportions of particle sizes in a given soil.

Soil texture is a principle determinant of soil properties such as moisture-holding capacity, erodibility, and other characteristics. Coarse sandy or gravelly soils drain quickly and are likely to be relatively droughty environments for plants compared to soils dominated finer silt and clay particles. Fine soils with a high proportion of clay particles allow moisture to penetrate and drain through very slowly, in places contributing to the formation of wetlands. Soils dominated by silt are intermediate.



stand – a recognizable area of a forest or shrubland that is relatively homogeneous in terms of structure, species composition, and other characteristics.

stomate (also, stoma; plural stomates or stomata) -- a pore in the surface of a leaf (or other aerial organ) allowing the exchange of gases between plant tissues and the atmosphere. Plants use stomatal control to regulate **transpiration**.

streambed -- The unvegetated portion of a stream channel, or the channel through which a natural stream of water runs or used to run (as with a dry streambed).

succession (ecological succession) – directional change in the structure, composition, and other characteristics of a plant community or an ecosystem as the available competing organisms, especially plants, respond to and modify the environment over time. Usually considered to take place in the intervals between large-scale disturbances. Stages in succession are often referred to by where they are understood to occur in a successional sequence; e.g., early successional, late successional, or climax stages. See also **climax**.

swamp – A wetland dominated by trees. Also known as a forested wetland. The term is sometimes also used to refer to wetlands dominated by shrubs.

thalweg -- the lowest thread of a stream channel.

thinning – Systematic removal of trees in a forest or woodland, or shrubs in a shrubland, for the purpose of reducing tree or shrub densities to achieve silvicultural or ecological objectives.

tidal – influenced by tides. Tides are generated from the sea, but tidal chemistry can be saline, brackish, or freshwater.

transpiration -- the movement of water within a plant and the subsequent loss of water as vapor through the plant's leaves.

tree – A large woody perennial variously defined as greater than 6 (or 8) meters tall (20 or 26 ft.). Trees are frequently single-stemmed and branching, but certain multi-stemmed individuals occur in some species, under certain conditions, or may even be characteristic of some species. A few tree species (coast redwood, Douglas fir, one or more Eucalyptus species in Australia) reach maximum heights of over 300 feet. See also **shrub**.

understory – vegetative layers beneath the **overstory** of a forest or shrubland.

vertebrate – an animal with a backbone.

weed – Any undesirable or troublesome plant, especially one that grows profusely where it is not wanted [*Dictionary.com*]. See also **noxious weed, invasive species, introduced species**.

wetland -- an area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." **-** Definition used by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency.

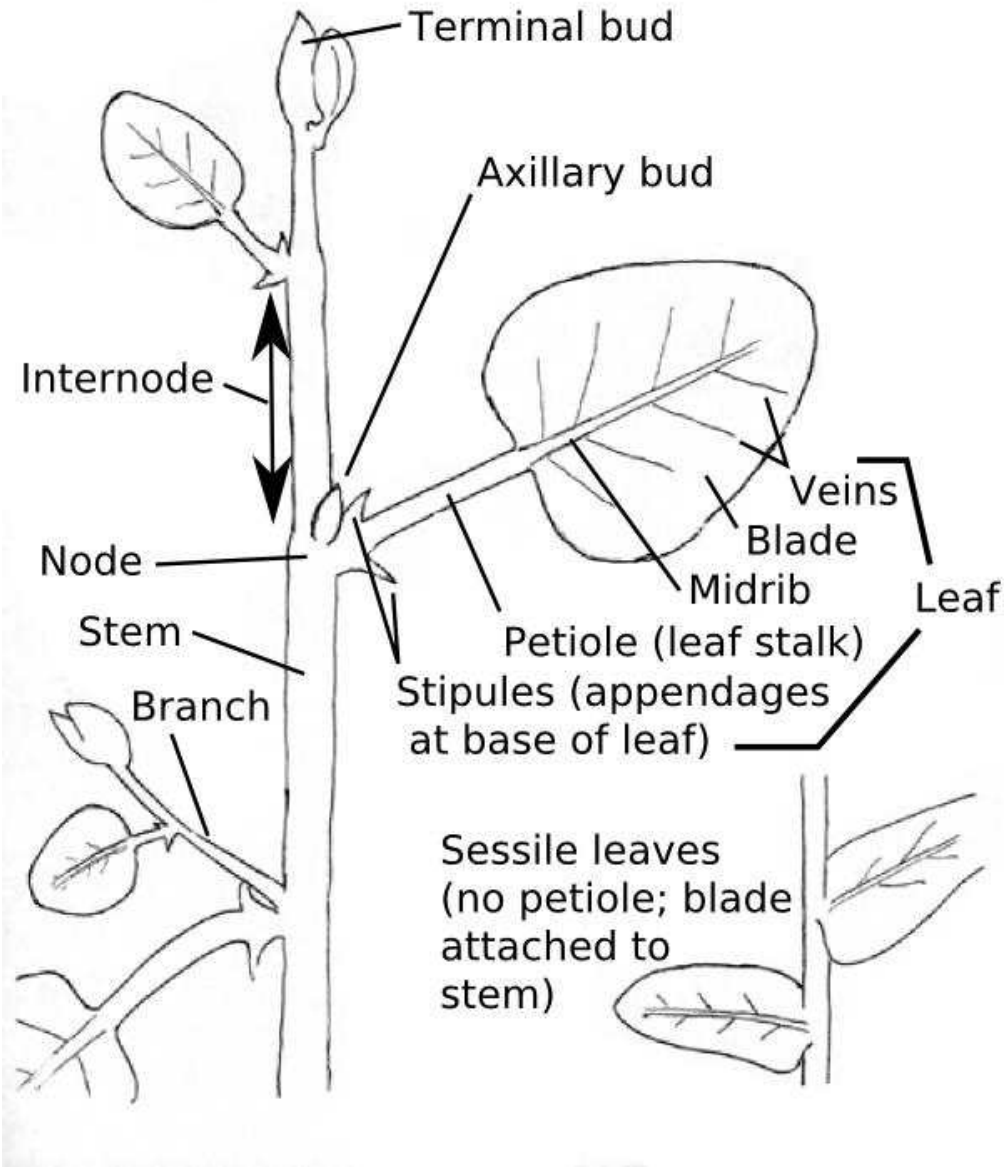
woodland – A vegetation type in which the canopy cover of trees averages 25-60%.

