

Glossary of Bromeliaceae terms

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Based on information from many Botanical sources..

Extra reading or charts can be found under appendices as indicated. App1 is of a general nature. Figs are more definitive in the form of drawings

If you come across a botanical term that you are not sure of, please contact me. I might not know the answer but can try to find out

NOTE This is designed for downloading (only 44 pages) plus appendices and figures if you so desire. I find that hard copy is much more useful than checking up on the computer.

App. 1 – Bringing Bromeliaceae Back to Homeland Botany, J Brom Soc 58(3): 123-9. 2008

App. 1a – Flowering plant Gouda - drawing

App. 1b – Flowering plant Rauh – drawing

App. 2 - Thyse - What is it and Why is it in the Bromeliad Glossary

App. 3 – Why do I have a Worksheet

App. 3a - Worksheet

Fig. 1 - drawing

Fig. 1a - drawing

Fig. 2 – Color chart

Fig. 3 – Color chart

Fig. 4 – Inflorescence types drawing

Fig. 4a - Inflorescence types drawing

Fig. 5 – Leaf outlines drawing

Fig. 5a – Leaf tips drawing

Fig. 5b – Leaf margins drawing

Fig. 6 - Stem and leaf sections drawing

Fig. 7 - Tillandsia flower parts drawing

Appendices and Figures are included in this copy but are also available as separate downloads from fcbs.org

Bromeliad Glossary

A

a-, an-: Without.

abaxial: Situated out of, or directed away from, the axis. eg. the underside of a leaf

aberrant: Unusual or exceptional; a plant or structure that varies from the type: mostly used with regard to variation.

abortive: Defective; barren; not developed.

abr-: Delicate (abrophyllum = delicate-leaved).

abscissus; cut off

acantha: Referring to a thorn, spines (e.g., *Acanthostachys pitcairnioides*).

acaulescent: Stemless, or apparently so (acauline = without a stem).

acclimatization: A process by which an organism attains tolerance to a changed environment.

-aceae: Added to stem of name or synonym of type genus to form name of family.

acerose: Pointed or shaped like a needle.

-aceus: Resembling; having the nature of; belonging to. Used to form adjectives from nouns.

achyrostachys: Chaff-like spike.

acicular: Needle-shaped; like a needle or bristle as some leaves; having sharp points like needles.

aciculatus: marked with very fine irregular streaks

actino-: Star-like; radiating from the center; rayed (actinophylla = rayed leaves). **actinomorphic:** Regular flowers. When individual flower parts are bisected vertically in two or more planes and have similar halves. Not to be used to describe sepals or petals

aculeate: Prickly; sharp-pointed.

acuminata, acuminate: Tapering into a long narrow point

acute: Ending in a sharp point with sides nearly straight (acutissima = very pointed; acutangulatus = acute angle; acutifidus = acutely cut; acutifolius = sharp leaf)

ad-: To; on; onto (adnatum = joined to).

adaxial: Adjacent to, or turned towards, the axis. eg. the upper side of the leaf

adherent: Attached or joined, although normally separate.

adjacent: See erect

adjoining: contiguous, confinis

adnate: Joined, united with another part, as stamens with the corolla tube or an anther in its whole length with the filaments.

adpressus: Pressed against; lying flat against.

adscendens: Ascending.

adustus: blackened, scorched

adventitious: Produced out of unusual or abnormal places, such as some roots or buds, or from stems or leaves.

adventive: Said of an introduced plant not yet established: imperfectly or only partially naturalized.

aemulans : rivalling, more or less equalling

aequi-, equi-: Equal.

aequatorialis, aequatorius: Equatorial.

aer-: Referring to the air (aeranthos = flowers of the air).

aerial roots: Roots produced above or out of the growing medium.

aesitivation: The arrangement of floral parts in the bud.

affina: Related to another species; often used in the sense of being doubtful or ambiguous; shortened as aff.

agglomerate: Gathered together in a cluster or mass; collected into a mass but not coherent.

agglutinate: Adhered in a mass by some sticky or viscous substance.

aggregated: Clustered in a dense mass; adhering as if glued together (aggregatus).

alaris : axillary

alate: Winged or wing-like. An outgrowth of tissue around a structure.

alba, albida: White; pale (albiflora = having white flowers).

albino bromeliads: Plants with floral bracts and flowers that are white, although normally they would be colored. Albino seedlings are those that are pure white.

albo-marginate: a form of variegation where the edge of the leaf is white

-alis: Belonging or pertaining to.

allantoideus: sausage shaped

alliaceus: like garlic or onion

alpestris: Growing in mountains; alpine.

alta: Referring to height (altus, altissimus = very tall).

altern: Alternate; any arrangement of parts not opposite or whorled; placed singly at different heights on the axis or stem (alternifolia).

amabilis: Lovely.

ambiens: going around, surrounding

amethyst: Violet-colored (amethysticus).

ammo-: sand- . ammobius means dwelling on sand

amoena: Beautiful; charming; pleasing.

amorphous: Having no definite form; formless.

ampla: Ample; abundant; large; great.

amplexicaul: Clasping or embracing a stem, as a leaf.

ampliate: Enlarged.

amplitude: The gradient of tolerance shown by a species to a single factor or aggregation of factors, such as light, soil, water or temperature.

ampullacea: Flask- or bottle-shaped.

an-: Lacking, without.

ana-: Upwards; back again; with general sense of increasing.

analogous: Related in use and function, but not in origin.

ananase: An anti-inflammatory enzyme derived from pineapples with special medicinal usages.

anatropous: Having the ovule inverted at an early period of its development.

anceps: two-edged.

anciptous: Two-headed; two-edged, as certain flattened stems.

andro-: male

androgynous: having male and female flowers in the same inflorescence

andromonoecious: a plant having both bisexual flowers and solely male flowers, as in *Cryptanthus* subgenus *Cryptanthus*

angiosperm: A plant with seeds enclosed in an ovary, such as a bromeliad.

angust: Narrow (angustus, angustifolia narrow-leaved, having narrow leaves).

annular: In the form of a ring.

anomalous: Deviating from the type; abnormal.

anterior: Incorrectly used for sepals - Front; on the front side; away from the axis. should be abaxial although this is inapplicable in long/or twisted pedicels

anther: The pollen-bearing part of a flower; the top of the stamen that sheds pollen

anthesis: The flowering period; the time when the flower is fully open, usually the time of anther maturity when the pollen is ripe.

anthocarpus: Said of a body combined of flowers and fruit united into a solid mass, as in a pineapple.

anthocyanin: Red, blue, or violet pigment in the *Bromeliaceae* which affects coloration.

antiacantha: Against the spine.

antical: Front; anterior.

antipetalous opposite the petal – sometimes the filament is joined for some length to the petal

antipodal: Diametrically opposite; on opposite sides.

antisepalous opposite the sepal or in other words next to the antisealous filament.

antrorse: Directed upward or forward. usually referring to spines

-anus: Belonging or pertaining to.

apex: The tip of an organ; e.g., the tip of a leaf.

apical: At the apex or top or growing tip.

apiculate: Terminating abruptly in a little point that is not particularly stiff.

apiculus: A small apical point or tip.

apo-: From; away; out of; free.

apomixis: seed without sex – seeds inherit only genes from mother

appendage: An attached subsidiary or secondary part. as in petal appendages

appendic-: Referring to an appendage (appendiculatus).

applanate: Flattened or horizontally expanded.

appressed: Closely and flatly pressed against; adpressed.

approximate: Close together but not united.

aqu-: Referring to water.

aquiferous: Water-bearing.

aquilega-: Resembling an eagle; aquiline.

arachnoid: Cobwebby with soft and slender entangled hairs; spider-like.

araneosa: Resembling a spider web.

arcuate: Bent or curved in the form of a bow.

arena: Referring to sand (arenicolous = dwelling in sandy places).

areole: A small, more or less angular space on a surface, as between the veins of leaves.

argenta: Silvery.

aristate: With an awn or stiff bristle usually at the apex.

