

Glossary of Botanical Terms Used in the OpenKey Project

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edited by Stephen M. Seiberling

The terms defined here mostly correspond to character states and characters in the OpenKey Project plant description database. The definitions, while reflecting general usage in the botanical literature, are sometimes more narrow than the possible range of meanings for the terms. The intention was to create definitions that permit making distinctions useful for plant identification in the field, rather than to produce a more broadly applicable botanical glossary.

Alan S. Weakley and Peter S. White, both of the University of North Carolina at Chapel Hill, and Kenneth R. Robertson of the University of Illinois at Urbana-Champaign, contributed to the glossary. Numerous published sources were also consulted. The principal source used for each definition is listed in brackets at the end of the entry. Definitions with no source listed were written by the editor.

Entries that define OpenKey Project *character states* list the botanical structure(s) to which the term applies in square brackets after the term. The botanical structure is immediately followed by the category of application of the term, as used in this project, in curly brackets. The definition is then given, often including a list of contrasting or similar terms in conventional parentheses. The source for the definition is listed lastly in square brackets. The format for entries in schematic form is:

Term – [Botanical structure] {category of application} Definition.... (Terms for comparison.) [source reference]

For example:

Acicular – [Leaflets, Leaves] {shape} Very long and slender, gradually tapering to a point, like a needle; needle-shaped. (Compare with awl-shaped, filiform and linear.)
[modified from K&P, p. 11]

Combining the botanical structure with its associated category of application yields the name of the OpenKey *character* to which the term applies. Thus, in the above example, the characters to which the term acicular applies are, “Leaflets shape” and “Leaves shape” (or, in more common usage, Leaflet shape and Leaf shape).

When no botanical structure and category of application are listed, the term does not represent an OpenKey character state, but is included to help define other terms such as characters or words that appear within the definitions.

Glossary Index:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

- Accessory fruit** – [Fruits] {type} A fruit or group of fruits that ripen together and include some accessory tissue (i.e. structures not derived from the pistil) such as the thickened hypanthium of a rose (*Rosa*) hip or the fleshy receptacle of a strawberry (*Fragaria*). [modified from W&K, p. 585]
- Accessory parts of fruits** – Structures consisting of, or derived from, floral parts other than the pistil, such as sepals, hypanthium or receptacle.
- Achene** – [Fruits] {type} A more or less small, dry fruit that does not split open at maturity (indehiscent), with a typically thin, close-fitting wall surrounding a single seed. [modified from Z, p. 357]
- Acicular** – [Leaflets, Leaves] {shape} Very long and slender, gradually tapering to a point, like a needle; needle-shaped. (Compare with awl-shaped, filiform and linear.) [modified from K&P, p. 11]
- Acorn** – [Fruits] {type} A nut with a persistent, cup-like structure (cupule) attached at the base consisting of numerous partially fused, overlapping, dry bracts, as in oaks (*Quercus*). [modified from K&P, p. 11]
- Acuminate** – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} Gradually tapering to a sharp point, forming concave sides along the tip. (Compare with acute.) [modified from H&H, p. 153]
- Acute** – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} Tapering to a pointed apex with more or less straight sides, the sides coming together at an angle of less than 90°. (Compare with acuminate and obtuse.) [modified from H&H, p. 153]
- Adventitious (1)** – Structures or organs arising in a position that is unusual for their type, as roots originating on the stem. [modified from H&H, p. 5]
- Adventitious (2)** – [Roots] {type} Roots arising from any part of the plant (e.g. stem or leaf) other than the root system; usually growing laterally, often from the lower part of the main stem. [modified from Z, p. 358]
- Aerial stem** – [Stems] {type} A prostrate to erect, above ground stem. [modified from W&K, p. 30]
- Aggregate fruit** – [Fruits] {type} A cluster of fruits that stick together or are fused, originating from two or more separate pistils contained within a single flower, as in blackberry (*Rubus*). (Compare with multiple fruit.) [modified from H&H, p. 6]
- Alternate** – [Leaves] {insertion} Positioned singly at different heights on the stem; one leaf occurring at each node. (Compare with opposite and whorled.) [modified from L, p. 738]
- Androecium** – A collective term for all the stamens and any closely associated structures in a flower. [modified from W&K, p. 585]
- Angiosperm** – [Plants] {major group} Plants that bear their seeds enclosed in an ovary; the flowering plants. (Compare with gymnosperm.)
- Annual** – [Plants] {life span} Normally living one year or less; growing, reproducing, and dying within one cycle of seasons. [K&P, p. 15]
- Anther** – The pollen-producing portion of the stamen typically borne at the tip of a stalk or filament. [modified from Z, p. 358]
- Apex** – The portion of a plant structure (such as a leaf, bud, stem, etc.) farthest from its point of attachment or uppermost; the tip. (Compare with base.) [modified from H&H, p. 10]
- Apical** – [Placentation] {type} Attachment of ovules at the top or apex of the ovary. (Compare with basal placentation.) [modified from Z, p. 359]
- Apiculate** – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} Ending abruptly in a small, slender, point that is not stiff and often slightly curved. (Compare with aristate, caudate and mucronate.) [modified from H&H, p.153]

- Apopetalous** – [Corolla] {fusion} With petals distinct, not fused. (Compare with sympetalous.)
[modified from K&P, p. 16]
- Apophysis** – The outer portion of a cone scale which is exposed when the cone is closed.
[modified from H&H, p. 10]
- Aposepalous** – [Calyx] {fusion} With sepals distinct, not fused. (Compare with synsepalous.)
[modified from K&P, p. 16]
- Appressed** – [Leaves, Petals, Phyllaries, Sepals] {vertical orientation} Pressed upwardly close or flat against the bearing structure, thus more or less parallel to it. (Compare with ascending, reflexed and spreading.) [modified from K&P, p. 16]
- Aquatic-emergent** – [Plants] {habit} Growing in water with stem and leaves extending above the surface. (Compare with aquatic-floating and aquatic-submerged.)
- Aquatic-floating** – [Plants] {habit} Growing in water with leaves floating on the surface.
(Compare with aquatic-emergent and aquatic-submerged.)
- Aquatic-submerged** – [Plants] {habit} Growing in water with stem and leaves beneath the surface. (Compare with aquatic-emergent and aquatic-floating.)
- Arachnoid** – [Buds, Leaf lower surface, Leaf upper surface, Phyllaries, Sepals, Young twigs] {pubescence type} With fairly sparse, fine, white, loosely tangled hairs; cobwebby. [modified from K&P, p. 17]
- Aristate** – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} Bearing a prolonged, slender, stiff, usually straight tip; awned or bristled. (Compare with apiculate, caudate and mucronate.) [modified from K&P, p. 18]
- Armature** – Any kind of sharp defense such as thorns, spines, or prickles. [modified from L, p. 739]
- Armed** (1) – [Bark of mature trunks] {surface appearance} Bearing any kind of sharp defense such as thorns, spines, or prickles. [modified from L, p. 739]
- Armed** (2) – [Seed cone scales] {armature} Bearing a hook, prickle or other sharply pointed structure on the end of the cone scale.
- Ascending** – [Leaves, Petals, Phyllaries, Sepals] {vertical orientation} Spreading at the base and then curving upward to an angle of 45° or less relative to the bearing structure. (Compare with appressed, reflexed and spreading.) [modified from K&P, p. 18]
- Asymmetric** (1) – [Calyx, Corolla] {symmetry} Not divisible into essentially equal halves along any plane. (Compare with bilaterally symmetric and radially symmetric.) [modified from K&P, p. 18]
- Asymmetric** (2) – [Seed cones] {symmetry} Not divisible into essentially equal halves along any plane. (Compare with nearly symmetric and symmetric.) [modified from K&P, p. 18]
- Attenuate** – [Leaf bases, Leaflet bases] {shape} Tapering gradually to a narrow base. [H&H, p. 150]
- Auriculate** – [Leaf bases, Leaflet bases] {shape} With ear-shaped appendages at the base.
[modified from H&H, p. 150]
- Autotrophic** – [Plants] {nutrition} Able to synthesize the nutritive substances an organism needs from the non-living environment; in plants, photosynthetic. (Compare with parasitic.)
[modified from REE, p. 891]
- Awl-shaped** – [Leaflets, Leaves] {shape} Narrowly triangular and sharply pointed, like an awl. (Compare with acicular and ensiform.) [modified from H&H, p. 150]
- Awn** – A slender, more or less straight and stiff, fine-pointed appendage; may be located at the tip of a leaf or bract and a continuation of the midvein, or comprising the pappus in fruits of the sunflower family (Asteraceae). [modified from K&P, p. 19 & W&K, p. 587]
- Axil** – The point of the upper angle formed between the axis of a stem and any part (usually a leaf) arising from it. [H&H, p. 13]
- Axile** – [Placentation] {type} Attachment of ovules at or near the center of a compound ovary which has more than one inner compartment (multilocular), the ovules located on the inner

angle formed by the interior partitions (septa). (Compare with free-central placentation.)
[modified from Z, pp. 359-60]

Axillary – [Buds, Inflorescences, Seed cones] {position} On the stem just above the point of attachment of a leaf (or leaf scar) or branch; borne in the axil of a leaf or branch. (Compare with terminal.) [modified from W&K, p. 32]

Axis – Any relatively long, continuous, supporting structure that typically bears other organs laterally, and represents the main line of growth and/or symmetry; as a stem that bears leaves or branches, or the rachis of an inflorescence that bears flowers along its length. [modified from K&P, p. 19 & H&H, p. 13]

B

Banded – [Leaf lower surface, Leaf upper surface] {color variegation} Transverse, or horizontal, stripes of one color crossing another. (Compare with striped.) [modified from RDMB, p. 150]

Bark – The outermost layer of a woody stem, usually with one or more corky layers that prevent water loss and protect the inner living tissues from mechanical damage. [modified from W&K, p. 587]

Basal (1) – At or very near the base of a plant structure. [modified from K&P, p. 20]

Basal (2) – [Leaves] {position} With leaves arising at or near the base of the stem. (Compare with cauline.) [modified from H&H, p. 162]

Basal (3) – [Placentation] {type} Attachment of ovules at the base of the ovary. (Compare with apical placentation.) [modified from Z, p. 360]

Base – The portion of a plant structure (such as a leaf, bud, stem, etc.) nearest the point of attachment or lowermost; the bottom. (Compare with apex.)

Berry – [Fruits] {type} A fleshy fruit that does not split open at maturity (indehiscent), with few or more seeds (rarely just one), the seeds without a stony covering; the flesh may be more or less homogenous or with the outer portion more firm or leathery; as grapes (*Vitis*). (Compare with drupe.) [modified from Z, p. 360]

Biennial – [Plants] {life span} Normally living two years; germinating or forming and growing vegetatively during one cycle of seasons, then reproducing sexually and dying during the following one. [K&P, p. 21]

Bifoliate – [Leaves] {complexity form} Compound with two leaflets; two-leafleted or geminate. (Compare with bigeminate and trifoliate) [modified from W&K, p. 587]

Bigeminate – [Leaves] {complexity form} With two orders of leaflets, each divided into pairs or geminately compound; doubly paired. (Compare with bifoliate.) [modified from RDMB, p. 94, modified; H&H, p. 16]

Bilaterally symmetric – [Calyx, Corolla] {symmetry} Divisible into two essentially equal portions along only one plane. (Compare with asymmetric and radially symmetric.) [modified from K&P, p. 120 (see zygomorphic)]

Bipalmately compound – [Leaves] {complexity form} With two orders of leaflets, each palmately compound; twice palmately compound. (Compare with once palmately compound and tripalmately compound.) [modified from RDMB, p. 94]

Bipinnately compound – [Leaves] {complexity form} With two orders of leaflets, each pinnately compound; twice pinnately compound. (Compare with once pinnately compound and tripinnately compound.) [modified from RDMB, p. 94]

Bipinnately lobed – [Leaves] {lobing form} With two orders of leaf lobing, each pinnately lobed; twice pinnately lobed. (Compare with once pinnately lobed and tripinnately lobed.)