xylem -- a specialized water-conducting tissue present in all vascular plants. Responsible for the distribution of moisture and dissolved nutrients from the roots to the rest of the plant.

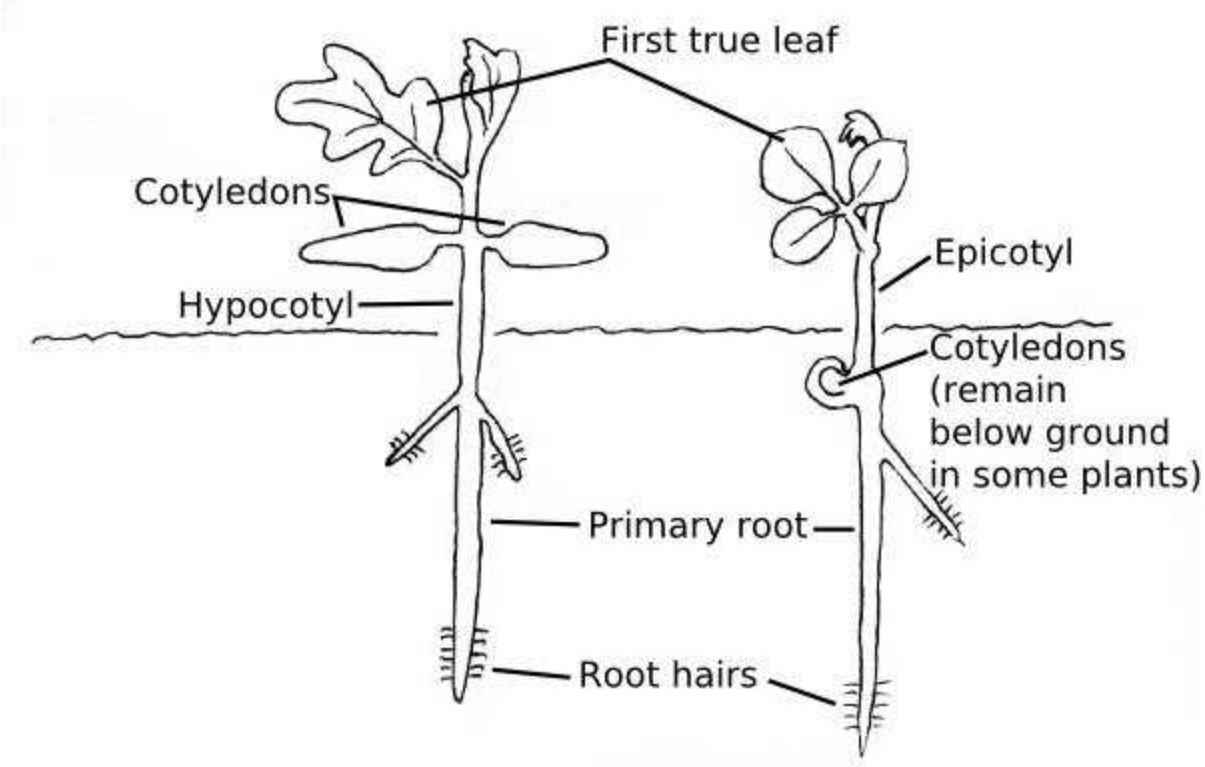
A basic illustrated glossary of plant identification jargon