-arius: Possession or pertaining to.

armate: Armed; with a defensive structure as a sharp point, thorn, spine, or barb.

arom-: Referring to odor (aromatica).

arrect-: Erect (arrectus).

arrhizus: rootless

articul-: Joined, articulate (articulatus).

arund-: Referring to a reed, reed-like (arundinaceus).

arvensis: Pertaining to cultivated fields.

ascending: Rising up; produced somewhat obliquely or indirectly upward.

-ascens: Indicating a process of becoming but also a lack of full attainment.

asepalous: Having no sepals.

asexual: Sexless; without sex, such as in vegetative propagation.

assurgens: rising upwards

asymmetrical: Not symmetrical; having no regular shape.

-atilis: Indicating place of growth.

atmospheric: Relating to plants that live exclusively from moisture and minerals from the air.

atra-: Dark (atratus = black; atropurpurea = deep purple; atrombens = dark red; **atroviridipetala** = dark green petals).

attenuate: Narrowing to a point; thin or slender (Appendix V).

-atus: Possession or likeness.

Auctor: author, writer

auctus: enlarged, increased

augusta: Majestic; notable; august.

aurantiacum: Orange-colored.

aure-: Golden (aureus, aurespina = golden-spined; aureobrunnea = golden brown).
auri-: Referring to an ear-shape.
auricle: An ear-shaped part or appendage, as the projection at the base of some leaves and petals.
autogamous: Plants that routinely self-pollinate.
auxin: A chemical substance produced in the growing tips of stems, roots, and in young parts generally, helping to regulate or modify the growth of these parts.
awl-shaped: Tapering gradually upward from a broad base to a sharp point; narrowly triangular.
awn: A bristle-like part or appendage.
axil: The juncture of leaf and stem; the upper angle that a petiole or peduncle makes with the stem that bears it.
axile: Borne in or on the axis or relating to it.
axillary: Within or from an axil.
axis: The main or central line of development of any plant or organ; the main stem.
azur-: Referring to the color blue (azureum).

B

baccate: Berry-like; pulpy or fleshy, as in the fruit of an aechmea or a billbergia.
backcross: Cross-fertilization of a hybrid with one of its parents.
bambusoides: Bamboo-like.
banded: Marked with cross-bars or horizontal lines of a contrasting color. or with very prominent ribs or other structures.
barb: A short point or thorn: used to designate points with reflexed or hook-like appendages.
barbellate: Having short, stiff, hooked bristles or hairs.
basal: Of, at, or forming the base.
basifixed: Attached by the base, as an ovule that is affixed at its support by its bottom rather than by its side or by an angle.
basionym: A previously published legitimate name-bringing or epithet-bringing synonym from which a new name is formed for a taxon of different rank or position
berry: A pulpy or fleshy indehiscent fruit with two or more seeds. One of the indicators of *Bromelioideae*
bi-, bis-: Two or twice.
bialate: Twice-winged.
bicarinate: Having two keels or ridges
bicaudate: Having two tail-like appendages.
bicolor: Two-colored, usually referring to leaves where the upperside is a contrasting color to the underside.
bifarious: Arranged in two rows - distichous.
bifid: Two-cleft or two-cut; forked.
biflora: Two-flowered.
bifurcate: Twice-forked.
bigeneric cross: The crossing of two different genera to form a hybrid genus (e.g., *Neoregelia x Aechmea = xNeomea*).
binary: Of two units or components.
binomial: Scientific name of organisms consisting of a genus name and a species name in Latin, with the genus name capitalized and the species name in lower case. The scientific names are italicised or underlined.
biodiversity: Including all genera, species, ecosystems and the ecological processes of which they are a part.

biogeography: Study of the distribution of different groups of organisms (geobotany = plant geography).

biomass: Total number of living organisms per unit area at a given time.

biota: The animal and plant life of a region; flora and fauna collectively.

bipartite: Divided into two parts; separated nearly to the base.

bipinnate: wrongly Twice-pinnate; a once-compound inflorescence in which the flowers are borne on secondary spikes rather than on the simple extension of the scape. **should be called** Panicle with sidebranches of the first order or once branched

biserrate: Doubly serrate: the serratures themselves are serrate.

bisexual: Flowers with both male and female parts.

bituminosa: Sticky.

bivittatus: Doubly striped lengthwise.

blade: The expanded part of a leaf or floral segment.

bland: Pleasant appearing; charming; tempting.

bloom: See glaucous, pruinose

blushing: Usually refers to the reddening of the centers of bromeliads as they approach blooming period.

borate: Strap-shaped.

botanical drawing : Often used in conjunction with a protologue to further define the attributes of the species. See fig1 & 1a

botry-. –**botrys:** bunch, raceme

bottom heat: A term used to designate the condition that arises when the roots of plants, or the soil in which they grow, are exposed to a higher temperature than that of the air in which the aerial parts are growing.

brachy-: Short or squat (brachycaulos = short stemmed; brachyphylla = with short leaves).

bract-: A modified leaf, often a flower-like structure associated with the true flowers

bractial: Relating or pertaining to bracts.

bracteiform: Having the form of a bract.

bracteole: A small bract; an accessory bract.

bracteosus: With numerous or conspicuous bracts.

bractlet: Bract borne on a secondary axis, as on the pedicel.

branch: Axis or stem of a compound inflorescence whose flowers have pedicels.

breaking: Said when buds start to grow.

brevi-: Short (brevicollis = short-necked; brevifolia = short-leaved).

bristly: bearing stiff short hairs or bristles

Brocchinioideae One of the 8 subfamilies of the Bromeliaceae. Type *Brocchinia*

bromelain: An enzyme, extracted from the root of a pineapple, which has the property of digesting protein.

bromelicolous: Refers to animals that live within Bromeliads.

bromeligenic: Refers to an animal that is entirely dependent on its habitat in Bromeliads to complete its reproductive cycle and development.

bromeliifolia; With leaves like those of the genus .

Bromeliaceae: The family name of the bromeliad. Split into 8 sub-families *Brocchinioideae*, *Bromelioideae*, *Hechtioideae*, *Lindmanioideae*, *Navioideae*, *Pitcairnioideae*, *Puyoideae*, *Tillandsioideae*

Bromelioideae: One of the 8 subfamilies of the *Bromeliaceae*. The fruits are baccate.

brunneus: Brown; russet.

brush: A thicket, floristically of great diversity, but with no single species being dominant.

bryoides: Moss-like.

bud: An incipient or nascent shoot; the rudimentary or beginning stalk of a shoot, flower, or leaf

before expanding.

bulbiformis: Shaped like a bulb.

bulbosa: Like a bulb.

bulbous: Bulb-like: with the structure or characteristics of a bulb.

C

C₃ plant: A plant that incorporates carbon dioxide into an organic compound with three carbon atoms and is then further modified into sugars and other compounds during photosynthesis; the common method for green plants.

C₄ plant: A plant that incorporates carbon dioxide into an organic compound with four carbon atoms; only found in a number of tropical plants.

cacticola: Growing on a cactus.

caducus: falling, dropping off early

caes-: Referring to the color blue (caerulea = pale indigo blue or dark blue; caerulescens = having a tendency to be blue, almost dark blue; caesia = blue or bluish gray). **caespitose:** Referring to stems growing in tufts or rather close clusters forming a turf or a mat.

calcariform: Spur-shaped; formed like a spur.

callosity: A thickened or hardened part or protuberance.

calo-: Beautiful.

calocephala: With a beautiful head.

calycine: Pertaining to a calyx; calyx-like.

calyculata: With whorls of bracts below the calyx; fruit enclosed in a calyx.

calyx: The outermost whorl (sepals) of a flower .