- Bipinnate-pinnatifid** – [Leaves] {complexity form} Twice pinnately compound with pinnatifid leaflets. (Compare with once pinnate-pinnatifid and tripinnate-pinnatifid.)
- Bisexual** (1) – Having functional reproductive structures of both sexes (i.e. male and female) in the same flower or cone. (Compare with unisexual.) [modified from K&P, p. 21]
- Bisexual** (2) – [Flowers] {gender} Having functional reproductive structures of both sexes (i.e. male and female) in the same flower. (Compare with unisexual.) [modified from K&P, p. 21]
- Biternate** – [Leaves] {complexity form} With two orders of leaflets, each divided into threes or ternately compound; twice trifoliolate. (Compare with trifoliolate and triternate.) [modified from RDMB, p. 94]
- Blade** – The flat, expanded portion of a leaf, petal, sepal, etc. [modified from RDMB, p. 93]
- Blade-like** – [Stipules] {type} Expanded and flattened, as the main portion or blade of a broad leaf. (Compare with glandular, scale-like and spinose.)
- Blotched**– [Leaf lower surface, Leaf upper surface] {color variegation} The color disposed in broad, irregular blotches. [RDMB, p. 150]
- Bordered**– [Leaf lower surface, Leaf upper surface] {color variegation} One color is surrounded by an edging of another. (Compare with edged.) [modified from RDMB, p. 150]
- Bract** – A modified, usually reduced leaf, often occurring at the base of a flower or inflorescence. [modified from H&H, p. 18]
- Branch** – A division or subdivision of a stem or other axis. [modified from H&K, p. 6]
- Branchlet** – An ultimate branch, i.e. one located at the end of a system of branches; a small branch. (Compare with twig.) [modified from K&P, p. 22]
- Bristle** – A slender, more or less straight and stiff, fine-pointed appendage; may be located at the tip of a leaf or bract and a continuation of the midvein, or comprising the pappus in fruits of the sunflower family (Asteraceae). [modified from K&P, p. 22 & W&K, p. 587 (see awn)]
- Broadleaf herbaceous** – [Plants] {habit} Herbaceous with relatively broad leaves, thus differing from the long, narrow leaves of grasses (Poaceae) and other grass-like plants. (Compare with grass-like herbaceous.)
- Broad-leaved** – [Leaves] {general form} With leaves that are not needle-like or scale-like, but having relatively broad, flat surfaces, as in most deciduous trees such as maples (*Acer*) and hickories (*Carya*). (Compare with needle-like and scale-like.)
- Bud** – An immature shoot, either vegetative, floral or both, and often covered by protective scales. [modified from RDMB, p. 88]
- Bulb** – [Stems] {type} A short, vertical, usually underground stem with fleshy storage leaves attached, as in onions (*Allium cepa*). (Compare with corm.) [W&K, p. 588, modified.]
- Bundle scar** – A small scar within a leaf scar left by a vascular bundle that previously entered the stalk (petiole) or base of the fallen leaf. [modified from W&K, p. 588]
- Bur** – [Fruits] {type} A cypsela or other fruit enclosed in a whorl of dry bracts (involucre) covered with spines or prickles that are often hooked, aiding in their dispersal by animals, as in cocklebur (*Xanthium*). [modified from RDMB, p. 111, H&H, p. 19, & H&K, p. 6]

C

- Caducous** – [Petals, Sepals, Stipules] {persistence} Falling off very early, as stipules that drop soon after the leaf develops. (Compare with persistent.) [modified from Z, p. 361]
- Calyx** – The collective term for all of the sepals of a flower; the outer perianth whorl. (Compare with corolla.) [modified from H&H, p. 20]
- Canescent** – [Buds, Leaf lower surface, Leaf upper surface, Phyllaries, Sepals, Young twigs] {pubescence type} Gray or white in color due to a covering of short, fine, gray or white hairs. [H&H, p. 165]

- Capsule** – [Fruits] {type} A dry fruit that opens (dehisces) in any of various ways at maturity to release few to many seeds. [modified from Z, p. 362]
- Carnivorous** – [Plants] {carnivory} Capturing animals (usually insects), digesting their tissues and assimilating the digested substances as nourishment, especially nitrogen. [modified from K&P, p. 25]
- Carpel** – The basic ovule-bearing unit of flowers, thought to be evolutionarily derived from an infolded leaf-like structure; equivalent to a simple pistil or a division of a compound pistil. [modified from K&P, p. 25]
- Caryopsis** – [Fruits] {type} A more or less small, dry fruit that does not split open at maturity (indehiscent), with a thin wall surrounding and fused to the single seed, as the fruits of the grass family (Poaceae); a grain. [modified from Z, p. 362 & H&H, p. 22]
- Catkin** – [Inflorescences] {type} A pendent, more or less flexible, spike-like inflorescence with numerous small flowers, typically of only one sex (unisexual), lacking petals and subtended by scaly bracts, as in willows (*Salix*) and birches (*Betula*); catkins are often wind pollinated and fall as a unit after flowering or fruiting. [modified from Z, p. 358 (see ament)]
- Caudate** – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} Ending in a long, tapering, straight or curved, flexible tip; tailed. (Compare with apiculate, aristate and mucronate.) [modified from K&P, p. 26]
- Cauline** – [Leaves] {position} With leaves positioned along the stem above ground level. (Compare with basal.) [modified from H&H, p. 162]
- Chambered** – [Pith] {type} Interrupted by more or less regularly spaced cavities. (Compare with continuous, diaphragmed and hollow.) [modified from K&P, p. 27]
- Checked** – [Bark of mature trunks] {surface appearance} Bark divided into small squarish plates, resembling alligator leather, as in flowering dogwood (*Cornus florida*). (Compare with plated and warty.) [modified from C&A, pp. 1-3]
- Ciliate** – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form}; [Buds] {pubescence type} With a fringe of hairs along the margin. [modified from H&H, p. 24]
- Circular** – [Leaf cross section] {shape} Round in cross section.
- Circumferential** – [Stipules, Stipule scars] {extent} Encircling the twig.
- Circumscissile capsule** – [Fruits] {type} A capsule that splits open (dehisces) by a horizontal line around the fruit, the top coming off as a lid. [modified from Z, p. 362]
- Clasping** – [Leaf bases, Leaflet bases] {shape} The base partly surrounding the stem. [modified from RDMB, p. 134]
- Clawed** – [Petals] {shape}
- Cleft** – [Petal apices] {shape}
- Clouded** – [Leaf lower surface, Leaf upper surface] {color variegation} Colors are unequally blended together. [RDMB, p. 150]
- Clustered** – [Leaves] {insertion}; [Needles] {presence of clusters or fascicles} Leaves grouped closely together at the point of attachment and tending to diverge from one another, as the leaves on short shoots in Ginkgo (*Ginkgo biloba*) or the needles on short shoots in larches (*Larix*). (Compare with fascicled and solitary.) [modified from K&P, p. 29]
- Collateral** – [Buds] {position} In pairs, within or straddling the leaf axils; often located on either side of an axillary bud. (Compare with superposed.) [modified from K&P, p. 30]
- Compound** – [Leaves] {complexity} Divided into two or more equivalent parts, as a leaf that consists of multiple, distinct leaflets; not simple. [modified from K&P, p. 31]
- Compound dichasium** – [Inflorescences] {type} A determinate, cymose inflorescence with the main axis bearing a terminal flower and a pair of opposite or nearly opposite lateral branches, each branch also bearing a terminal flower and a pair of lateral flowers or branches; a branched dichasium. (Compare with cyme and simple dichasium.) [modified from K&P, p. 38]

- Compound ovary** – An ovary formed by the fusion of the bases of two or more carpels; recognizable by the presence of more than one area of placentation, locule, ovary lobe, style (or style branch), or stigma. (Compare with simple ovary.) [modified from W&K, p. 590]
- Compound umbel** – [Inflorescences] {type} An inflorescence composed of several branches that radiate from almost the same point, like the ribs of an umbrella, each terminated by a secondary set of radiating branches that end in one or more flowers, the upper surface of the whole inflorescence rounded, or more or less flat; a branched umbel; as in Queen Anne’s lace (*Daucus carota*). (Compare with simple umbel.) [modified from Z, p. 388]
- Cone** – Reproductive structures in conifers comprised of scales and/or other types of modified leaves densely arranged on a central stalk; female, or seed cones, bear ovules on the surface of their scales; male cones produce pollen.
- Conic** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Rounded in cross section, broadest at the base and essentially triangular in outline; cone-shaped. [modified from K&P, p. 32]
- Conifer** – Cone-bearing plants, such as pines (*Pinus*).
- Conspicuous lenticels** – [Bark of mature trunks] {surface appearance} Bark with readily visible pores or lenticels, as in many of the birches (*Betula*).
- Continuous** – [Pith] {type} Uninterrupted by cavities and essentially homogenous in texture; solid. (Compare with chambered, diaphragmed and hollow.) [modified from K&P, p. 32]
- Cordate** – [Leaf bases, Leaflet bases, Leaflets, Leaves] {shape} Heart-shaped, with the notch at the base. [H&H, p. 150]
- Corm** – [Stems] {type} A short, solid, vertical, usually underground, enlarged stem with leaves that are dry and scale-like or absent. (Compare with bulb.) [W&K, p. 31, modified.]
- Corolla** – The collective term for all of the petals of a flower; the inner perianth whorl. (Compare with calyx.) [modified from H&H, p. 31]
- Corymb** – [Inflorescences] {type} A racemose inflorescence with the individual flower stalks (pedicels) progressively shorter toward the apex so the flowers are all at about the same level, forming a flat or rounded surface across the top. (Compare with simple umbel.) [modified from K&P, p. 33]
- Crenate** – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} With rounded teeth along the margin; scalloped. (Compare with crenulate, dentate and serrate.) [modified from H&H, p. 157]
- Crenulate** – [Leaf margins, Leaflet margins] {form} With very small, rounded teeth along the margin; finely crenate or small-scalloped. (Compare with crenate, denticulate and serrulate.) [modified from H&H, p. 157, K&P, p. 34]
- Crisped** – [Leaf margins, Leaflet margins] {form} Margins divided and twisted in more than one plane, as parsley (*Petroselinum crispum*) leaves; curled. [modified from RDMB, p. 137 (see crispat)]
- Cuneate** – [Leaf bases, Leaflet bases] {shape} Wedge-shaped and tapering to a point at the base. [H&H, p. 150]
- Cupule** – A cup-like structure at the base of some fruits, such as the acorns of oaks (*Quercus*), composed of a persistent, usually dried, whorl of bracts (involucre) or other sterile floral parts, that are often partially fused. [modified from L, p. 747, & K&P, p. 35]
- Cyathium** – [Inflorescences] {type} An inflorescence consisting of a single, naked, terminal pistillate flower with several tiny, naked, lateral staminate flowers, the whole more or less enclosed by a cuplike whorl of bracts (involucre) and resembling a single flower; as in poinsettias (*Euphorbia*). [modified from K&P, p. 36]
- Cylindric** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Rounded in cross section with a more or less uniform diameter and blunt ends; cylinder-shaped. [modified from K&P, p. 36]