From *Extension.org* [http://articles.extension.org/pages/32635/weed-identification-tools-and-techniques#glossary]

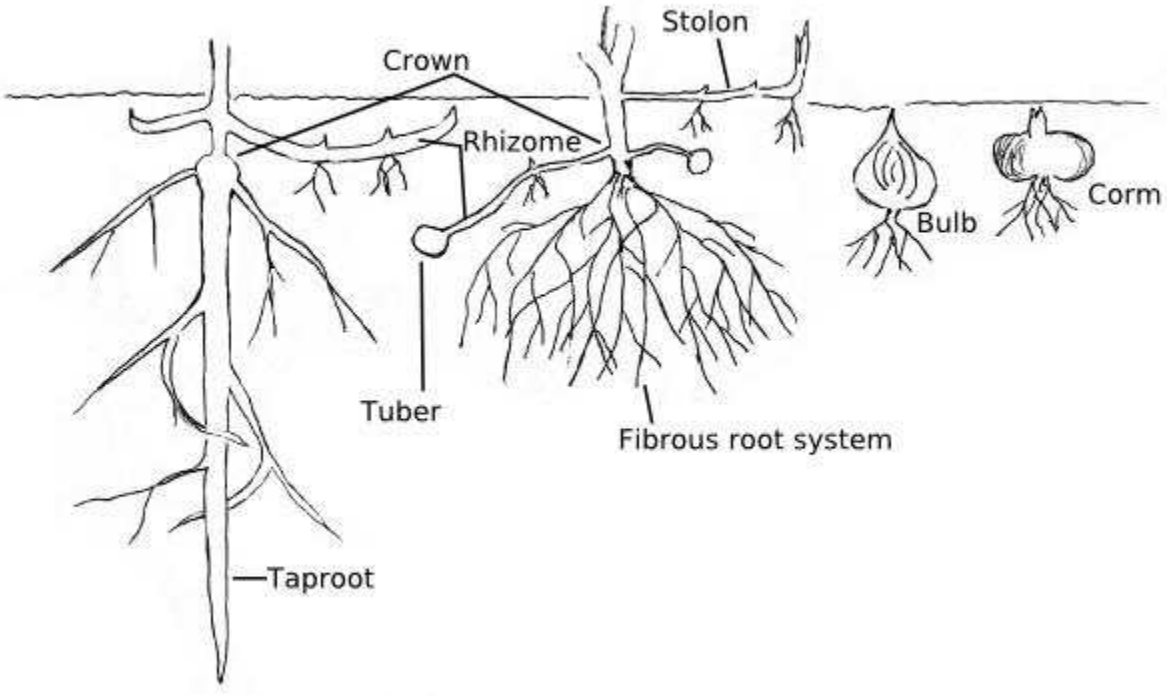
All figures by Mark Schonbeck, Virginia Association for Biological Farming.