CAM: Acronym for crassulacean acid metabolism. A modification of the assimilation process primarily found in succulent plants and some bromeliads. Carbon dioxide (CO₂) is taken up by the plant during the night hours and stored in the form of organic acids. During the day time the stomata are closed and the stored acids are broken down, with the resultant CO₂ assimilated by the normal C₃ pathway.

cambium: A soft formative tissue that gives rise to new tissues (wood, bark, etc.) in the stems of plants. In woody plants it is between the wood and bark, its function being to increase the size of the stem.

campestris: Of fields.

canal- : Referring to lines, grooves (canaliculate = grooved or channeled lengthwise).

candida: White; white-hairy; shining lustrous white; pure.

canescent: Greyish and inconspicuously covered by short fine hair.

canopy: The collective continuous or discontinuous cover provided by foliage.

capill-: Referring to a hair or thread (capillarius, capillare, capilliformis = formed like a hair;).

capillary: Hair-like, very slender.

capit-: Referring to the head (usually to the flower cluster).

capitata: Formed like a head; aggregated into a very dense or compact cluster.

capitate: Forming a rounded head.

capitiform: Having the form of a head.

capitulum: Head; a close body of sessile flowers.

capsular: Pertaining to a capsule; formed like a capsule.

capsule: Mature dry fruit that eventually opens to shed the seeds; the "seed-pod".

caput: head

carcharodon: With shark-like teeth.

cardinalis: Superior; pre-eminent; scarlet.

carin-: Referring to a keel (carinata, carinate = keeled, like a lobster claw, having a single central ridge)

carina: A keel-like part or ridge to be found on the surface of a leaf or floral segment;

carn-: Referring to flesh (carneous = of a fleshy texture; carnosus = fleshy, pulpy).

carnivorous plant: A plant with adaptations primarily designed to capture animals, and thereby acquire substantial portions of its needed nutrients. eg. possibly *Brocchinia reducta*

carpel: The cell of a simple fruit or pistil. Bromeliad fruits contain three carpels.

cartilaginous: Hard and tough, like parchment; gristle-like.

castaneous: Reddish brown; chestnut-colored; often applied to the leaf sheath.

cataphyll: An undeveloped leaf; a rudimentary leaf form as at the beginning of a growth. eg bracts on a stolon

category: A level to which a taxonomic group may be assigned. These levels in descending order are Division, Class, Order, Family, Tribe, Genus, Section, Series, Species, Variety, Form, and their respective sub-units where applicable.

caud-: Referring to a tail.

caudal: A slender tail-like appendage.

caudata: Furnished with a tail or tails.

caudex: The woody base, stem, or trunk of an otherwise herbaceous perennial.

caul-: Referring to a stem (cauliflorus = bearing flowers on the stem; caulescens = having a stem or stems).

-caul: Referring to a stem (albicaulis = white-stemmed).

caulescent: Having an evident leafy stem above the ground.

cauline: Belonging to the stem; borne on a stem.

cellular: Refers to tissue made up of short, thin-walled cells; composed of cells.

-cephalus: Head or headed.

cespitose: Matted; growing in tufts; in little dense clumps.

cf. short for confer or compare with (similar to aff.)

chaet-: Referring to a hair or bristle (chaetophylla = bristle-like leaves).

chaeta: A bristle; seta.

channeled: Deeply grooved lengthwise.

character: That which marks an individual from kindred others. eg petal colour

chartaceous: Thin, hard, and stiff; having the texture of writing paper.

chimera: A mixture of tissues of different genetic constitution in the same part of the plant often resulting in variegation of a part or of the whole plant.

chiropterophily: Pollination by bats eg *Werauhia*

chlamys: cloak, mantle, covering

chlor-: Referring to the color green (chloranthus = green-flowered; chlorophyll = green pigment in plant necessary for the manufacture of its food; chlorophylls = green leaves; chlorosticta = green-spotted).

chloroplast: A minute flattened granule containing chlorophyll, developed only in cells exposed to light. Chloroplasts are the center of photosynthesis and starch formation. **chlorotic:** Abnormally yellowed because of a breaking down of the chlorophyll.

chrys-: Golden or golden yellow (chrysantha = golden-flowered).

ciliate: With very minute hairs along the margins.

ciner: Referring to ashes; ash-gray in color.

cinereous: Light gray; ash-colored.

ciophile: Needing little light but high humidity.

circin-: Coiled (circinnatus = coiled inward, referring to the leaves; rolled up on the axis with the apex at the center of the coil).

circinate: Coiled downward or inward from the top.

citr-: Referring to citrus (citrina = lemon-colored).

clav-: Referring to a club (clavatus).

clavate: Club-shaped; said of a long body thickened toward the top.

claw: The long, narrow petiole-like base of the petals or sepals in some flowers.

cleistogamy: Production of flowers that do not open to expose reproductive organs, thus preventing cross-pollination. Occurs in some species of *Tillandsia* subgenus *Diaphoranthema*

clonal: Of, or pertaining to, a clone.

clone: two or more individuals, originally derived from one plant by asexual propagation, which remain genetically identical.

cm: Centimeter. Measure of length equal to 0.3937 inches (2.54 cm = 1 inch).

coalescence: A union of similar parts or organs or of those in the same series, as stamens with stamens and petals with petals.

coarctate: Crowded together; compressed.

coccinea: Scarlet.

cochlear: Spoon-shaped.

cochleatus: coiled like snail's shell

coelest-: Referring to the sky; blue (coelestis = sky blue; coerulea = dark blue).

coherent: Two or more similar parts or organs joined.

-cola: -dweller,

collateral: By the side; standing side by side.

colony: A group of individuals, usually of one species, living in close community .

colour (or color): Had very little meaning to taxonomy when all descriptions were based on herbarium specimens. These days more reliance is made on colour but there is no world-wide standard approach. W T Stearn's Botanical Latin goes to great lengths advising the historical approach to colours. See Fig 2. We have taken the opportunity of showing what could be adopted for Bromeliaceae from the book Exotica. See Fig 3

coma: Referring to a hair (comata or comose = bearing a tuft or tufts of hair; comosus = bearing a tuft of hair or leaves; coma = tuft of hair, particularly on a seed).

communis: General; growing together in company; gregarious.

community pot: A pot containing small seedlings that have been transplanted from the original growing medium.

compactus: Compact; dense.

complanata: Flattened out in one plane, referring to the inflorescence.

complanate: Flattened; level.

complete: Designates a flower that has sepals, petals, stamens and pistils.

complicate: Folded over or back on itself.

compound: Having two or more similar parts in one organ. A compound inflorescence is a branching inflorescence.

compressed: Flattened, especially flattened laterally.

con-: With or having (concolor = of one color throughout, uniformity of hue in sepals and petals; concentrica = with intensification of color in the center; concolorous = of the same color throughout).

conferta-: Crowded (confertiflora = crowded flowers).

confluent: Blending into one; running together.

confusa: Confused; uncertain (as to characteristics).

congeneric: Belonging to the same genus.

conglomerate: Clustered; brought together; forming a sphere.

conglutinated: United firmly together; glued together.

congruent: Corresponding with.

connate: United or joined; in particular, like or similar structures joined as one body or organ as in sepals

conspectus: A sketch or outline of a subject; a general survey.

contiguous: In actual contact; touching.

contorted: Twisted.

convex: Having a rounded surface, often one that is bulging and curved.