- Cyme** – [Inflorescences] {type} Generally, a determinate, compound, and frequently more or less flat-topped inflorescence; the basic cymose unit is a three-flowered cluster composed of a main stalk bearing a terminal flower and below it, two stalked, lateral flowers, each with a reduced leaf or bract at the base. (Compare with compound dichasium, helicoid cyme, scorpioid cyme and simple dichasium.) [modified from Z, p. 365]
- Cymose** – In the form of a simple or compound cyme; bearing cymes. [modified from H&K, p. 11]
- Cypsela** – [Fruits] {type} A dry, one-seeded fruit that does not split open at maturity (indehiscent), with persistent perianth tissue (pappus) attached at the top, as in some members of the sunflower family (Asteraceae). [modified from H&H, p. 35]

D

- Deciduous** (1) – [Leaves] {duration} Falling at the end of one growing season, as the leaves of non-evergreen trees; not evergreen. (Compare with evergreen and semi-evergreen.) [modified from L, p. 748]
- Deciduous** (2) – [Seed cone armature] {persistence} Armature tending to fall off while the cone is otherwise still intact. (Compare with persistent.)
- Decurrent** – [Leaf bases, Leaflet bases] {shape} With the leaf base extending downward along the stem. [modified from RDMB, p. 134]
- Decussate** – [Leaves] {insertion} Arranged along the stem in pairs, with each pair at right angles to the pair above or below; a form of opposite arrangement. [modified from H&H, p. 162]
- Deeply lobed** – [Leaflets, Leaves, Petals, Sepals] {lobing} With lobes that are cut approximately $\frac{1}{2}$ to $\frac{3}{4}$ the distance to the midrib or base; deeply cleft. (Compare with divided, moderately lobed and shallowly lobed.) [modified from RDMB, p. 137 (see parted) & H&H, pp. 157-58 (see parted)]
- Dehiscent** – Splitting or forming one or more openings in a regular pattern at maturity enabling the contents to be released for dispersal, as certain fruits, such as capsules, that split open when ripe releasing seeds. (Compare with indehiscent.) [modified from K&P, p. 37 & W&K, p. 591]
- Deltoid** – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Similar in shape to an equilateral triangle, with the point of attachment along one of the sides; like the Greek letter delta. (Compare with cordate and obdeltoid.) [modified from H&H, p. 150]
- Dentate** – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} Toothed along the margin, with pointed teeth that are directed outward rather than forward. (Compare with crenate, denticulate and serrate.) [modified from H&H, p. 157]
- Denticidal capsule** – [Fruits] {type} A capsule that opens (dehisces) at the apex, leaving a ring of teeth. [modified from RDMB, p. 110]
- Denticulate** – [Leaf margins, Leaflet margins] {form} Toothed along the margin, with very small, pointed teeth that are directed outward rather than forward; finely dentate. (Compare with crenulate, dentate and serrulate.) [modified from H&H, p. 157, & K&P, p. 37]
- Determinate inflorescence** – An inflorescence in which the terminal or central flower opens first, halting further elongation of the main axis, as in cymes. (Compare with indeterminate inflorescence.) [modified from Z, p. 366]
- Diaphragmed** – [Pith] {type} Uninterrupted by cavities but with regularly spaced partitions of denser tissue. (Compare with chambered, continuous and hollow.) [modified from K&P, p. 38]

- Dichotomous** – [Leaf venation, Leaflet venation] {form} With veins forking into more or less equal pairs, as in *Ginkgo* leaves. (Compare with palmate, parallel, pinnate and reticulate venation.) [modified from W&K, p. 591]
- Diocious** – [Plants] {distribution of gender} Having functionally unisexual (i.e. separate male and female) flowers or cones, which are borne on *different* plants within the species; thus some plants are male and others are female. (Compare with monoecious and synoecious.) [modified from K&P p. 39]
- Discoidal**– [Leaf lower surface, Leaf upper surface] {color variegation} A single large spot of color in the center of another. (Compare with dotted and spotted.) [modified from RDMB, p. 150]
- Distichous** – [Leaves] {habit} With leaves arranged along the stem in two rows, the rows opposite one other; two-ranked. (Compare with three-ranked and four-ranked.) [modified from K&P, p. 40]
- Divided** – [Leaflets, Leaves, Petals, Sepals] {lobing} Cut or split almost to the midrib or base. (Compare with deeply lobed, moderately lobed and shallowly lobed.) (*Please note that the word “divided” as used here to describe a particular type of lobing, has a narrower meaning than the general sense of the word used elsewhere in this glossary.*) [modified from H&H, p. 157]
- Dotted**– [Leaf lower surface, Leaf upper surface] {color variegation} The color disposed in very small round spots. (Compare with discoidal and spotted.) [modified from RDMB, p. 150]
- Doubly serrate** – [Leaf margins, Leaflet margins] {form} Margin with teeth of two sizes (small teeth on the big teeth), the teeth bent toward the apex; doubly sawtoothed. (Compare with serrate.) [modified from W&K, p. 38]
- Drupe** – [Fruits] {type} A fleshy fruit that does not split open at maturity (indehiscent), with a soft outer wall and one or more hard inner stone(s) each usually containing a single seed, as cherries and plums (*Prunus*). (Compare with berry.) [modified from K&P, p. 41]
- Duration** – The length of time that a plant or any of its component parts exists. [RDMB, p. 87]

E

- Edged**– [Leaf lower surface, Leaf upper surface] {color variegation} One color is surrounded by a very narrow rim of another. (Compare with bordered.) [modified from RDMB, p. 150]
- Ellipsoid** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Widest near the middle, with convex sides tapering equally toward rounded ends, and rounded in cross section; elliptic or oval-shaped in outline. [modified from K&P, p. 42]
- Ellipsoid-cylindric** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Intermediate in shape between ellipsoid and cylindric.
- Elliptic** – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Widest near the middle, with convex sides tapering equally toward both ends [modified from W&K, p. 36]; in the shape of an ellipse or narrow oval [modified from H&H, p. 150]. (Compare with oblong and oval.)
- Emarginate** – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} With a notch at the apex. [H&H, p. 153]
- Ensiform** – [Leaflets, Leaves] {shape} Long and moderately slender, flat in cross section, gradually tapering to a pointed apex; sword-shaped; as an *Iris* leaf. (Compare with awl-shaped, linear and lorate.) [modified from K&P, p. 43 & H&H, p. 150]
- Entire** – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} With relatively smooth margins that lack teeth, spines or other projections (the margins may be lobed); with a continuous margin. [modified from H&H, p. 157]

- Epidermis** – The outermost layer of cells of leaves, young stems and roots. [modified from REE, p. 896]
- Epigynous** – [Flowers] {perianth position} With the free portion of the perianth (the whorl of sepals and petals) borne at the top of a floral cup which is fused to and wholly encloses the ovary, the perianth thus appearing to arise from the top of the ovary. (Compare with hypogynous and perigynous.) [modified from K&P, p. 43]
- Epiphytic** – [Plants] {habit} Physically supported in its entirety by another plant through all or the major part of its life, but not drawing direct nutrition from the host plant. (Compare with parasitic.) [modified from K&P, p. 44]
- Equitant** – [Leaves] {habit} With leaves clustered at the base of the stem and in two ranks, the sides overlapping at the base and often sharply folded along their midridge, as in *Iris*. [modified from Z, p. 367]
- Erose** – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} With the margin irregularly toothed, as if gnawed. [H&H, p. 157]
- Even-pinnate** – [Terminal leaflet] {presence} Pinnately compound with an even number of leaflets, none truly terminal. (Compare with odd-pinnate.) [modified from K&P, p. 44]
- Evergreen** – [Leaves] {duration} Bearing green leaves through the winter and into the next growing season; persisting two or more growing seasons; not deciduous. (Compare with deciduous and semi-evergreen.) [modified from RDMB, pp. 146 & 154]
- Exfoliating** – [Bark of mature trunks] {surface appearance} Bark splitting or cracking and falling away in thin patches or sheets, as in shagbark hickory (*Carya ovata*) and river birch (*Betula nigra*). [modified from K&P p. 44]

F

- Falcate** – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Long, arcing to one side and tapering toward the apex; sickle-shaped. [modified from K&P, p. 45]
- Fan-shaped** – [Leaflets, Leaves] {shape} Shaped like a fan, as a *Ginkgo* leaf.
- Fascicle** – [Inflorescences] {type} A tight cluster of stalked (pedicellate) flowers, the stalks originating very close to one another and diverging little if at all. [modified from K&P, p. 45]
- Fascicled** – [Leaves] {insertion}; [Needles] {presence of clusters or fascicles} In a tight bundle, several leaves appearing to arise from a common point and diverging little if at all, as the needles of many pines (*Pinus*). (Compare with clustered and solitary). [modified from RDMB, p. 119]
- Fibrous** – [Roots] {type} With several to many relatively slender roots of about the same diameter. (Compare with tap root.) [modified from W&K, p. 593]
- Filament** – The stalk of a stamen, which supports an anther at its tip. [modified from K&P, p. 46]
- Filiform** – [Leaflets, Leaves] {shape} Long and very slender, basically round in cross section and of uniform diameter; thread-like. (Compare with acicular and linear.) [modified from K&P, p. 46]
- Flaky** – [Bark of mature trunks] {surface appearance} Bark with more or less regular, thin flakes, as in eastern hophornbeam (*Ostrya virginiana*) and many pines (*Pinus*). [modified from H, p. 18 (see scaly)]
- Fleshy** – [Seed cone scales] {type} Fairly firm and dense, juicy or at least moist, and easily cut. (Compare with leathery and woody.) [modified from K&P, p. 47]
- Floral** – upon, within, or associated with the flowers. [K&P, p. 48]
- Floral cup** – A cup or tube usually formed by the fusion of the basal parts of the sepals, petals and/or stamens, and on which they are seemingly borne; surrounds the ovary, or ovaries, and

- may be fused wholly, partly or not at all to them; the shape varies from disc-like to cup-shaped, flask-like or tubular; a hypanthium. [modified from REE, p. 897 (see floral tube), Z, p. 368, K&P, p. 48, & W&K, p. 595 (see hypanthium)]
- Floret** – A very small, structurally specialized flower, especially those of the grasses (Poaceae) and the sunflower family (Asteraceae). [modified from K&P, 48]
- Flower** – The reproductive structure in flowering plants (angiosperms), consisting of stamens and/or pistils, and usually including a perianth of sepals and/or petals. [modified from H&H, p. 48]
- Follicle** – [Fruits] {type} A usually dry fruit, with one interior chamber or locule, and splitting open (dehiscing) lengthwise along a single line, as in milkweed (*Asclepias*). [modified from K&P, p. 49 & Z, p. 368]
- Four-ranked** – [Leaves] {habit} With leaves arranged in along the stem in four rows. (Compare with distichous and three-ranked.)
- Four-angled** – [Leaf cross section] {shape} More or less diamond-shaped in cross section.
- Free-central** – [Placentation] {type} Attachment of ovules to a free-standing central axis in a compound ovary which has a single inner compartment (unilocular), and thus no interior partitions (septa). (Compare with axile placentation.) [Z, p. 368]
- Fringed** – [Petal apices] {shape}
- Fruit** – The seed-bearing structure in flowering plants, consisting of one or more matured or ripened pistil(s), along with any persisting accessory parts such as sepals or receptacle. [modified from K&P, p. 49]
- Furrowed** – [Bark of mature trunks] {surface appearance} Bark with relatively long narrow depressions or grooves, as in tulip-tree (*Liriodendron tulipifera*). [modified from K&P, p. 50]
- Fusiform** – [Buds] {shape} Elongate, broadest at the middle, evenly tapering to either end, and rounded in cross section; spindle-shaped. [modified from K&P, p. 51]
- Fusion** – The physical connection of equivalent or dissimilar structures, as fused sepals or petals. [modified from K&P, p. 51]