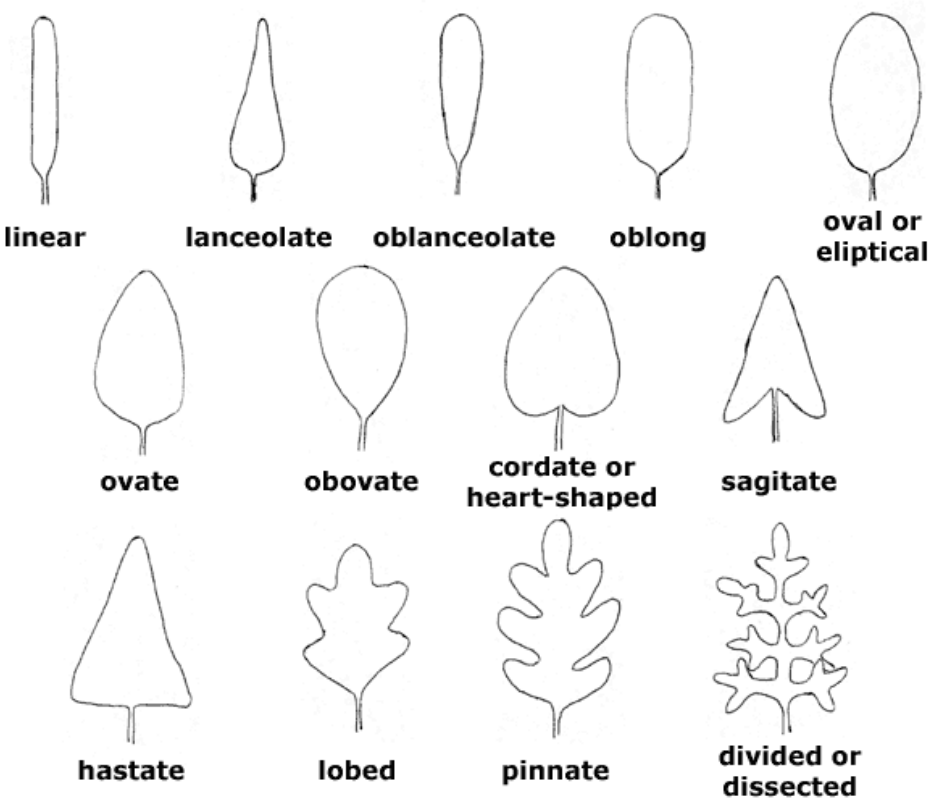
Aboveground structures of a broadleaf plant.



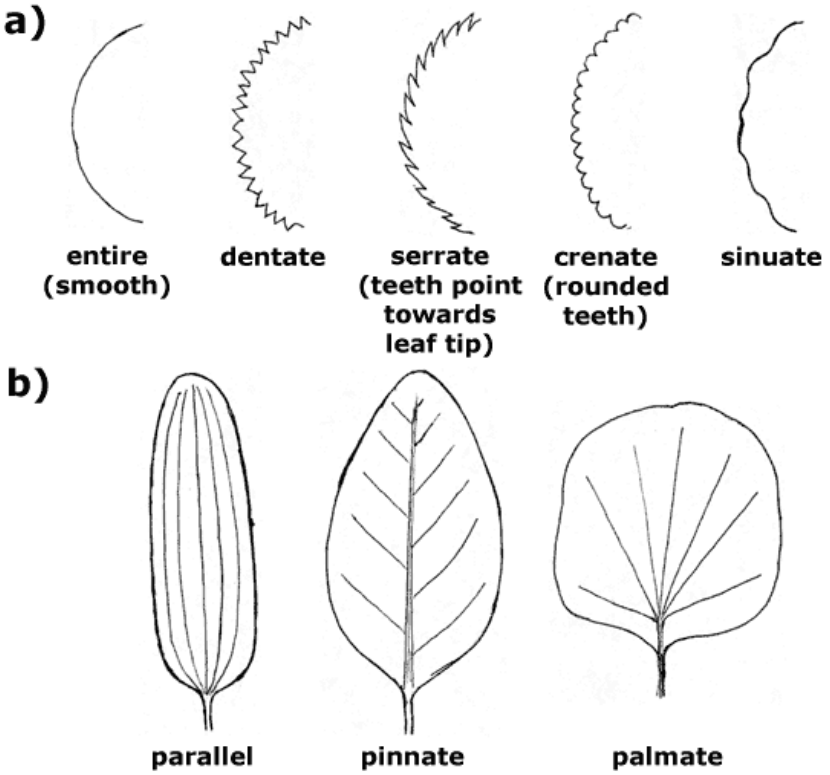
Structures of broadleaf seedlings.