convolute: Rolled around, as a leaf in bud with one edge inside and the other outside; coiled.

contracted: Refers to an inflorescence that is narrow and dense with short or appressed branches.

cool house: A greenhouse with a maximum night temperature of 50-60° F .

copper: a metal necessary for plant growth but can be fatal in excess such as copper treated timber

corallina: Coral color.

cordate: Heart -shaped.

cori-: Referring to leather (coriacea or coriaceous = leathery in texture, thick and tough).

corolla: The inner circle of floral parts composed of petals.

corymb: A broad, more or less flat-topped flower cluster – as in *Neoregelia/Canistrum* etc (corymbiform = having the form of a short, broad, flat-topped indeterminate flower cluster; corymbosa = having a corymb or a flat-topped flower cluster).

cotyledon: The seed-leaf; the primary leaf or leaves in the embryo of plants.

crassulacean acid metabolism: (CAM) a process common to many xerophytes, including some *Tillandsia*, involving the night-time accumulation of atmospheric CO₂ to make malic acid.

crateriform: Cup-shaped; like a deep saucer.

cren-: Scalloped (crenate = shallowly round-toothed or obtusely toothed, having the margin cut into rounded scallops).

crested: Bearing a tuft; having a terminal of proliferating cells producing a grotesque shape.

cretaceous: Chalky.

crispa-: Curled; crinkled; finely waved along the margin (crispate = a leaf margin when very irregular, curled, and twisted; cristata = bearing a crest, crested).

crocata: Saffron-colored.

cross: To transfer pollen from a flower of one plant to pollinate a flower of a different plant: the progeny resulting from such pollinations are known as crosses.

cruenta: Blood-stained; the color of blood; or with blood-colored spots.

crypt-, crypto-: Hidden; covered; concealed.

cucullate: Hooded; having the margins curved inward to resemble a hood.

cultivar: Produced in cultivation as opposed to one growing in habitat; – an assemblage of plants that has been selected for a particular attribute or combination of attributes and that is clearly distinct, uniform, and stable in these characteristics and that when propagated by appropriate means retains those characteristics.

cultivation: The growing of a plant away from its natural habitat.

cultrate: In the shape of a knife blade.

cupular: Cup-like or cup-shaped.

cuspidate: A pointed end.

cuspidate: Tipped with a sharp, rigid point.

cuticle: The outermost layer of the cells of the epidermis.

cyanea: Bright blue; azure.

cyath-: Referring to a cup (cyathiforme = cup-shaped).

cyl-: Referring to a cylinder.

cymbiformis: Boat-shaped; convex and keeled.

cyme: A broad, more or less, flat-topped determinate flower cluster.

cymose: Pertaining to an inflorescence with the central flowers opening first.

cytogenetics: The science of the part played by cells in causing phenomena of heredity, mutation, and evolution.

cytokinin: A chemical compound used as a plant growth regulator.

D

dactylina: Resembling fingers; finger-like.

damp down: To dampen by spraying the walks, benches, etc., of a greenhouse, lathhouse, or other growing area in order to increase the humidity but without watering the plants or pots.

damping-off: The rotting of seedlings or other new plants due to a fungus or bacterial infestation.

dasy-: Thick (dasystachys = thick spike of flowers).

dasyliiriifolia: Like the lily genus, *Dasyilirion*.

dealbata: Whitish, or almost white; often with reference to flower bracts.

de-: From: out: of; off (decorticans = off skin; i.e., peeling bark)

deciduous: Refers to a plant that loses its leaves at the end of its growth period.

declinate: Curving downwardly, or turning outwardly.

decolor: deprived of its natural colour, faded

decomposita: Decomposed; more than once-compound or divided.

decora: Ornate; elegant; becoming; comely.

decumbent: Reclining or lying on the ground, but with the end ascending; usually referring to a shoot.

decurrent: Running down the stem; extending down the stem or ovary below the point of insertion.

decurved: Curved downward; bent downward.

deflexed: Turned downward abruptly.

defoliation: The shedding or loss of leaves either as a seasonal normality or as a consequence of disease.

dehiscent: Opening spontaneously when ripe for the release of the contents, such as seeds.

deltoid: Triangular; resembling a triangle with equal sides.

density: The degree of the closeness of flowers or foliage to each other (densiflora = having the flowers densely clustered, densely flowered; densifolius = densely leaved; densispica = dense spike).

dent: Referring to a tooth (dentate = with sharp spreading teeth, e.g., leaves deeply indented at regular intervals to appear like the cutting edge of a saw; denticulate = having very small tooth-like projections.).

deorsum: downward, below, (opposite to sursum)

depauperate: Dwarf; starved; reduced in form and function.

depressed: More or less flattened from the top.

descending: The direction gradually downwards.

dessicate: Without moisture; dried up.

dessucate: Opposite leaves in four rows in alternating pairs.

determinate: Definite cessation of growth at the apex or in the main axis. Said of an inflorescence when the terminal flower opens first and thus terminates further elongation of the floral axis.

di-, dis-: Two, twice.

dichlamydea: Two-garmented, referring to bracts in two series; provided with both calyx and corolla.

dichogamy: Having pistils and stamens maturing at different times, preventing self-pollination.

dichotomous key: Characterized by regular division into pairs from bottom to top; having a dual arrangement.

diclinous: Imperfect; having either stamens or pistils but not both; unisexual.

dicotyledonous: Having two cotyledons (seed leaves).

didisticha: Double distichous in vertical ranks.

difformis: Of unusual form in comparison with the normal for the genus.

diffuse: Loosely branching or spreading; of open growth.

digitate: Hand-like; compound with the members arising from one point.
digitatus: Shaped like an open hand; finger-like.
dilated: Expanding as a flattened surface to become larger or wider.
dimerous: Of two parts; having two members in each whorl as applied to flowers.
dimorphic: Referring to the occurrence of two different forms of flowers, leaves, etc., on the same plant or on distinct plants of the same species. "Leaves dimorphic would refer to a plant such as a *Pitcairnia* that may have very short and spiny leaves and others that are long and entire.
dioecious: The male and female flowers on different, individual plants.eg. *Hechtia* and some *Catopsis*
diploid: Having the normal complement of two similar sets of chromosomes.
discolor: Having two different colors, usually referring to leaves that are one shade on top and another underneath.
discrete: Separate but not coalesced; distinct.
disjunct: Characterized by a separation of parts or formed into separate groups; not growing together; disconnected.
dissemination: Dispersal of reproduction structures such as seeds, fruit, or vegetative parts, chiefly through the agencies of water, wind, birds, and animals.
dissitiflora: Loosely flowered; well spaced flowers.
distal: Farthest from the place of attachment.
distichantha: Flowers arranged in two opposite rows.eg *Aechmea distichantha*
distichous: Arranged in two ranks, as the flower spikes of many vrieseas.
distinct: Separate; when petals are distinct, they are not joined at the edges.
diurnal: Opening or occurring during the daytime.
divaricate: Diverging or widely spreading. Generally applies to how branching occurs in a compound inflorescence.
divergent: Going in different directions from a common point; spreading out.
dm: Decimeter; a measure of length equal to 10 cm or 3.937 inches.
dorsal: Back; relating to the back or outer surface of a part or organ.
dorsifixed: Attached by the back, applied especially to anthers.
double: Referring to flowers that have more than the usual number of floral envelopes, particularly of petals.
downy: Covered with weak, short, and soft hairs.
drepanocarpa: Section of the fruit curved like a sickle.