G

- Geminate** – In pairs, as a leaf which is divided into two leaflets. (Compare with ternate.)
- Germination** – The beginning or resumption of growth by a seed, bud or other structure. [modified from REE, p. 898]
- Glabrate** – [2-4-year-old twigs, Buds, Leaf lower surface, Leaf upper surface, Petals, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence} Becoming glabrous; almost glabrous [H&H, p. 167]; pubescent when young, but losing the hairs in maturity [W&K, p. 594].
- Glabrous** – [2-4-year-old twigs, Buds, Leaf lower surface, Leaf upper surface, Petals, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence} Lacking plant hairs (trichomes). (Compare with pubescent.) [modified from W&K, p. 39]
- Glandular** (1) – [Petioles, Rachises] {special surface features} Bearing secreting organs, or glands. [modified from L, p. 754]
- Glandular** (2) – [Stipules] {type} In the form of a secreting organ or gland. (Compare with blade-like, scale-like and spinose.) [modified from L, p. 754]
- Glaucous** – [Buds, Young twigs, Leaves] Covered with a whitish or bluish waxy coating (bloom) that can sometimes be rubbed off. [modified from W&K, p. 594]
- Globose** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Circular in cross section and in outline when viewed from any angle; like a globe or sphere. [modified from K&P, p. 52]
- Glomerule** – [Inflorescences] {type} A dense cluster of flowers. [modified from H&H, p. 51]

- Glossy** – Lustrous or shiny, as the upper surface of southern magnolia (*Magnolia grandiflora*) leaves.
- Glutinous** – Gluey, sticky or gummy; covered with sticky exudates. [modified from H&H, p. 168]
- Grass-like herbaceous** – [Plants] {habit} Herbaceous with relatively long, narrow leaves appearing similar to those of grasses (Poaceae). (Compare with broadleaf herbaceous.)
- Grooved** – [Apophyses] {texture} With a narrow depression or groove.
- Gymnosperm** – [Plants] {major group} A seed plant which produces seeds that are not enclosed inside an ovary, as the conifers. (Compare with angiosperm.) [modified from REE, p. 898]

H

- Habit** – The general appearance, characteristic form, or mode of growth of a plant. [H&H, p. 52]
- Half-inferior** – [Ovaries] {position} With the lower portion of the ovary enclosed by and fused to a floral cup, the whorl of sepals and petals (perianth) and/or stamens (androecium) thus appearing to arise from near the middle of the ovary. (Compare with inferior and superior.) [modified from K&P, p. 54]
- Hastate** – [Leaf bases, Leaflet bases, Leaflets, Leaves] {shape} Arrowhead-shaped, but with the basal lobes turned outward rather than downward. (Compare with sagittate.) [modified from H&H, p. 53]
- Head** – [Inflorescences] {type} An inflorescence with crowded, sessile or nearly sessile, small flowers (florets) borne on a common receptacle which is convex or flat and often disc-shaped; characteristic of the sunflower family (Asteraceae). [modified from K&P, p. 55]
- Helicoid cyme** – [Inflorescences] {type} A cyme in which the lateral branches develop on only one side, all segments branching on the same side, causing the inflorescence to curve or coil. (Compare with cyme and scorpioid cyme.) [modified from K&P, p. 36]
- Hemi-parasitic** – [Plants] {nutrition} Partially parasitic; in plants, photosynthetic but deriving at least some nutrients from a host organism. (Compare with parasitic.) [modified from RDMB, p. 312]
- Herbaceous** – [Plants] {woodiness} Having little or no living portion of the shoot persisting aboveground from one growing season to the next, the aboveground portion being composed of relatively soft, non-woody tissue. (Compare with woody.) [modified from K&P, p. 56]
- Hesperidium** – [Fruits] {type} A specialized berry with a leathery skin or rind, and a fleshy interior divided into sections or locules, as lemons and oranges (*Citrus*). (Compare with pepo.) [modified from K&P, p. 56]
- Hip** – [Fruits] {type} An aggregation of achenes surrounded by an urn-shaped, more or less fleshy floral cup or hypanthium, as in roses (*Rosa*). [modified from RDMB, P. 111]
- Hirsute** – [Buds, Leaf lower surface, Leaf upper surface, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence type} With coarse, stiff hairs. [modified from W&K, p. 595]
- Hispid** – [Buds, Leaf lower surface, Leaf upper surface, Phyllaries, Sepals, Young twigs] {pubescence type} With stiff, bristly, usually stout-based hairs. [modified from W&K, p. 595]
- Hollow** – [Pith] {type} With an uninterrupted central cavity, the pith lacking or disintegrating prior to maturity. (Compare with chambered, continuous and diaphragmed.) [modified from K&P, p. 57]
- Hypanthium** – A cup or tube usually formed by the fusion of the basal parts of the sepals, petals and/or stamens, and on which they are seemingly borne; surrounds the ovary, or ovaries, and may be fused wholly, partly or not at all to them; the shape varies from disc-like to cup-

shaped, flask-like or tubular; a floral cup. [modified from REE, p. (see floral tube), Z, p. 368 (see floral cup), K&P, p. 58, & W&K, p. 595]

Hypogynous – [Flowers] {perianth position} With the perianth (the whorl of sepals and petals) not fused into a floral cup of any kind and arising at the same level as the base of the ovary. (Compare with epigynous and perigynous.) [modified from K&P, p. 58]

I

Imbricate (1) – [Leaves] {habit} Overlapping, as the shingles on a roof. [modified from L, p. 756]

Imbricate (2) – [Bud scales] {type} Overlapping, as the shingles on a roof. (Compare with valvate.) [modified from L, p. 756]

Impressed – [Leaf upper surface venation] {relief}

Incised – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} Margins sharply and deeply cut, usually jaggedly. [RDMB, p. 137]

Inconspicuous – [Stipule scars] {presence} Not readily visible.

Indehiscent – Not splitting or forming an opening at maturity, the contents being released for dispersal only after decay, digestion or erosion of the structure, as certain fruits, such as achenes and berries, that retain their seeds when ripe. (Compare with dehiscent.) [modified from K&P, p. 59]

Indeterminate inflorescence – An inflorescence in which the lowermost or outermost flower opens first, with the main axis often elongating as the flowers develop, as in racemes. (Compare with determinate inflorescence.) [modified from Z, p. 371]

Inferior – [Ovaries] {position} With the ovary wholly enclosed by and fused to a floral cup, the whorl of sepals and petals (perianth) and/or stamens (androecium) thus appearing to arise from the top of the ovary. (Compare with half-inferior and superior.) [modified from K&P, p. 60]

Inflorescence – 1) The mode or pattern of flower bearing; the arrangement of flowers on the floral axis. 2) A basic unit of the flower-producing portion of a plant, composed of one or more flowers and any supporting stalks and appendages (e.g. bracts, involucre, etc.); a flower cluster. [modified from K&P, p. 60]

Infrapetiolar – [Buds] {position} Axillary and surrounded by the base of the leaf stalk or petiole. [modified from K&P, p. 60]

Insertion – The location of points of attachment of a structure (e.g., a leaf) to some dissimilar bearing structure (e.g., a twig). [modified from K&P, p. 60]

Internode – The portion of a stem between two nodes, i.e. the part where leaves and/or branches do not arise. [H&H, p. 60]

Involucre – A whorl of bracts subtending a flower or flower cluster. [H&H, p. 61]

Involute – [Leaf margins, Leaflet margins] {vertical disposition} With margins rolled inward, toward the upper side. (Compare with plane and revolute.) [modified from H&H, p. 157]

K

Keel – A longitudinal ridge, more or less triangular in cross section, like the keel of a boat. [modified from K&P, p. 61]

Keeled (1) – [Petals] {shape}

Keeled (2) – [Apophyses] {keels} With a vertical ridge or keel. (Compare with cross-keeled.)

- Keeled above** – [Leaves] {keels} With a longitudinal ridge or keel, more or less triangular in cross section, running down the center of the upper surface of the leaf. (Compare with keeled below.) [modified from K&P, p. 61]
- Keeled below** – [Leaves] {keels} With a longitudinal ridge or keel, more or less triangular in cross section, running down the center of the lower surface of the leaf. (Compare with keeled above.) [modified from K&P, p. 61]

L

- Lacerate** – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} Margins irregularly cut, appearing torn. [RDMB, p. 137]
- Laciniate** – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} Cut into narrow, ribbon-like segments. [modified from H&H, p. 157]
- Lance-cylindric** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Intermediate in shape between lanceoloid and cylindric.
- Lance-obovoid** – [Seed cones] {shape before opening, shape when open} Intermediate in shape between lanceoloid and obovoid.
- Lanceolate** – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Several times longer than broad, widest near the base and tapering to a point at the apex; lance-head-shaped. (Compare with oblanceolate.) [modified from W&K, p. 36]
- Lanceoloid** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Considerably longer than broad, rounded or somewhat flattened in cross section, broadest near the base and somewhat concavely tapering toward the tip; lance-head shaped in outline. [modified from K&P, p. 63]
- Lance-ovoid** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Intermediate in shape between lanceoloid and ovoid.
- Leaf** – A lateral outgrowth of a stem, usually green and photosynthetic, and often consisting of a stalk (petiole) and an expanded portion (blade); leaves may also be needle-like or scale-like in form. (Compare with leaflet.) [modified from H&K, p. 24]
- Leaf complexity** – The division (or not) of a leaf into distinctly separate segments or leaflets; whether a leaf is simple or compound.
- Leaf insertion** – The position of leaves as defined by the relative location of their points of attachment on the stem (e.g. alternate, opposite, whorled, etc.).
- Leaf scar** – The scar remaining on a twig at the former place of attachment of a leaf, after the leaf has fallen. [modified from H&H, p. 63]
- Leaf venation** – The visible pattern of veins on a leaf. [modified from W&K, p. 608]
- Leaflet** – One of the separate, leaf-like segments of a compound leaf. [modified from K&P, p. 64]
- Leathery** – [Seed cone scales] {type} Moderately thick, tough and pliable. (Compare with fleshy and woody.) [modified from K&P, p. 64]
- Legume** – [Fruits] {type} A usually dry fruit that splits open (dehisces) lengthwise along two sutures and has a single interior chamber (locule), as in the pea family (Fabaceae). (Compare with loment.) [modified from Z, p. 373 & K&P, p. 64]
- Lenticel** – The specialized openings in the bark of some woody stems that provide a passage for gas exchange, often appearing as small, circular to elongate marks on the surface of the bark. [modified from W&K, p. 596]
- Lepidote** – Covered with small scales. [modified from RDMB, p. 141]

- Linear** – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Long and narrow, with the sides more or less straight and parallel. (Compare with acicular, ensiform, filiform and lorate.) [modified from K&P, p. 66]
- Lobe** – A more or less major protrusion or segment of a leaf or leaflet delimited by concavities (sinuses) in the leaf margin. [modified from K&P, p. 66]
- Locule** – A distinct compartment or cavity within organs such as ovaries, anthers or fruits. [modified from K&P, pp. 66-67]
- Loculicidal capsule** – [Fruits] {type} A capsule that splits open (dehisces) lengthwise directly into the locules or chambers of the ovary, more or less midway between the ovary partitions. (Compare with septicidal capsule.) [modified from Z, p. 374 & L, p. 760]
- Loment** – [Fruits] {type} A usually dry fruit that breaks apart crosswise at points of constriction into one-seeded segments, as in beggar’s ticks (*Desmodium*); considered to be a modified legume. (Compare with legume.) [modified from Z, p. 374 & W&K, p. 597]
- Lorate** – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Long and moderately narrow, flat in cross section, with sides more or less straight and parallel, often flexible and curving; strap-shaped. (Compare with ensiform and linear.) [modified from K&P, p. 67]
- Lyrate** – [Leaflets, Leaves] {shape} Pinnately lobed, with a large, rounded terminal lobe and smaller lower lobes; lyre-shaped. (Compare with pandurate, runcinate and spatulate.) [modified from H&H, p.150]