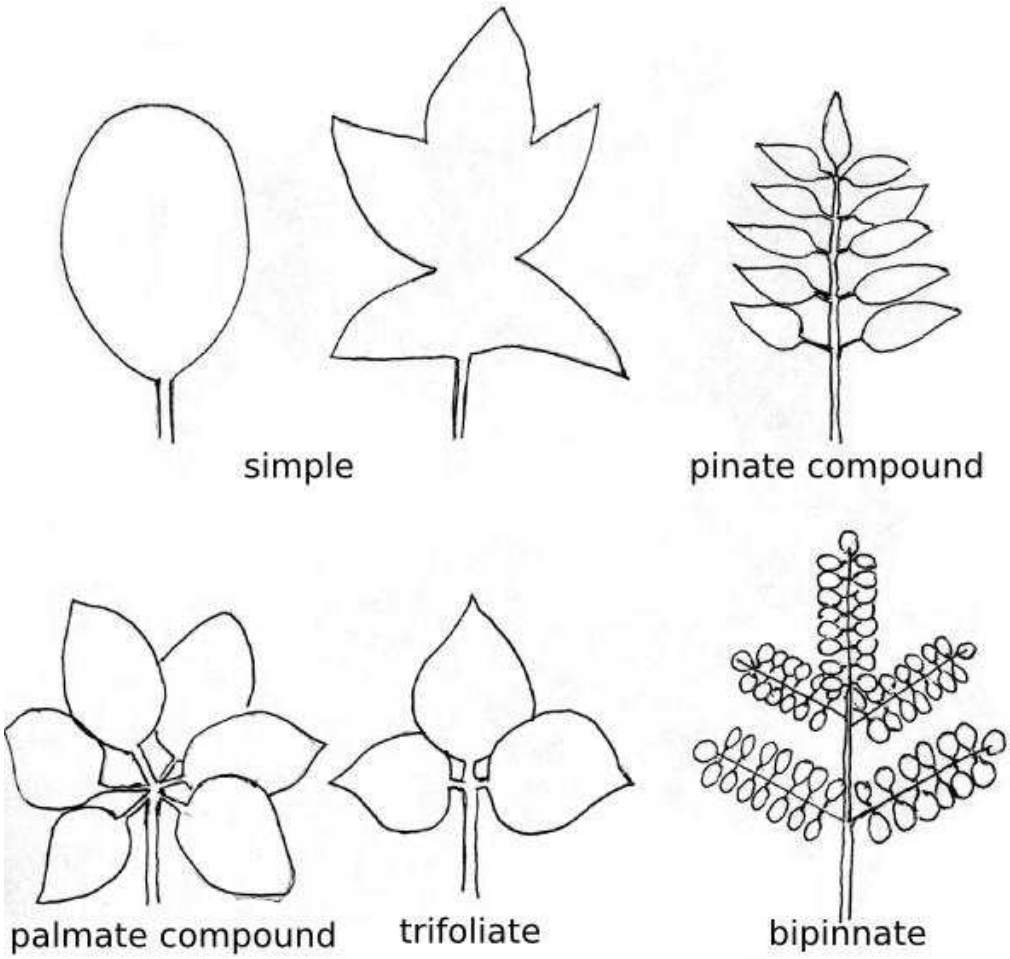
Roots and other underground structures.



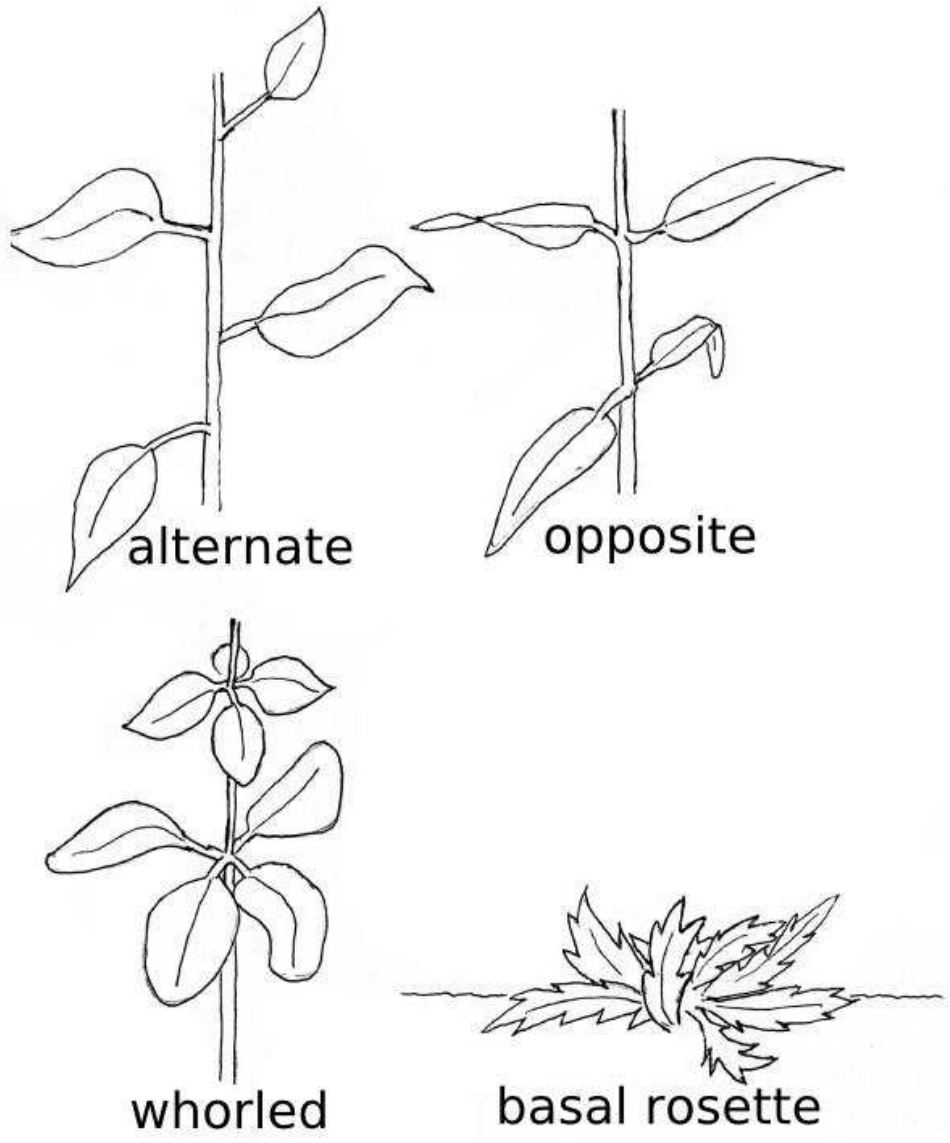
Leaf shapes.