E

e-, ex-: Without: missing: out of; or from.
ebracteatus: Without bracts.
ecarinate: Without keel; without a ridge.
echinata: Armed with numerous prickles or spines; prickly.
eco-: Habitat; environment.
ecology: The science that deals with the mutual relationship between organisms and their environment; particularly, the study of plant life in relationship to its environment.
ecotype: A group of similar variants of a species that keep their individuality as a distinct group through environmental selection and isolation; a single such individual.
ect-, ecto-: On the outside; outwards.
edaphic: Referring to soil and topography, rather than climatic effects.
edentate: Without teeth.
effuse: Loosely spreading; very diffuse.
elata: Tall or tall in comparison with its near allies.
elegans: Choice; attractive; elegant.

eleutheropetala: With free petals

ellipsoid: An elongated solid in which all the sections are ellipses or circles.

elliptic: Shaped like an ellipse; i.e., broadest at the center, tapering equally to base and apex.

elongata: Lengthened; elongated; stretched out.

emarginate: Having a notched margin at the apex.

emasculate: To remove the stamens of a flower before they dehisce or the pollen becomes ripe. Done prior to artificial hybridization.

embryo: The plantlet in the seed.

endemic: Peculiar to a particular locality and not found elsewhere.

endemism: Quality or state of being endemic or native to a particular region.

endo-, ento-: Inside; inwards.

endosperm: The albuminous (starchy) tissue that is enclosed in the embryo of the seed and serves to nourish it when germinating.

ens-: Referring to a sword (ensate or ensiformis = long, flat, two-edged, nearly or quite straight, with a sharp point; ensifolius = having sword-shaped leaves).

-ensis: Habitat, country, or place of origin.

entire: Margin not in any way indented; whole. Entire leaves have smooth edges **entomophily:** Pollination by insects.

ephemeral: Lasting only a short time; transitory.

epi-: On or upon; living on the surface of another.

epicuticular wax: waxy coating often seen in say *Alcantarea*

epidermis: The outer layer of cellular tissue enveloping the entire plant body, functioning as a protective covering and as a control against loss of water.

epigynous: Situated on the upper part of the ovary. Therefore ovary inferior. One of the characteristics of *Bromelioideae*

epigynous tube: A tube through the thickness of the top of the ovary.

epiphyte: An airplant; a plant growing on another or on some object as a means of support only and deriving its needed moisture and nutrients from the air. It is not a parasite.

epithet: The scientific specific name applied to an organism; e.g., in *Tillandsia cyanea*, *cyanea* is the epithet.

erect: Applied to flowers or floral bracts that stand up nearly parallel to the rachis to which they are attached.

erectus: Stately; proud; exalted.

erose: Having the margin irregularly notched as if gnawed.

erubescens: Becoming rosy-red; blushing.

erythro-dactylon: Red-fingered.

erythrolepis: Red-scaled.

-escens: Process of becoming but not fully achieved.

-estris: Place of growth.

ethylene: A gas used to force blooming in bromeliads.

etiolate: To blanch, as by the exclusion of sunlight. Said of plants usually grown in darkened conditions. The loss of color is caused by the conversion of the green chloroplasts to leucoplasts. Etiolated bromeliads often have long thin leaves.

eury-: Broad (eurycorymbose = with a broad, more or less flat-topped, indeterminate flower cluster).

evanescent: Of short duration; not lasting.

evolute: Unfolded; turned back.

ex-: Without; lacking; free form.

excavated: Hollowed out.

excelsus: Tall.

excurved: Curving outward or away from the axis.

exotic: Foreign; from another country; not native.

explant: A tissue culture; a group of cells growing independently of the parent from which it was taken.

exserta, exserted: Projecting beyond a common point; protruding .

exsiccated: Dry or dried; free from moisture.

extra-: Outside of or beyond.

exude: To discharge slowly through small pores.

F

F1: The first filial generation; often a constant breeding hybrid type.

F2: The second filial generation; the progeny from the crossing or selfing of the F1. The number increases for each subsequent generation.

facies: The general appearance or looks of a plant.

falcate: Curved and flat, tapering gradually; scythe-shaped.

family: A major division or subdivision of an order; a group of related genera.

farin-: Referring to starch or wheat (farinaceous = containing starch or starch-like material, like flour: mealy).

fasciata: Marked transversely with broad parallel stripes of color; banded.

fasciate: United or massed laterally.

fasciation: A malformation caused by several stems becoming fused into one.

fascicle: A condensed or close cluster, as of flowers. see *Nidularium* as an example

fasciculata: In close bundles or cluster.

fascinator: Unusually attractive; fascinating.

fastigiate: Of habit when branching is erect and close together, so forming a columnar, conical, or pyramidal shape.

fastuosa: Proud.

fauces: throat

fecundation: Fertilization of the female by the male to form a new individual.

fenestralis: With window-like openings; referring to the light-green rectangular areas on leaves which give the illusion of windows.

ferox: Ferocious; very thorny; spiny.

ferr-: Referring to iron; rusty color (ferruginea = rusty red; ferruginous = rust-colored).

fertile: Capable of producing fruit.

fertilization: The effect of pollination resulting in the conversion of the flower into fruit and of the ovules into seed Also the application of nutrients to the plants and the growing medium.

festucoides: Grassy.

fetid: See foetid.

fibrous: Fiber-like; containing fibers or thread-like parts.

fide: according to

filaform: Thread-like; long and very slender.

filament: In general, a thread-like structure; the thread-like stalk of the anther.

fili-: Thread (filicaulis = with thread-like stems; filiform = long and slender; filifera = having threads).

fimbriate: Fringed; bordered by fine hairs.

fir bark: A potting medium of chopped bark of certain firs, used either alone or a mixture. see also pine bark

flabellata: Branched; in the shape of a fan.

flaccid: Soft; lax and weak; not rigid.

flagelliformis: Long and slender like a whip: whip-like

flammea: Fiery red; flame-colored.

flavous: Yellowish.

flexuosa: Zigzag; tortuous; bending alternately in opposite directions.

floccose: With tufts or flocks of soft wool or woolly hair

flora: The plant population of a certain geographical area.

floral bracts: The structure just below the flowers: may be leaf-like or colored

floral envelope: The perianth or calyx and corolla.

floribunda: Many flowered; free-flowering.

floriferous: Flower-bearing; blooming freely.

flower: All the plant structures from and including the sepals inward. See Fig 7

flower induction: Forcing the blooming of a plant by artificial means, such as by use of gases or chemicals.

flumen: River

fluted: With grooves or furrows.

foetid: Having a disagreeable odor; fetid.

foliaceous: Leaf-like; said particularly of the sepals and calyx-lobes that in texture, size, or color look like small or large leaves.

foliage: The leaves of a plant.

foliar: Referring to a leaf.

foliar feeding: Fertilizing by means of spraying nutriment on the foliage.

-foliate: Pertaining to leaves; having leaves.

foliosa: Many leaved.

foot candle: Unit of illumination equivalent to that produced by an average candle at the distance of one foot. Used in measuring the light in a growing area, such as a greenhouse.

forcing: To quicken the induction of flowering by artificial means, such as by the use of gases or chemicals.

forma: A sub-group within a species displaying a minor characteristic, but not great enough to be called a variety.

formosa: Beautiful; handsome.

formula: In the designation of hybrids it is the names of the two parents connected by the multiplication sign x.

free: Not joined to other organs; as petals free from the stamens or calyx.

friable: Easily crumbled or pulverized; used in connection with a loose, porous soil **frigida:** From cold regions.

fructescence: The maturing stage of fruit.

fruit: Capsule or berry containing seed

frutescens: becoming shrubby

fugacious: Short-lived; fading very rapidly; transitory.

fulgens: Shining; glistening.

fulvous: Dull yellow; yellow-tinged with brown or gray; tawny.

funeris: Funereal.

fungicide: Any substance that destroys fungi.

funnelform: With the shape of a funnel; in bromeliads referring to the form of the rosette.

furcate: Forked.

furfuraceous: Scuffy; covered with bran-like scales or powder.

fuscosis: Grayish-brown; dull brown.

fusiform: Spindle-shaped; narrowed both ways from a swollen middle.