M

- Marbled**– [Leaf lower surface, Leaf upper surface] {color variegation} A surface traversed by irregular veins of color, as a block of marble. [modified from RDMB, p. 150]
- Margin** – The edge, as in the edge of a leaf blade. [H&H, p. 67]
- Marginal** – [Placentation] {type} Attachment of ovules along one side of a simple ovary. (Compare with parietal placentation.) [modified from H&K, p. 25]
- Mericarp** – [Fruits] {type} One of the segments of a schizocarp once it has split apart, often appearing to be a separate fruit; usually one-seeded and not splitting open at maturity (indehiscent); as the small, relatively hard-coated “nutlets” in the mint family (Lamiaceae) or the individual winged samaras of maples (*Acer*). [modified from K&P, p. 69]
- Midrib** – A main or primary vein running lengthwise down the center of a leaf or leaf-like structure; a continuation of the leaf stalk (petiole); the midvein. [modified from W&K, p. 598, & K&P, p. 70]
- Midvein** – A main or primary vein running lengthwise down the center of a leaf or leaf-like structure; a continuation of the leaf stalk (petiole); the midrib. [modified from W&K, p. 598 (see midrib), & K&P, p. 70]
- Moderately lobed** – [Leaflets, Leaves, Petals, Sepals] {lobing} With lobes that are cut approximately $\frac{1}{4}$ to $\frac{1}{2}$ the distance to the midrib or base. (Compare with deeply lobed, divided and shallowly lobed.) [modified from RDMB, p. 137 (see cleft) & H&H, pp. 157 (see cleft)]
- Monoecious** – [Plants] {distribution of gender} Having functionally unisexual (i.e. separate male and female) flowers or cones, which are borne on the *same* plant; each plant thus possessing both male and female reproductive structures. (Compare with dioecious and synoecious.) [modified from K&P, p. 70]
- Mucronate** – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} Ending abruptly in a short, hard point. (Compare with apiculate, aristate and caudate.) [modified from K&P, p.71]
- Multilocular** – With more than one interior compartment or locule. (Compare with unilocular.)

Multiple fruit – [Fruits] {type} A fruit formed from several flowers (and associated parts) more or less coalesced into a single structure with a common axis, as a mulberry (*Morus*) or pineapple (*Ananas comosus*). (Compare with aggregate fruit.) [modified from Z, p. 375 & H&H, p. 71]

N

Naked – [Bud scales] {type} With no scales covering the immature shoot.

Nearly sessile – [Flowers, Leaflets, Leaves, Seed cones] {form of attachment} With a very short, somewhat indistinct stalk. (Compare with petiolate, petioulate, sessile and stalked.) [modified from K&P, p. 106]

Nearly symmetric – [Seed cones] {symmetry} Not fully symmetric, but divisible into nearly equal halves along one or more planes. (Compare with asymmetric and symmetric.)

Nectar – A sugary, sticky fluid secreted by many plants. [H&H, p. 73]

Nectary-bearing – [Petioles, Rachises] {special surface features} Bearing a glandular structure that secretes nectar [modified from W&K, p. 598 (see nectary)], often appearing as a protuberance, scale or pit [modified from L, p. 762 (see nectary)].

Needle-like – [Leaves] {general form} With leaves that are more or less needle-shaped, and usually evergreen; they may be flattened as in hemlocks (*Tsuga*) or more rounded as in pines (*Pinus*). (Compare with broad-leaved and scale-like.)

Node – The portion of a stem where leaves and/or branches arise; often recognizable by the presence of one or more buds. (Compare with internode.) [modified from H&H, p. 73]

Not persistent – [Seed cones] {persistence} Falling from the branch soon after shedding seeds.

Not serotinous – [Seed cones] {serotiny} Having cones that open when the seeds ripen or soon thereafter.

Nut – [Fruits] {type} A more or less large, dry fruit that does not split open at maturity (indehiscent), with a single inner chamber and a thick, bony wall surrounding a single seed, as walnuts (*Juglans*). [modified from Z, p. 376 & K&P, p. 73]

Nutrition – Mode of acquiring substances necessary for growth and development. [modified from K&P, p. 73]

O

Obcordate – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Heart-shaped with the point of attachment at the narrow end; inversely cordate. (Compare with cordate and obdeltoid.) [modified from H&H, p.150]

Obdeltoid – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Similar in shape to an equilateral triangle, with the point of attachment at the narrow end; inversely deltoid. (Compare with deltoid and obcordate.) [modified from H&H, p.150]

Ob lanceolate – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Several times longer than broad, widest near the apex and tapering to a point at the place of attachment; inversely lanceolate. (Compare with lanceolate and spatulate.) [modified from H&H, p.150]

Oblique – [Leaf bases, Leaflet bases] {shape} Having an asymmetrical base. [RDMB, p. 137]

Oblong (1) – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Shaped like a compressed oval, with the sides approximately parallel for most of their length. (Compare with elliptic.) [modified from K&P, p. 73]

Oblong (2) – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Shaped like an elongated ellipsoid, the sides almost parallel from near one end to near the other end. [modified from K&P, p. 73]

Oblong-cylindric – [Buds] {shape} Intermediate in shape between oblong and cylindric.

Oblong-cylindric – [Seed cones] {shape before opening, shape when open} Intermediate in shape between oblong and cylindric.

Oblong-ovoid – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Intermediate in shape between oblong and ovoid.

Obovate – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Egg-shaped with the point of attachment at the narrower end; inversely ovate. (Compare with ovate.) [modified from H&H, p.150]

Obovoid – [Seed cones] {shape before opening, shape when open} Egg-shaped with the base at the narrow end; inversely ovoid. [modified from K&P, p. 74]

Obtuse (1) – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} More or less blunt at the apex, with the sides coming together at an angle of greater than 90°. (Compare with acute.) [modified from H&H, p. 153]

Obtuse (2) – [Leaf bases, Leaflet bases] {shape} More or less blunt at the base, with the sides coming together at an angle of greater than 90°. [modified from W&K, p. 37]

Ocellated– [Leaf lower surface, Leaf upper surface] {color variegation} A broad spot of some color has another spot of a different color within it. (Compare with zoned.) [modified from RDMB, p. 150]

Odd-pinnate – [Terminal leaflet] {presence} Pinnately compound with an odd number of leaflets, one of them terminal. (Compare with even-pinnate.) [modified from K&P, p. 74]

Once palmately compound – [Leaves] {complexity form} Compound with leaflets all attached at a common point and diverging from one another. (Compare with once pinnately compound, bipalmately compound and tripalmately compound.) [modified from K&P, p. 76]

Once pinnately compound – [Leaves] {complexity form} Compound with leaflets attached at different points along and on either side of a central axis or rachis. (Compare with once palmately compound, bipinnately compound and tripinnately compound.) [modified from K&P, p. 81]

Once pinnately lobed – [Leaves] {lobing form} With several main segments or lobes positioned along and on either side of a central axis; lobed in a feather-like pattern. (Compare with palmately lobed.) [modified from K&P, p. 81 (see pinnate)]

Once pinnate-pinnatifid – [Leaves] {complexity form} Once pinnately compound with pinnatifid leaflets. (Compare with bipinnate-pinnatifid and tripinnate-pinnatifid.)

Opposite – [Leaves] {insertion} Positioned in pairs along the stem, the members of each pair at the same level across from one another; two leaves occurring at each node. (Compare with alternate and whorled.) [modified from K&P, p. 75]

Orbiculate – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Approximately circular in outline. (Compare with oval and reniform.) [modified from H&H, p.150]

Oval (1) – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Broadly elliptic, the width more than one-half the length, with rounded ends. (Compare with elliptic, orbiculate and ovate.) [modified from H&H, p.150]

Oval (2) – [Leaf cross section] {shape} Elliptic in cross section.

Ovary – [Flowers] The lower portion of a pistil where ovules are borne; often distinguishable from the rest of the pistil by its larger circumference. [modified from K&P, p. 75]

Ovate – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Egg-shaped in outline, with the broader end near the base. (Compare with obovate and oval.) [modified from H&H, p.150]

Ovoid – [Buds] {shape}; [Seed cones] {shape before opening, shape when open} Rounded in cross section, broadest near a bluntly rounded base and convexly tapering to a narrower rounded tip; egg-shaped. [modified from K&P, p. 75]

- Ovoid-acuminate** – [Buds] {shape} Egg-shaped but with the narrow end concavely tapering to a point.
- Ovoid-conic** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open}
Intermediate in shape between ovoid and conic.
- Ovoid-cylindric** – [Buds] {shape}; [Seed cones] {shape before opening, shape when open}
Intermediate in shape between ovoid and cylindric.
- Ovoid-ellipsoid** – [Buds] {shape} Intermediate in shape between ovoid and ellipsoid.
- Ovule** – The structure in flowering plants and gymnosperms which when fertilized develops into a seed. [modified from H&K, p. 29]

P

- Painted** – [Leaf lower surface, Leaf upper surface] {color variegation} Colors disposed in streaks of unequal intensity. [RDMB, p. 150]
- Palmate (1)** – With three or more leaflets, lobes or other structures arising from a common point and diverging from one another; arranged or structured in a hand-like pattern. (Compare with pinnate.) [modified from K&P, p. 76 & RDMB, p. 139]
- Palmate (2)** – [Leaf venation, Leaflet venation] {form} With three or more primary veins arising from a common point at or near the base of the leaf or leaflet blade. (Compare with dichotomous, parallel, pinnate and reticulate venation.) [modified from RDMB, p. 139]
- Palmately lobed** – [Leaflet, Leaves] {lobing form} With three or more main segments or lobes essentially arising from a common point near the base of the leaf or leaflet blade; lobed in a hand-like pattern. (Compare with once pinnately lobed.) [modified from RDMB, p. 139]
- Pandurate** – [Leaflets, Leaves] {shape} Basically inversely egg-shaped (obovate), but with two opposite rounded sinuses in the lower half and two small basal lobes; fiddle-shaped. (Compare with lyrate.) [modified from K&P, p. 76]
- Panicle** – [Inflorescences] {type} A branched raceme, the main axis either determinate or indeterminate, and the lateral branches racemose; more loosely, a much-branched inflorescence of various types. (Compare with raceme and thyrses.) [modified from K&P, p. 76]
- Pappus** – A ring or pair of hairs, bristles, awns or scales attached at the top of the ovary just beneath the petals, persisting in fruit and often aiding in dispersal by wind or animals, especially in the sunflower family (Asteraceae). [modified from K&P, p. 77 & Z, p. 377]
- Parallel** – [Leaf venation, Leaflet venation] {form} With two or more primary veins that run more or less parallel from the base to the tip of the leaf or leaflet blade. (Compare with dichotomous, palmate, pinnate and reticulate venation.) [modified from K&P, p. 87 (see parallelodromous)]
- Parasitic** – [Plants] {nutrition} Living in or on an organism of a different species and deriving nutrients from it. (Compare with autotrophic, epiphytic, hemi-parasitic and saprophytic.) [modified from REE, p. 904]
- Parietal** – [Placentation] {type} Attachment of ovules on the inner wall, or intrusions of the wall, of a compound ovary with a single inner compartment (unilocular). (Compare with marginal placentation.) [modified from RDMB, p. 18]
- Pectinate** – [Leaves] {habit} Arranged like the teeth of a comb, the leaves slender and more or less perpendicular to the stem; comb-like. [modified from K&P, p. 78]
- Pedicel** – The stalk of a individual flower, either that of a solitary flower or of single flowers in a multi-flower inflorescence. (Compare with peduncle.) [modified from K&P, p. 78]
- Peduncle** – The main stalk of a multi-flower inflorescence or of a cluster of flowers within an inflorescence. (Compare with pedicel.) [modified from K&P, p. 79]

Peltate – [Leaf bases, Leaflet bases] {shape} Having the leaf stalk (petiole) attached to the lower surface of the leaf, usually near the center. [modified from RDMB, p. 137]

Pepo – [Fruits] {type} A specialized berry with a hard or leathery rind and a fleshy interior surrounding a mass of seeds, without interior sections or locules, as melons and cucumbers (*Cucumis*). (Compare with hesperidium.) [modified from Z, p. 378]

Perennial – [Plants] {life span} Normally living more than two years, with no definite limit to its life span. [K&P, p. 79]

Perfoliate – [Leaf bases, Leaflet bases] {shape} Having the base completely surrounding the stem, so that the stem appears to pass through the leaf. [modified from H&H, p. 150]

Perianth – The collective term for the outer sterile parts of a flower, comprising the calyx (sepals) and the corolla (petals) when both whorls are present. [modified from W&K, p. 600]

Perigynous – [Flowers] {perianth position} With the free portion of the perianth (the whorl of sepals and petals) borne at the top of a floral cup which is either a) fused to and partially encloses the ovary (the perianth thus appearing to arise at a level between the bottom and top of the ovary), or b) free from the ovary and extending up and around it to some extent. (Compare with epigynous and hypogynous.) [modified from K&P, p. 79-80]

Persistent (1) – [Petals, Sepals, Stipules] {persistence} Remaining attached; not falling off early, as stipules that remain attached while the leaves are attached. (Compare with caducous.) [modified from L, p. 764]

Persistent (2) – [Seed cones] {persistence} Remaining on the branch long after shedding seeds, sometimes for many years.