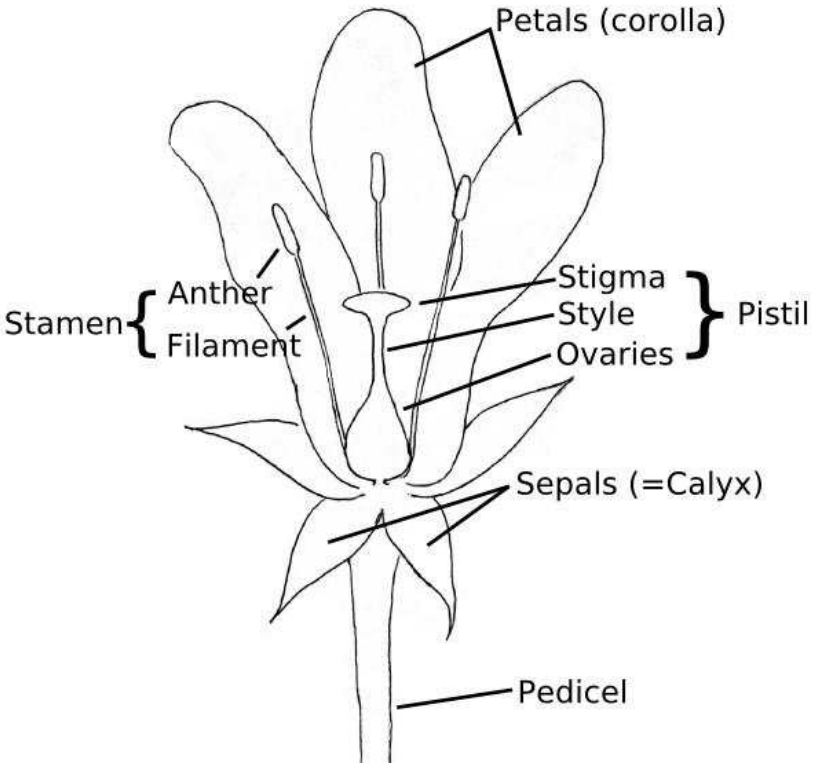
(a) Leaf margins. (b) Leaf venation.