G

gam: United; married (gamopetala = joined petals; gamosepala = with united sepals, having the calyx of one piece.)

gamete: One of the sex cells, either male or female.

gemin-: Referring to twins (geminata = occurring in pairs; geminiflora = twin-flowered).

gemma: A bud or bud-like organ capable of reproducing the plant.

gemmule: A little bud or bud-like structure.

gene: That part of a chromosome which is concerned with the transmission and determination of hereditary characteristics.

generation: The epoch from one 1-celled stage of a plant to the next 1-celled stage. The period from birth to death.

generic: Of or pertaining to a genus.

genetics: The science of the causes and effects of inheritance and variations and the factors determining similarities and differences among individuals related by descent.

geniculate: Bent abruptly; joined.

genitalia: stamens and pistil

genotype: The fundamental hereditary make-up of an organism.

genus: A subdivision of a family consisting of one or more species which show common characteristics and appear to have a common ancestry. There are more than fifty genera belonging to the *Bromeliaceae*

geo-: Referring to the earth, the ground.

geotropic: Movements (by growth processes) as a reaction to gravity.

germination: The growth of an embryo or seed into a plantlet or individual plant.

gibbosity: A swelling or bulging on one side or near the base.

gigantea: Very large; gigantic.

gigas: A giant, with reference to the size of the flower or the plant.

glabrate: Nearly glabrous; with a covering of non-persistent, or very sparse, hairs.

glabrescent: Slightly glabrous; tending to become glabrous or smooth.

glabrous: Smooth; glossy; without pubescence or hairs.

glabrum: Smooth; not hairy.

gladiate: Sword-shaped or sword-like.

gladioliflora: With flowers resembling those of a gladiolus.

gland: A small protuberance: a secreting part or appendage; often used in the sense of glandlike.

glandular: Having or bearing secreting organs or glands.

glanduliform: Gland-like.

glandulosa: Bearing glands; glandular.

glaucous: Becoming bluish-gray or glaucous.

glaucous: Sea-green; covered with a bloom (powder) or whitish substance that rubs off. **globose:** Spherical or round.

glochidiate: Barbed at the tip; pertaining to hairs of bristles when ending in two or more hooks.

glomerate: In dense or compact cluster or clusters.

gloriosa: Very beautiful; glorious; illustrious.

glutinosa: Sticky; glutinous.

gracilis: Slender; graceful.

graminiform: Grass-like.

grand: Large (grandiceps = large headed; grandis = large, imposing, showy).

granular: Minutely or finely mealy; covered with very small grains.

granuliferous: Composed of, or covered with, very small granules.

granulosa: Composed of, or appearing as if covered by, minute grains.

grex: A group of species or hybrids: applied collectively to the offspring of a given cross; literally a flock or swarm. Generally identified by formula involving parents names.

grex name a type of Group used in orchid nomenclature applied to the progeny of an artificial cross from specified parents

Group name a formal category denoting an assemblage of cultivars, individual plants, or assemblages of plants on the basis of defined similarity (see Grex)

guttata: Spotted; speckled; referring to the foliage.

gymnobotrya: A raceme without covering.

gymnos-: Naked; not covered.

gynoecium: The female or pistil-bearing part of the flower.

H

habit: The appearance; general mode or style of growth.

habitat: Place of growth; the type of locality in which a plant normally grows.

hairs: A general term for many kinds of small and slender outgrowths on the epidermis of plants. Special kinds of hairiness are designated as setose, villous, comose, pubescent, and hirsute.

halophyte: A plant that shows wide tolerance of, or is able to adjust to, saline or alkaline soils.

hamate: Hook-shaped.

hamosa: Hooked.

hapaxanth: A plant that flowers or fruits but once with no offsetting. - a better term than Monocarp.

haploid: Having the basic chromosome number for the species; single in appearance or arrangement.

hapuu: Hawaiian tree fern fiber used for potting bromeliads and orchids. Used also as slabs for mounting epiphytic plants.

hardening: Referring to growth; a temporary adaptation for tolerance to low or extremely fluctuating temperature.

hastate: Of the shape of an arrowhead, but with the basal lobes pointing outward instead of backward

head: A dense cluster of sessile or nearly sessile flowers; a short, dense spike.

Hechtioideae One of the 8 subfamilies of the *Bromeliaceae*. Type *Hechtia*

helicoid: Watch spring; referring to certain billbergias that have slightly recoiled petals. **heliconioides:** Resembling a heliconia.

heliophile: Requiring a great light intensity and relatively little humidity.

heliophyte: A sun lover.

hemi-: Half.

hepta-: Seven; of seven parts.

herb: A plant, such as a bromeliad, with no persistent woody stem above the ground.

herbaceous: Refers to a plant which has a stem that is not woody, like that of trees or certain shrubs.

herbarium: A collection of plant specimens that are dried or otherwise preserved, annotated, identified, and systematically arranged.

heredity: The resemblance among individuals related by descent.

hermaphrodite: A flower with both stamens and pistils; same as bisexual.

hetero-: More than one kind.

heterantha: Variable in flowers.

heteroclamydeous: Having more than one kind of covering; i.e., dissimilar sepals and petals in *Bromeliaceae*.

heteromorphous: Of more than one kind or form.

heterophylla: Having various leaves; with leaves of more than one shape.

heterosis: Hybrid vigour. It is sometimes observed that the offspring of cross-mating between different species often grow quicker in the first generation and ultimately grow larger than the parents. This effect is important in the cultivation of plants.

heterostachys: Different spike; referring to one which is lax at the base and dense at the top.
hexa-: Six; of six parts (hexagonus = six-angled).
hieroglyphica: Referring to markings that resemble hieroglyphics or ancient writings.
hirsute: Covered with long, rather coarse or stiff hairs.
hirsutulous: Somewhat hirsute.
hispid: Provided with stiff or bristly hairs.
hoary: Covered with a close white or whitish pubescence.
holdfast: Roots whose primary function is to secure a plant to its host.
holotype: The one specimen or illustration used by the author or designated by the author as the nomenclatural type
homo: Very similar; one of a kind; alike.
homocarpous: With all the fruits, as of a flower-head, alike.
homologous: Corresponding in type of structure.
homomorphic: Uniform; all the given parts alike.
homonym: A name spelled exactly like another name published for a taxon of the same rank based on a different type Note. Names of subdivisions of genera or infraspecific taxa with the same epithet even if of different rank are treated as homonyms disregarding the connecting term
hooked: Abruptly curved at the tip.
horny: Hard and dense in texture; corneous.
horridus: Provided with spines or barbs; rough; forbidding.
host: A plant that supports another; a tree on which epiphytes grow.
humidity: Moisture; dampness. Absolute humidity indicates the amount of vapor actually present in the air. Relative humidity is the ratio of the quantity of vapor actually present to the greatest amount possible at the given temperature.
humus: Decomposing organic matter in the soil.
hyaline: Thin and translucent, but rarely transparent.
hybrid: the result of a cross between differing plants or taxonomic units
hybrid vigor: See heterosis.
hybridization: The crossing of different taxa.
hygroscope: An instrument that shows variations in the moisture of the atmosphere. **hygroscopic:** Capable of absorbing moisture from the atmosphere.
hypanthium: a fleshy, cup-shaped part situated above or below the ovary and bearing the sepals, petals, and stamens. See *Alcantarea*
hyper-: Above; over.
hypo-: Below; under.
hypogynous flower: A flower with petals and sepals attached under the ovary .Therefore ovary superior. One of the characteristics for most of the *Tillandsioideae*
hypophyllous: On the undersurface of the leaf.
hypothesis: An assumption based on available evidence but not proven beyond doubt.
hystrix: Porcupine-like; bristly.