Persistent (3) – [Seed cone armature] {persistence} Remaining attached; not falling off while the cone is still intact. (Compare with deciduous.) [modified from L, p. 764]

Petal – A unit or segment of the inner floral envelope or corolla of a flower; often colored and more or less showy. (Compare with sepal.) [modified from L, p. 764]

Petiolate – [Leaves] {form of attachment} With a leaf stalk or petiole. (Compare with nearly sessile, petiolulate and sessile.)

Petiole – The stalk of a leaf. (Compare with petiolule and rachis.) [modified from W&K, p. 600]

Petiolulate – [Leaflets] {form of attachment} With a leaflet stalk or petiolule. (Compare with nearly sessile, petiolate and sessile.)

Petiolule – The stalk of a leaflet of a compound leaf. (Compare with petiole.) [modified from H&H, p. 84]

Photosynthetic – Able to convert light energy to chemical energy by means of chlorophylls and other photosynthetic pigments. [modified from REE, p. 905 (see photosynthesis)]

Pilose – [Buds, Leaf lower surface, Leaf upper surface, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence type} With soft, more or less straight hairs. [modified from W&K, p. 39]

Pinnate (1) – With several leaflets, lobes or other structures positioned along and on either side of a central axis; arranged or structured in a feather-like pattern. (Compare with palmate.) [modified from K&P, p. 81]

Pinnate (2) – [Leaf venation, Leaflet venation] {form} With secondary veins arising from a single, large midvein. (Compare with dichotomous, palmate, parallel and reticulate venation.) [modified from RDMB, p. 139]

Pinnately lobed – [Leaflets] {lobing form} With several main segments or lobes positioned along and on either side of a central axis; lobed in a feather-like pattern. (Compare with palmately lobed.) [modified from K&P, p. 81 (see pinnate)]

Pinnatifid – With several lobes positioned along and on either side of a central axis; lobed in a feather-like pattern. [modified from K&P, p. 81]

Pistil – The female or ovule-bearing organ of a flower, typically composed of an ovary, style and stigma. [modified from Z, p. 379]

- Pistillate** – [Flowers] {gender} Having functional pistils, but no functional stamens, making the flower unisexual and female. (Compare with staminate.) [modified from K&P, p. 81]
- Pith** – The more or less soft and spongy tissue in the center of some stems and roots; sometimes degenerating to leave a hollow tube. [modified from H&H, p. 87]
- Placentation** – The arrangement of ovules within the ovary. [modified from L, p. 765]
- Plane** – [Leaf margins, Leaflet margins] {vertical disposition} With midrib and margin all in one plane, or nearly so; flat. (Compare with involute and revolute.) [modified from W&K, p. 39]
- Plated** – [Bark of mature trunks] {surface appearance} Bark with relatively large, more or less flat plates, as in mature loblolly pine (*Pinus taeda*) or mature white oak (*Quercus alba*). (Compare with checkered.)
- Pollen** – The small, often powdery, grains which contain the male reproductive cells of flowering plants and gymnosperms. [modified from H&K, p. 33]
- Pollen cone** – A male or pollen-producing cone; typically smaller and of shorter duration than seed cones.
- Polygamous** – [Plants] {distribution of gender} Having both bisexual (combined male and female) and unisexual (separate male and female) flowers or cones, which are borne on the same plant or on different plants of the same species. [modified from K&P, p. 83]
- Pome** – [Fruits] {type} A fleshy fruit that does not split open at maturity (indehiscent), with a more or less soft outer part derived from ripened hypanthium; the interior portion enclosing the seeds is divided into several sections or locules bounded by cartilaginous tissue; as apples (*Malus*). [modified from K&P, p. 84]
- Poricidal capsule** – [Fruits] {type} A capsule that develops openings or pores (dehisces), usually at or near the apex, through which the seeds pass to the outside; as in poppy (*Papaver*). [modified from K&P, p. 84]
- Prickle** – A small, sharp, non-woody structure developed from outgrowth of the surface of bark or epidermis. (Compare with spine and thorn.) [modified from W&K, p. 39]
- Primary vein** – A main vein in a leaf or other laminar structure from which other veins branch; the midvein or midrib when present. [modified from K&P, p. 84]
- Pseudoterminal** – [Buds] {position} Appearing to be the terminal bud, but actually the uppermost axillary bud with a subtending leaf scar on one side and the scar of the terminal bud often visible on the other side. (Compare with terminal.) [modified from L, p. 767]
- Puberulent** – [Buds, Leaf lower surface, Leaf upper surface, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence type} With very short hairs. [modified from W&K, p. 39]
- Pubescence** – The broad term for any type of plant hairiness. [W&K, p. 602]
- Pubescent** – [2-4-year-old twigs, Buds, Leaf lower surface, Leaf upper surface, Petals, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence} Bearing plant hairs (trichomes). (Compare with glabrous.) [modified from W&K, p. 39]
- Punctate glandular** – [Petioles, Rachises] {special surface features} Bearing sessile or embedded glands. (Compare with stipitate glandular.) [modified from W&K, p. 602 (see punctate)]

R

- Raceme** – [Inflorescences] {type} An elongate, indeterminate inflorescence with stalked flowers borne singly along an unbranched main axis or rachis. (Compare with panicle and spike.) [modified from K&P, p. 87]
- Racemose** – In the form of a simple or compound raceme; bearing racemes. [modified from H&K, p. 35]
- Rachis** – 1) The main axis of a compound leaf above the point of attachment of the lowermost leaflet; a continuation of the leaf stalk or petiole. 2) The main axis of a compound

- inflorescence above the point of attachment of the lowermost flower; a continuation of the inflorescence stalk or peduncle. [modified from W&K, p. 33]
- Radially symmetric** – [Calyx, Corolla] {symmetry} Divisible into two essentially equal portions along more than one plane. (Compare with asymmetric and bilaterally symmetric.) [modified from K&P, p. 12 (see actinomorphic)]
- Raised** – [Leaf upper surface venation] {relief}
- Receptacle** – 1) The more or less enlarged end of an individual flower stalk (pedicel) which bears some or all of the flower parts. 2) The enlarged end of a compound flower stalk (peduncle) bearing two or more flowers, or the florets of a head, as in the sunflower family (Asteraceae). [modified from W&K, p. 602, Z, p. 381 & K&P, p. 88]
- Reflexed** – [Leaves, Petals, Sepals] {vertical orientation} Bent backward or downward. (Compare with appressed, ascending and spreading.) [modified from H&H, p. 98]
- Reniform** – [Leaflets, Leaves] {shape} Broader than long, broadly rounded and notched at the base; kidney-shaped. (Compare with cordate and orbiculate.) [modified from W&K, p. 603]
- Reticulate** – [Leaf venation, Leaflet venation] {form} With a clearly visible network of interconnecting veins. (Compare with dichotomous, palmate, parallel and pinnate venation.) [modified from W&K, p. 603 & K&P, p. 89]
- Revolute** – [Leaf margins, Leaflet margins] {vertical disposition} With margins rolled backward, toward the underside. (Compare with involute and plane.) [modified from H&H, p. 158]
- Rhizome** – [Stems] {type} An underground, usually horizontal stem, often resembling a root but bearing nodes (points where leaves and/or branches can arise); usually with adventitious roots. (Compare with stolon and tuber.) [modified from K&P, p. 89]
- Rhombic** – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Broadest at the middle, with more or less straight sides of equal length tapering to either end; diamond-shape. [modified from K&P, p. 89]
- Ridged** – [Bark of mature trunks] {surface appearance} Bark with long, narrow protrusions or ridges, as in tulip-tree (*Liriodendron tulipifera*). [modified from K&P, p. 90]
- Root** – The portions of a plant that are anatomically distinct from the shoot and that lack nodes and internodes; roots serve for anchorage, absorption and/or storage, and usually grow below ground. (Compare with shoot.) [modified from K&P, pp. 87-88 (see radix)]
- Rosetted** – [Leaves] {habit} With leaves in a tight cluster radiating from a central axis, usually at or near the base of the stem, as in dandelion (*Taraxacum*). [modified from W&K, p. 603]
- Rounded** – [Leaf apices, Leaf bases, Leaflet apices, Leaflet bases, Petal apices, Phyllary apices, Sepal apices] {shape} Forming a smooth, continuous curve. [W&K, p. 37]
- Rugose** – Wrinkled. [H&H, p. 170]
- Runcinate** – [Leaflets, Leaves] {shape} Broad near the apex and tapering toward the base, with a series of coarse, sharp lobes on either side that mostly point toward the base, as a dandelion (*Taraxacum*) leaf. (Compare with lyrate.) [modified from K&P, p. 92]

S

- Saccate** – [Petals] {shape}
- Sagittate** – [Leaf bases, Leaflet bases, Leaflets, Leaves] {shape} Arrowhead-shaped, with the basal lobes directed downward. (Compare with hastate.) [H&H, p.102]
- Samara** – [Fruits] {type} A winged, more or less dry fruit that does not split open at maturity (indehiscent), and contains a single seed, as in ash (*Fraxinus*) and maple (*Acer*). [modified from Z, p. 382]
- Sap** – The fluids circulated throughout a plant. [modified from H&H, p. 102]

Saprophytic – [Plants] {nutrition} Obtaining nourishment from dead organic matter. (Compare with parasitic.) [modified from RDMB, p. 312]

Scabrous – Rough and sand-papery to the touch, due to structure of the epidermis or to the presence of short stiff hairs. (Compare with smooth.) [modified from W&K, p. 603 & H&H, pp. 170-71]

Scale – 1) Small, flattened structures that are usually thin, dry and membranous in texture. 2) Small, often triangular shaped, leaves that are appressed to the branchlets as in Juniper (*Juniperus*).

Scale-like (1) – [Leaves] {general form} With small, typically triangular-shaped leaves that are often appressed to the branchlets, as in juniper (*Juniperus*). (Compare with broad-leaved and needle-like.) [modified from W&K, p. 603]

Scale-like (2) – [Petals, Phyllaries, Sepals] {shape} Having the form of small, often triangular shaped, leaves that are appressed to the branchlets, as in juniper (*Juniperus*). [modified from W&K, p. 603]

Scale-like (3) – [Stipules] {type} In the form of a small, flattened structure, usually thin, dry and membranous in texture. (Compare with blade-like, glandular and spinose.) [modified from W&K, p. 603]

Scaly – [2-4-year-old twigs, Petioles, Rachises] {special surface features} Bearing scales of one kind or another.