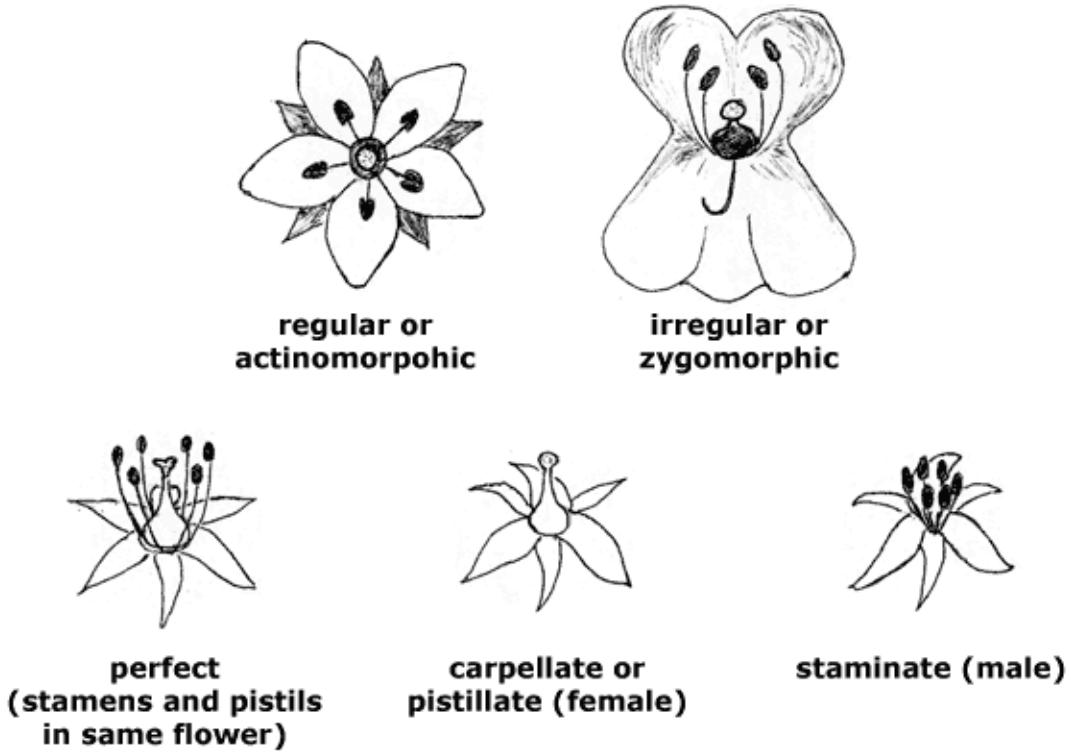
Leaf structures.



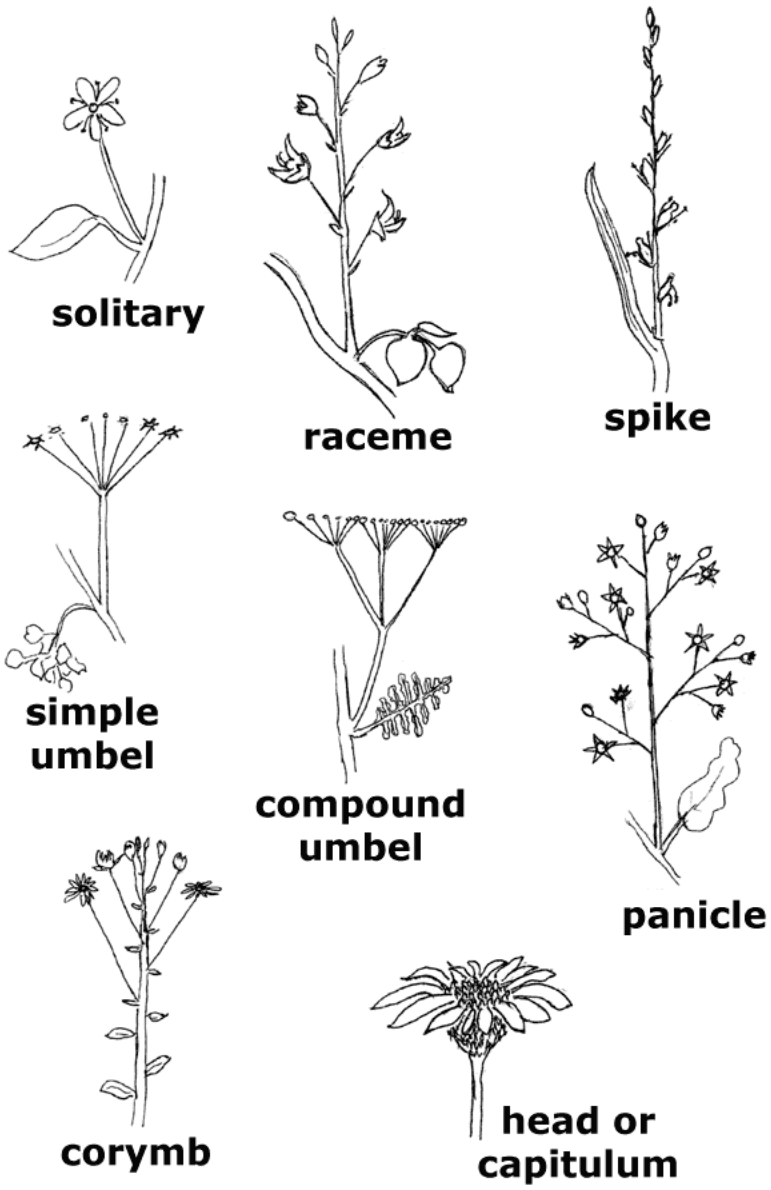
Leaf arrangement.