I

icon: Illustration

IDENTIFICATION : of species is based mainly on a Holotype herbarium specimen and a protologue. Derek Butcher has most protologues on record and can be supplied on request. If you are serious in trying to identify a species App 3 and 3a may help

igneous: Red; fiery in color.

ignotus: unknown

illustris: Brilliant; lustrous.

imbricate: Overlapping, like the shingles of a roof **does not mean** bracts appressed to the peduncle

immersed: Referring to a part when enclosed (at least partially) by another structure.

impendens: overhanging

imperfect flower: A flower with either stamens or pistils, but not both; flower with only one sex . eg. *Hechtia* and some *Catopsis*

imperialis: Regal: imperial.

impressed: Deeply nerved; furrowed and grooved as if by pressure.

inbreeding: Breeding through successive generations of the same stock.

incanus: Hoary, white

incarnatus: flesh coloured

inchoatus: incomplete, unfinished

incised: Cut; slashed irregularly, more or less deeply and sharply.

included: Not protruded, as stamens not projecting from the corolla.

incola: dweller

incomplete flower: Lacks one or more of the four parts (sepals, petals, stamens, pistils) usually making up a complete flower.

incrassate: Thickened.

incurvate: Incurved; curved inward.

incurvus: Crooked; bent; curved inward.

indefinite: Numerous, usually more than 20; any number above a readily obtainable estimate; an indeterminate inflorescence.

indehiscent: Not regularly opening as a seed pod or anther; remaining closed at maturity

indeterminate: Growing on from the apex, particularly the main axis. An inflorescence that continues to develop new flowers at the tip for an indefinite length of time.

indigen: A plant that is native or indigenous to a certain locality.

indigenous: Native to a certain country; not imported.

indument: A covering of hair.

indumentum: The covering of leaves and bracts; in bromeliads this consists of trichomes.

induplicate: With margins folded inwardly.

indurate: Hard or hardened.

inermis: Unarmed; without thorns or spines.

inferior: Beneath; lower; below. As an inferior ovary, one that is below the calyx.

inflata: Swollen; inflated.

inflexed: Bent or turned abruptly inwards or downwards.

inflorescence: Wrongly used as the part of the plant that holds or contains the flower or flower cluster; the mode of flowering **Should be** all organs for displaying flowers including peduncle. See Fig 4 & 4a

infra-: Below; beneath.

infructescence: A fruit-bearing shoot.

infundibuliform: In the shape of a funnel.

inserted: Attached, as a stamen growing on the corolla.

insignis: Admirable; distinguished; noble.

integrifolia: With entire leaves.

integument: An outer covering, such as a skin.

inter-: Between, particularly between closely related parts or organs.

intergeneric hybrids: Hybrids between species of two or more genera.

intermedia: Intermediate in color, form, or habit: halfway.

internode: The part or space of a stem between two nodes or joints.

interspecific: Between or among two or more species pertaining to hybrids.

intra-: Within (within a species).

introduction: The bringing of an exotic plant by man or other agency from its native habitat to another

area.

introrse: Turned or faced inward or towards the axis.

intumescens: Swollen; puffed up; tumid.

intumescence: A protuberance formed by abnormal growth at the surface of an organ or part.

inverted: Turned over; end-for-end; top side down.

involucrata: Circle or collection of bracts.

involucre: A whorl of small leaves or bracts situated close underneath a flower or flower cluster.

involute: Referring to a flat body, such as a leaf, that is rolled inward or toward the upperside.

-ioides: Resembling or like.

ionantha: Violet-flowered.(wine coloured)

iridiflora: With flowers like those of an iris.

iridifolia: With iris-like leaves.

irregular: A vague term used to show inequality in the size, form, or union of similar parts

iso-: Equal.

isomorphic: Referring to parts or individuals when identical in shape or form.

isonym:. The same name based on the same type, published independently at different times by different authors. Note: only the earliest isonym has nomenclatural status

isosyntype: A duplicate of a syntype

isotype: A duplicate specimen of the holotype

ixioides: Resembling plants of the iris genus *Ixia* (*Iridaceae*).

J

jointed: With nodes or points of real or apparent articulation.

jucunda: Delightful.

juncea: Resembling a reed.

juncifolius: Rush-leaved.

juvenile leaves: The leaves appearing immediately after the seedling leaves, frequently differing in form and size from the adult leaves.

juxta: near, nearby

K

keel: A ridge on the outside of a fold; the longitudinal ridge on a leaf.

kermesiana: Crimson.

key: A table in which the salient characteristics of a group of plants (or species, genera, etc.) are arranged so as to facilitate the determination of their names and/or taxonomic relationships.

kinen: A plant-growth substance.

L

laccatus: Looking as if varnished.

lacerate: Torn; irregularly cleft or cut.

laciniate: Margins cut into narrow, more or less equal segments.

laevis: Smooth; having a smooth, polished surface.

lamella: A thin, flat plate or laterally flattened ridge.

lamina: The blade of a leaf or petal or other expanded part or body.

laminata: Covered with scales or plates.

lampropoda: Shiny.

lanate: Woolly; covered with something resembling wool.

lanceolate: Lance-shaped; much longer than broad; widening above the base and tapering to the apex.

lanolin: Wool fat or grease.

lanuginosus: Covered with down or soft hair; woolly.

lateral: Arising from, or at the side of, an axis or structure.

lateral inflorescence: One that comes from the side instead of the center.

lateralis: From the side; on or at the side.

lath house: A slat house; a lattice-work structure providing filtered light for plants.

latifolia: Broad-leaved.

lax: Loose; distant. The term is applied to the inflorescence and describes the degree of closeness of the flowers. A lax inflorescence would indicate that the flowers are not touching one another.

laxiflora: Loose-flowered.

leaching: Generally used to indicate the washing out of solutes in the soil by watering.

lead: A young, new vegetative growth.

leaf: outlines, tips, margins see Fig 5, 5a, 5b. Can also apply to other plant parts

leaf -blade: The upper portion of the leaf; beyond the rosette in most species.

leaf-sheath: The lower portion of the leaf; that part forming the rosette; the basal and wider portion of the leaf.

leathery: See cori-.

lectotype: A specimen or illustration designated from the original material as the nomenclatural type if no holotype was indicated at the time of publication, or if it is missing, or if it is found to belong to more than one taxon .

leopardinum: Spotted like a leopard.

lepidote: Surfaced with small scales (trichomes), a key characteristic of the family *Bromeliaceae*. The scales may be fine and scarcely visible to the naked eye, or they may be coarse and spreading and highly visible.

lepto-: Thin; slender; narrow.

leptostachya: Thin stemmed.

leuco-: White; pale.

leucolepis: Covered with a white scurf or scales.

leucophylla: White-leaved.

ligulate: Shaped like a strap; ligulate.

ligule: A strap-shaped organ or body; particularly a strap-shaped corolla; a projection from the top of a sheath.

liguliform: Having the form of a ligule or thin appendage.

limb: An expanded part; as in the expanded portion of a petal above a petiole-like claw. **limbate:** Having a distinct border of some other color.