Scarious – [Stipules] {type}

Schizocarp – [Fruits] {type} A dry fruit with two or more interior chambers (locules), splitting open (dehiscing) along the partitions between chambers and separating into indehiscent, usually one-seeded segments (mericarps), as in the carrot family (Apiaceae) and maples (*Acer*). [modified from K&P, p. 94]

Scorpioid cyme – [Inflorescences] {type} A cyme in which the lateral branches develop on only one side, each successive segment branching on the side opposite the previous one, producing a more or less zig-zag effect. (Compare with cyme and helicoid cyme.) [modified from K&P, p. 36]

Scurfy – Covered with small, bran-like scales. [H&H, p. 171]

Secondary vein – A vein in a leaf or other laminar structure that branches from a main or primary vein; a side vein.. [modified from K&P, p. 95]

Seed – A mature or ripened ovule. [modified from K&P, p. 95]

Seed cone – A female or ovule-producing cone; typically larger and persisting longer than pollen cones.

Semicircular – [Leaf cross section] {shape} Shaped like a half circle in cross section.

Semi-evergreen – [Leaves] {duration} Bearing green leaves into or through the winter, but dropping them by the beginning of the next growing season; tardily deciduous or winter deciduous. (Compare with deciduous and evergreen.)

Semi-persistent – [Seed cones] {persistence} With some cones remaining on the branch after shedding seeds.

Sepal – A unit or segment of the outermost floral envelope or calyx of a flower; usually green and leaf-like. (Compare with petal.) [modified from L, p. 769]

Septicidal capsule – [Fruits] {type} A capsule that splits open (dehisces) lengthwise along lines formed by the septa or the partitions separating chambers (locules) inside the ovary. (Compare with loculicidal capsule.) [modified from Z, p. 383]

Septum (plural **septa**) – A distinct wall or partition that separates the chambers or locules of an ovary, fruit or other structure. [modified from K&P, p. 97]

Sericeous – [Buds, Leaf lower surface, Leaf upper surface, Phyllaries, Sepals, Young twigs] {pubescence type} With long, silky, usually appressed hairs. [modified from RDMB, p. 140]

Serotinous – [Seed cones] {serotiny} Having cones that remain closed long after the seeds are ripe. [modified from D, p. 1143]

- Serotiny** – The tendency of some seed cones to remain closed long after the seeds are ripe.
- Serrate** – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} Toothed along the margin, the sharp teeth pointing forward; sawtoothed. (Compare with crenate, dentate and serrulate.) [modified from H&H, p. 158 & K&P, p. 97]
- Serrulate** – [Leaf margins, Leaflet margins] {form} Toothed along the margin with very small, sharp, forward-pointing teeth; finely serrate or small-sawtoothed. (Compare with crenulate, denticulate and serrate.) [modified from H&H, p. 158 & K&P, p. 97]
- Sessile** – [Flowers, Leaflets, Leaves, Seed cones] {form of attachment} Without a stalk, positioned directly against the bearing structure. (Compare with petiolate, petiulate, nearly sessile and stalked.) [modified from W&K, p. 604]
- Shallowly lobed** – [Leaflets, Leaves, Petals, Sepals] {lobing} With lobes that are cut approximately $\frac{1}{8}$ to $\frac{1}{4}$ the distance to the midrib or base. (Compare with deeply lobed, divided and moderately lobed.) [modified from RDMB, p. 137 (see lobed) & H&H, pp. 157 (see lobed)]
- Sheathing** – [Leaf bases, Leaflet bases] {shape} Having a tubular structure partially or completely enclosing the stem below the apparent point of attachment of the leaf blade or stalk (petiole). [modified from RDMB, p. 137]
- Shoot** – 1) The portions of a plant that are anatomically distinct from the root and differentiated into nodes, where leaves and branches originate, and the spaces in between (internodes); shoots consist of stems, leaves and any other structures borne from the stem. (Compare with root.) [modified from K&P, p. 98] 2) A young stem or branch. [H&H, p. 107]
- Short shoot** – A stumpy, slow growing, lateral branch with very short internodes, often bearing flowers; a dwarf shoot. [modified from W&K, p. 604]
- Shreddy** – [Bark of mature trunks] {surface appearance} Soft but coarse, fibrous bark, usually shallowly furrowed, as in eastern red cedar (*Juniperus virginiana*). [RDMB, p. 91]
- Shrub** – [Plants] {habit} A relatively short, woody, perennial plant, usually without a single stem or trunk, and often with many crowded branches. (Compare with subshrub and tree.) [modified from RDMB, p. 88]
- Silicle** – [Fruits] {type} A dry fruit that splits open (dehisces) along two sutures, the exterior walls eventually falling away in two halves, leaving a single, persistent, interior partition (septum) to which the seeds are attached; usually not more than twice as long as wide; common in the mustard family (Brassicaceae). (Compare with silique.) [modified from K&P, p. 98 & Z, p. 384]
- Silique** – [Fruits] {type} A dry fruit that splits open (dehisces) along two sutures, the exterior walls eventually falling away in two halves, leaving a single, persistent, interior partition (septum) to which the seeds are attached; usually at least twice as long as wide; common in the mustard family (Brassicaceae). (Compare with silicle.) [modified from K&P, p. 98 & Z, p. 384]
- Simple** – [Leaves] {complexity} Undivided, as a leaf blade that is not separated into distinct leaflets; not compound. [modified from H&H, p. 156]
- Simple dichasium** – [Inflorescences] {type} A determinate, cymose, three-flowered inflorescence composed of a main stalk bearing a terminal flower and a pair of opposite or nearly opposite lateral flowers. (Compare with compound dichasium and cyme.) [modified from K&P, p. 38]
- Simple ovary** – An ovary composed of only one carpel; recognizable by the presence of only one area of placentation, locule, ovary lobe, style (or style branch), and stigma. (Compare with compound ovary.) [modified from H&H, p. 198]
- Simple umbel** – [Inflorescences] {type} An inflorescence composed of several branches that radiate from almost the same point, like the ribs of an umbrella, each terminated by one or more flowers, the upper surface of the whole inflorescence rounded, or more or less flat. (Compare with compound umbel and corymb.) [modified from Z, p. 388]

Single scale – [Bud scales] {type} Covered by a single scale.

Sinuate – [Leaf margins, Leaflet margins, Petal margins, Phyllary margins, Sepal margins] {form} With the margin smoothly and shallowly indented; wavy in a horizontal plane. (Compare with undulate.) [modified from RDMB, p. 138]

Sinus – The space or recess between two divisions or lobes of an organ such as a leaf or petal. [modified from L, p. 770]

Smooth (1) – [Buds, Young twigs, Leaves] With an even surface; not rough to the touch. (Compare with rugose and scabrous.) [H&H, p. 171]

Smooth (2) – [Bark of mature trunks] {surface appearance} Bark having a more or less continuous, even surface, with relatively few fissures or protrusions, as in American beech (*Fagus grandifolia*). [modified from H, p. xx]

Smooth (3) – [Apophyses] {texture} With an even surface, lacking keels, grooves or other surface features.

Solitary – [Inflorescences] {type}; [Needles] {presence of clusters or fascicles} Occurring singly and not borne in a cluster or group. [H&H, p. 175]

Spadix – [Inflorescences] {type} An inflorescence with small, stalkless (sessile) flowers more or less embedded in a thick, fleshy, unbranched axis or rachis, the whole inflorescence subtended and sometimes partially enclosed by a specialized bract or spathe, as in Jack-in-the-pulpit (*Arisaema triphyllum*). (Compare with spike.) [modified from K&P, p. 100]

Spathe – An often large, sometimes colored and flowerlike bract subtending and sometimes partially enclosing an inflorescence, as in calla lily (*Zantedeschia*) or jack-in-the-pulpit (*Arisaema triphyllum*). [modified from K&P, p. 100]

Spatulate – [Leaflets, Leaves, Petals, Phyllaries, Sepals] {shape} Broad and rounded near the apex with a narrower, long, tapering base; spatula-shaped or spoon-shaped. (Compare with lyrate and oblanceolate.) [modified from K&P, p. 100]

Spike – [Inflorescences] {type} A usually indeterminate, elongate inflorescence with unstalked (sessile) flowers arranged singly along an unbranched axis or rachis. (Compare with raceme and spadix.) [modified from K&P, p. 100]

Spikelet – [Inflorescences] {type} The basic unit of inflorescence in the sedges (Cyperaceae) and grasses (Poaceae) consisting of a spike of tiny flowers that lack petals, each subtended by scale-like bracts; spikelets are the ultimate subdivision in a typically more complex inflorescence. [modified from W&K, p. 605]

Spine – A woody, sharp-pointed, modified leaf or leaf part. (Compare with prickle and thorn.) [modified from W&K, p. 39]

Spinose (1) – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} Ending in a rigid, tapering, sharp tip; bearing a spine at the apex. [modified from K&P, p. 101]

Spinose (2) – [Stipules] {type} Modified into a woody, sharp-pointed structure, as a stipular spine. (Compare with blade-like, glandular and scale-like.)

Spiny or prickly – [Leaf margins, Leaflet margins, Phyllary margins, Sepal margins] {form} Bearing spines or prickles along the margin.

Spiny, prickly, thorny – [2-4-year-old twigs, Petioles, Rachises] {special surface features} Bearing spines, prickles or thorns.

Spiral – [Leaves] {insertion} Arranged along the stem in such a way that a line connecting the points of attachment would form a spiral; a form of alternate arrangement. [modified from H&K, p. 39]

Spotted – [Leaf lower surface, Leaf upper surface] {color variegation} The color disposed in small spots. (Compare with discoidal and dotted.) [modified from RDMB, p. 150]

Spreading – [Leaves, Petals, Phyllaries, Sepals] {vertical orientation} Extending outward horizontally, or upward at an angle between 90° to 45° relative to the bearing structure. (Compare with appressed, ascending and reflexed.) [modified from K&P, p. 102]

Spurred – [Petals] {shape}

Squarrose – [Phyllaries] {vertical orientation}

Stalk – A supporting axis or column that bears a structure at its apex and is usually narrower than the structure being borne, as the stalk of a flower or leaf. [modified from K&P, p. 102]

Stalked – [Flowers, Seed cones] {form of attachment} With a stalk. (Compare with nearly sessile and sessile.)

Stamen – The male reproductive organ in a flower that produces and releases pollen, composed of an anther usually borne on a stalk (filament). [modified from Z, pp. 384-85]

Staminate – [Flowers] {gender} Having one or more functional stamens, but no functional pistils, making the flower unisexual and male. (Compare with pistillate.) [modified from K&P, p. 103]

Stellate – [Buds, Leaf lower surface, Leaf upper surface, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence type} With hairs that branch from the base and resemble tiny stars. [modified from W&K, p. 605]

Stem – The axis of a shoot, bearing leaves, bracts and/or flowers, and usually growing above ground, but sometimes specialized and growing underground (see bulb, corm, rhizome and tuber) or on the surface of the ground (see stolon); stems are differentiated into regions called nodes, where leaves and branches originate, and internodes. [modified from K&P, p. 103]

Sterigma-bearing – [2-4-year-old twigs] {special surface features} With persistent leaf bases that remain on the twig after the leaf falls and appear as peg-like projections.