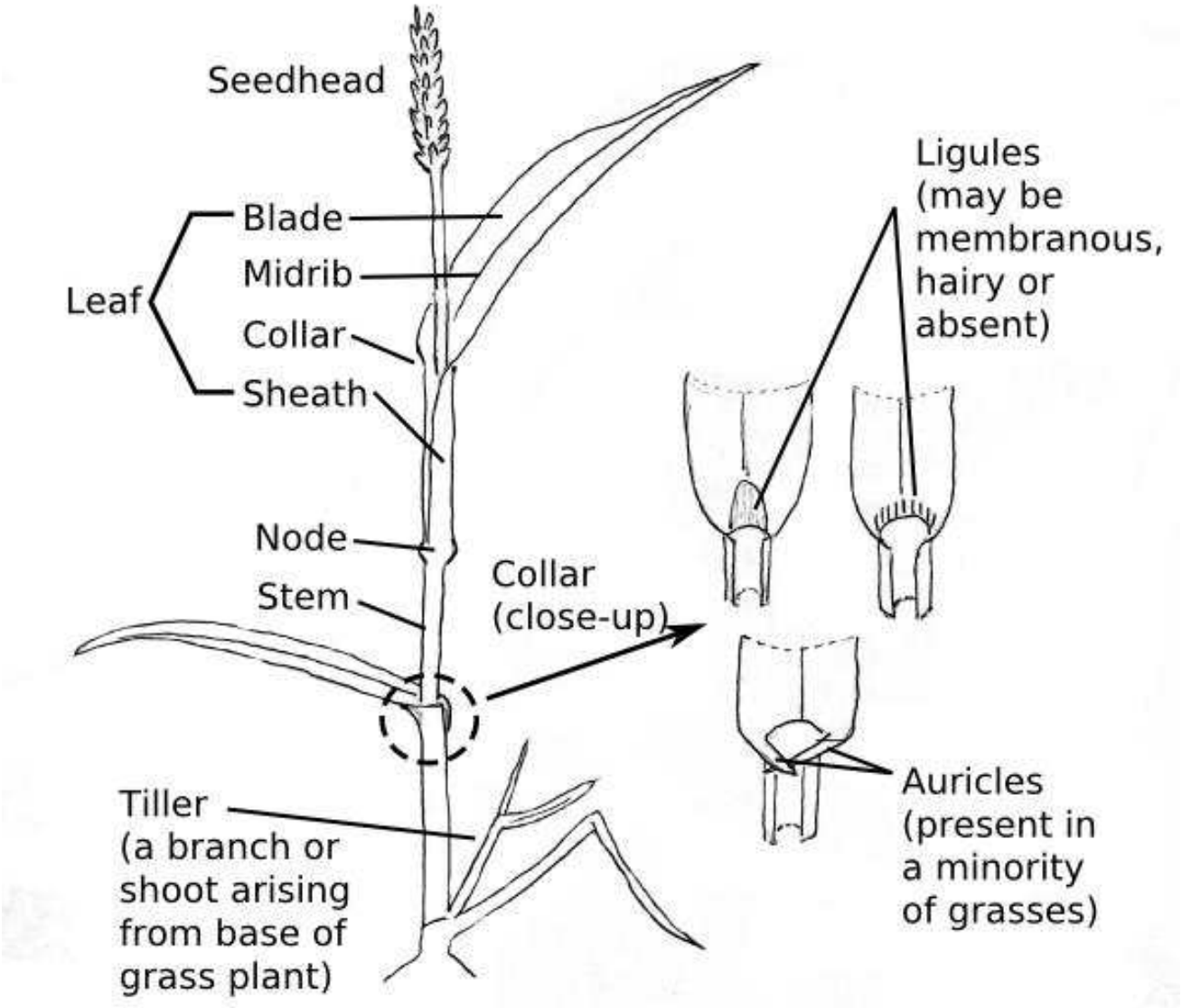
Flower structures.



Types of flowers.



Inflorescence types (i.e., arrangement of flowers in clusters).



Structures of a grass.
[Note: Many grasses are rhizomatous (rhizomes not shown)]