Stigma – The pollen-receptive region at the tip of a pistil. [modified from Z, p. 385]

Stinging – [Leaf lower surface, Leaf upper surface, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence type} With erect, usually long hairs, that produce irritation when touched, as in stinging nettle (*Urtica*). [modified from RDMB, p. 140 (see urent)]

Stipitate glandular – [Buds, Leaf lower surface, Leaf upper surface, Petioles, Phyllaries, Rachises, Sepals, Young twigs] {pubescence type} With stalked glandular hairs. (Compare with punctate glandular.) [modified from W&K, p. 605]

Stipule – A relatively small, typically leaf-like structure occurring at the base of a leaf stalk (petiole), usually one of a pair; stipules are sometimes in the form of spines, scales or glands. [modified from K&P, p. 104]

Stipule scar – The scar remaining on a twig at the former place of attachment of a stipule.

Stolon – [Stems] {type} A slender horizontal stem, at or just above the surface of the ground, that gives rise to a new plant at its tip or from axillary branches. (Compare with rhizome and tuber.) [modified from W&K, pp. 30-31]

Strigose – [Buds, Leaf lower surface, Leaf upper surface, Phyllaries, Sepals, Young twigs] {pubescence type} With straight, stiff, sharp appressed hairs. [modified from W&K, p. 605]

Striped – [Leaf lower surface, Leaf upper surface] {color variegation} Longitudinal, or vertical, stripes of one color crossing another. (Compare with banded.) [modified from RDMB, p. 150]

Strong – [Seed cone armature] {strength} With sturdy armature that is not easily broken.

Style – The more or less elongated portion of a pistil between the ovary and the stigma. [modified from L, p. 772]

Subshrub – [Plants] {habit} 1) A shrub-like plant but with only the base composed of woody tissue, the herbaceous branches dying back at the end of each growing season [modified from K&P, pp. 106-107]. 2) A very low shrub that sprawls on the ground; a trailing shrub. (Compare with shrub.) [modified from L, p. 772]

Succulent – [Plants] {habit} Juicy, fleshy and often thickened, as the stem of a cactus or the leaves of *Aloe*. [modified from H&H, p. 117]

Superior – [Ovaries] {position} With the ovary not fused to any portion of a floral cup, the whorl of sepals and petals (perianth) and/or stamens (androecium) thus arising from beneath the ovary. (Compare with inferior and half-inferior.) [modified from K&P, p. 107]

- Superposed** – [Buds] {position} Located directly above an axillary bud. (Compare with collateral.) [modified from RDMB, p. 93]
- Syconium** – [Fruits] {type} A multiple fruit characteristic of the figs (*Ficus*) with an enlarged, hollow, flask-like structure that becomes fleshy at maturity and bears numerous tiny, dry fruits along the inner surface. [modified from W&K, p. 606 & Z, p. 386]
- Symmetric** – [Seed cones] {symmetry} Divisible into essentially equal halves along one or more planes. (Compare with asymmetric and nearly symmetric.) [modified from K&P, p. 108]
- Sympetalous** – [Corolla] {fusion} With petals united, at least at the base. (Compare with apopetalous.) [modified from Z, p. 386]
- Synoeceious** – [Plants] {distribution of gender} With all flowers or cones bisexual, i.e. bearing functional reproductive structures of both sexes. (Compare with dioecious and monoecious.) [modified from K&P, p. 109]
- Synsepalous** – [Calyx] {fusion} With sepals united, at least at the base. (Compare with aposepalous.) [modified from Z, p. 386]

T

- Tap** – [Roots] {type} An enlarged vertical main root that is noticeably larger in diameter than any attached lateral roots. (Compare with fibrous roots.) [modified from W&K, p. 606]
- Tendril-bearing** – [2-4-year-old twigs, Petioles, Rachises] {special surface features} With a slender, twining organ used to grasp support for climbing, as grape (*Vitis*) vines. [modified from H&H, p. 120 (see tendril)]
- Terminal** (1) – At the top, tip, or end of a structure. [RDMB, p. 116]
- Terminal** (2) – [Inflorescences, Seed cones] {position} At the apex or tip of the stem. (Compare with axillary.) [modified from RDMB, p. 93]
- Terminal** (3) – [Buds] {position} At the apex or tip of the stem. (Compare with axillary and pseudoterminal.) [modified from RDMB, p. 93]
- Ternate** – In threes, as a leaf which is divided into three leaflets. (Compare with geminate.) [modified from H&H, p. 120]
- Tessellated** – [Leaf lower surface, Leaf upper surface] {color variegation} Color arranged in small squares, so as to have some resemblance to a checkered pavement. [RDMB, p. 150]
- Thorn** – A woody, sharp-pointed, modified stem. (Compare with prickle and spine.) [modified from W&K, p. 39]
- Three-angled** – [Leaf cross section] {shape} More or less triangular-shaped in cross section.
- Three-ranked** – [Leaves] {habit} With leaves arranged in along the stem in three rows. (Compare with distichous and four-ranked.)
- Thyrse** – [Inflorescences] {type} An elongate, many-flowered inflorescence with an indeterminate main axis or rachis and numerous lateral branches, each in the form of a cyme, as in most lilacs (*Syringa*). (Compare with panicle.) [modified from K&P, p. 111]
- Tomentose** – [Buds, Leaf lower surface, Leaf upper surface, Petioles, Phyllaries, Sepals, Young twigs] {pubescence type} With tangled woolly hairs. [modified from W&K, p. 607]
- Tree** – [Plants] {habit} A relatively tall, woody, perennial plant usually with a single stem (trunk) that bears branches. (Compare with shrub.) [modified from RDMB, p. 88]
- Trichome** – Any type of plant hair (except for root hairs). [W&K, p. 607]
- Trifoliolate** – [Leaves] {complexity form} Compound with three leaflets; three-leafleted or ternate. (Compare with bifoliolate, biternate and triternate.) [modified from W&K, p. 607]
- Tripalmately compound** – [Leaves] {complexity form} With three orders of leaflets, each palmately compound; three-times palmately compound. (Compare with once palmately compound and bipalmately compound.) [modified from RDMB, p. 94]

Tripinnately compound – [Leaves] {complexity form} With three orders of leaflets, each pinnately compound; three-times pinnately compound. (Compare with once pinnately compound and bipinnately compound.) [modified from RDMB, p. 94]

Tripinnately lobed – [Leaves] {lobing form} With three orders of leaf lobing, each pinnately lobed; three-times pinnately lobed. (Compare with bipinnately lobed and once pinnately lobed.)

Tripinnate-pinnatifid – [Leaves] {complexity form} Three times pinnately compound with pinnatifid leaflets. (Compare with bipinnate-pinnatifid and once pinnate-pinnatifid.)

Triternate – [Leaves] {complexity form} With three orders of leaflets, each divided into threes or ternately compound; three-times trifoliolate. (Compare with biternate and trifoliolate.) [modified from RDMB, p. 94]

Truncate (1) – [Leaf apices, Leaflet apices, Petal apices, Phyllary apices, Sepal apices] {shape} With the apex cut more or less straight across; ending abruptly, almost at right angles to the midrib. [modified from RDMB, p. 134]

Truncate (2) – [Leaf bases, Leaflet bases] {shape} With the base cut more or less straight across; ending abruptly, almost at right angles to the midrib. [modified from RDMB, p. 134]

Trunk – The aboveground, relatively stout, main stem of a tree; the bole. [modified from K&P, p. 133]

Tuber – [Stems] {type} A solid, enlarged, horizontal, shortened stem, usually borne below ground and containing food reserves, as in potatoes (*Solanum tuberosum*). (Compare with rhizome and stolon.) [modified from W&K, p. 31]

Twig – The relatively small end portion of a woody branchlet; a small branchlet. (Compare with branchlet.) [modified from K&P, p. 114]

Two-angled – [Leaf cross section] {shape} More or less flat in cross section, with an upper and lower surface.

U

Unarmed – [Seed cone scales] {armature} Without a hook, prickle or other sharply pointed structure on the end of the cone scale.

Undulate – [Leaf margins, Leaflet margins] {vertical disposition}; [Petal margins, Phyllary margins, Sepal margins] {form} With the margin undulating or wavy in a vertical plane. (Compare with sinuate.) [modified from RDMB, p. 138]

Unifoliolate – [Leaves] {complexity form} A structurally compound leaf with a single leaflet, making it appear simple, the compound nature of the leaf evident by a distinct articulation in the leaf stalk, as in redbud (*Cercis canadensis*); one-leafleted. [modified from K&P, p. 115]

Unilocular – With a single interior compartment or locule. (Compare with multilocular.)

Unisexual – [Flowers] {gender} Having functional reproductive structures of only one sex in the flower or cone. (Compare with bisexual.) [modified from K&P, p. 115]

Unlobed – [Leaflets, Leaves, Petals, Sepals] {lobing} With no recesses or indentations in the margin, or with indentations extending less than $\frac{1}{8}$ the distance to the midrib or base.

Utricle – [Fruits] {type} A more or less small, dry fruit that does not split open at maturity (indehiscent), with a thin bladder-like outer wall that is loose and free from the single seed. [Z, p. 388]

V

- Valvate** – [Bud scales] {type} With scales (usually two) meeting by the edges without overlapping. (Compare with imbricate.) [modified from L, p. 774]
- Variably serotinous** – [Seed cones] {serotiny} Having some cones that open when the seeds ripen and others that remain closed long after the seeds are ripe.
- Variogated**– [Leaf lower surface, Leaf upper surface] {color variegation} The color disposed in various irregular, sinuous, spaces. [RDMB, p. 150]
- Vascular bundle** – A strand of conducting tissues and associated cells within a stem or connected structure. [modified from K&P, p. 16]
- Vegetative** – 1) Of, or relating to, the non-flowering parts of a plant. 2) Producing new plants asexually by the spread or fragmentation of sterile (non-reproductive) tissue, without the formation of seeds. [modified from H&K, p. 45 & K&P, p. 116]
- Verticillaster** – [Inflorescences] {type} A pair of axillary cymes arising from opposite leaves or bracts and forming a false whorl, as in many salvias (*Salvia*). [modified from H&H, p. 175]
- Villous** – [Buds, Leaf lower surface, Leaf upper surface, Phyllaries, Sepals, Young twigs] {pubescence type} With slender curved or wavy, but not matted hairs. [modified from W&K, p. 39]
- Vine** – [Plants] {habit} A perennial plant with long woody or herbaceous stems that are flexible (at least initially), and are supported by other plants or structures, or that trail across the ground. [modified from K&P, p. 118, modified/W&K, p. 608]

W

- Warty** – [Bark of mature trunks] {surface appearance} Bark with relatively small, scattered protuberances, as in southern hackberry (*Celtis laevigata*). (Compare with checkered.)
- Weak** – [Seed cone armature] {strength} With armature that tends to break easily.
- Whorled** – [Leaves] {insertion} With three or more leaves positioned on the stem at the same level; three or more leaves occurring at each node. (Compare with alternate and opposite.) [modified from K&P, p. 119]
- Winged** – [2-4-year-old twigs, Petioles, Rachises] {special surface features} Having one or more elongate, relatively thin protrusions or appendages that loosely resemble wings, as the twigs of winged elm (*Ulmus alata*). [modified from K&P, p. 119]
- Woody** (1) – [Plants] {woodiness} With an aboveground shoot composed of relatively hard tissue that persists from one growing season to the next. (Compare with herbaceous.)
- Woody** (2) – [Seed cone scales] {type} Of or resembling wood, and thus relatively hard and dry. (Compare with fleshy and leathery.) [modified from K&P, p. 119]
- Wrinkled** – [Apophyses] {texture} With small folds or creases.

Z

- Zoned** – [Leaf lower surface, Leaf upper surface] {color variegation} The same as ocellated, but the concentric bands more numerous. (Compare with ocellated.) [modified from RDMB, p. 150]

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