Lindmanioideae One of the 8 subfamilies of the *Bromeliaceae*. Type *Lindmania*

line: Equals approx 2.1mm

linear: Long and narrow; the sides parallel or nearly so.

lineate: Lined; marked by thin parallel lines.

lineata: With thin lines or stripes.

lingulata: Tongue-shaped.

lithophyte: A plant that grows on rocks but obtains its nourishment from the atmosphere and forms accumulated humms in the fissures.

littoral: Pertaining to the seashore; coastal.

lobe: Any part or segment of an organ; specifically a part of the petal, calyx or leaf that represents a division in the middle.

lobule: A small lobe.

locule: Compartment or cell of a pistil or anther.

loculicidal: Dehiscence between the partitions into the cavity.

loliacea: Resembling the grass *lolium*.

longifolius: Long-leaved.

longipes: Long-footed; long-stalked.

longipetala: With long petals.

loratus: ligulate

lucida: Shining; bright.

luteus: Yellow.

M

m: Meter, a measure of length equal to 39.37 inches or 10 decimeters.

macr-, macro-: Long; large; great.

macranthus: Large-flowered.

macrodontes: With large teeth.

macronutrients: The 6 essential mineral elements (Ca, K, Mg, N, P, and S) which plants require in relatively large quantities compared to micronutrients.

macrophylla: Large-leaved.

maculate: Spotted; blotched; marked with spots.

magnifica: Showy; magnificent; of splendid appearance.

maidifolia: Corn-like leaves.

major: Greater; larger.

marcescent: Withering, but not falling away.

margin: Edge of leaf, sepal, petal etc

marginata: Furnished with a margin or border of distinct coloration.

marginata : as above, when used for cultivars

maritimus: Of the sea or shore.

maxima: The largest or greatest of its kind.

mealy: Refers to a surface that is covered with small particles.

-media: The middle; intermediate.

medial: Refers to the center of a structure.

medio-picta: a form of variegation where the center of the leaf is a whitish colour

medium: A potting mixture of any kind; also a nutrient substance, either liquid or jelly-like, used in the germination of certain seeds (pl. media).

medusae: Refers to Medusa, one of the Gorgons, whose hair was changed into serpents.

mega-, megalo-: Big; great; large.

mel-, melan-, melano-: Black; very dark.

melandonta: Black-spined; with black teeth.

meleagris: Speckled, resembling the spots on a Guinea hen.

membranaceous: Skin-like; thin, pliable and often transparent.

mericlone: A plant that is the result of meristeming.

meridionalis: South or southern.

meristem: The growing tissue made up of actively dividing cells, particularly at the tips of roots and at the apex of vegetative or floral shoots.

mesic: Moist; without periods of drought.

meso-: Middle.

mesophyll: Vital tissue of the leaf.

mesophyte: A plant with optimum growth within the mean temperature and moisture gradients; i.e., in places without dry seasons.

mesophytic: Growing under medium moisture conditions.

metabolism: The chemical changes in living cells by which the energy is provided for the vital processes and new material is assimilated to repair the waste.

micans: Glittering; sparking; mica-like.

micrantha: Small-flowered.

micro-: Small.

microcalyx: With a small calyx.

microclimate: The temperature, light conditions, and humidity found in one small area; e.g., in one's garden.

microlepis: Covered with small scale.

micronutrients: 7 essential elements (B, Cl, Cu, Fe, Mn, Mo, and Zn) which plants require in relatively small quantities compared to the macronutrients

microps: Small.

miniata: Vermillion; cinnabar-red; flame-scarlet.

minima: Least; smallest.

minor: Smaller.

minuta: Very small; minute.

mirabilis: Wonderful; marvelous.

mitis: Mild; gentle.

mm: Millimeter; a measure of length equal to 0.03937 of an inch or 1/25 of an inch. **monadelphia:** With filaments and stamens united in one set or bundle.

mono-: One; single.

monocarp: A plant that flowers or fruits but once with no offsetting. Better term Hapaxanth.

monoclinous: Hermaphroditic; perfect; the two sexes in the same flower.

monocotyledon: One of the two classes of angiospermous (seeds in a closed ovary) plants, characterized in the main by producing seeds of a single cotyledon or seed leaf. ie. *Bromeliaceae*

monoecious: The male and female flowers are on the same individual plant. As in most *Bromeliaceae*

monograph: A treatise on a particular subject, such as one genus or family.

monopodium: A main or primary axis that continues its original line of growth, giving off successive axes or lateral branches.

monostachia: Having one spike.

monostichous: In one row.

monospecific: A family or genus with a single species.

monotypic: Represented by a single member.

monstrosity: An abnormal type of development; a deformity .

montana: Pertaining to mountains; growing on mountains.

morphology: The study of the form and structure of plants without reference to the functional processes.

mucilagenous: Moist and viscid; sticky.

mucro: A short and sharp abrupt tip.

mucronate: Having an abruptly projecting point, as a leaf; an apex having a short tooth-like tip.

mucronulate: Minutely mucronate.

mule: An old designation for a cross, particularly between different species; usually denotes sterility.

multi-: Many.

multicaulis: With many stems.

multigeneric: Referring to hybrids containing several genera.

musaica: With mottling resembling a mosaic.

mutable: Variable in form or color.

Mutant: an individual produced as a result of mutation

Mutation: a spontaneous or engineered change in the genotype (genetic make-up of an individual), which may alter the phenotype (the sum total of all the characteristics of an individual plant)
(Comment - in other words what the genotype actually looks like)

mutinous: Without a point; blunt.

myosura: Like the tail of a mouse.

myri-: Countless; numerous.

myrmecophiles: Those plants in which the basal portion of the rosette is swollen into a hollow - chambered bulb that is usually infested with ants.

N

naked: Without covering; naked petals are those without nectar scales at their base.

See glabrous.

nanus: Dwarf.

nascent: Becoming formed; arising.

natural hybrid: The crossing of two different species because of proximity in a certain locality .

naturalization: The process of adapting to a new environment; successfully competing with natives without special aid or protection.

navicular: Boat-shaped; cymbiform.

Navioideae One of the 8 subfamilies of the *Bromeliaceae*. Type *Navia*

necrotic: The condition of cells and tissues killed through disease or injury.

nectar: The sugary secretion of a plant which attracts the insects or birds that pollinate the flower.

nectariferous: Nectar-bearing.

nectar scales: Spurs or pockets at the base of the petals that contain nectar

nectary: The gland or tissue that secretes the nectar.

memoral: Growing in shady places, in woods, or in groves.

neo-: New.

neoteny: The condition of having the period of immaturity indefinitely prolonged.

neotropical: Pertaining to the tropical regions of South America, the West Indies, Central America, and parts of North America.

neotype. A specimen or illustration selected to serve as nomenclatural type if no original material is extant or as long as it is missing

nephroid: Kidney-shaped; reniforml.

nerve: A slender rib or vein, particularly if not branched. Nerved means that the veins are plainly showing.

netted: Marked with reticulated lines or nerves that project somewhat above the surface. **neuter:** Neutral; with no functional stamens or pistils; with no parts functionally fertile.

nid: Nest.

nidularioides: Nest-like.

nidulate: Nested; as if like or borne in a nidus or nest.

nigra-: Black.

nigrescent: Blackish; becoming black; almost black.

nitida: Shining; lustrous.

nobles: Remarkable for its fine qualities; noble; eminent.

node: A joint where a leaf is borne or may be borne; any swollen or knob-like structure. **nodose:** Knotty or knobby.

nodule: A swelling caused by excessive development of tissue.

nodulose: Having nodules or small knots or knobs.

nomenclature: Naming of groups of organisms in conformity with an international code designed for precision and universal comprehension.

nomen nudum (nom. nud.). A name of a new taxon published without a description or diagnosis or reference to a description or diagnosis

notate: Spotted; marked by lines.

Novar: a term used where a cultivar is registered as a variegated plant and 'loses' its variegation

nucleus: The kernel of a seed; the central denser structure of a cell containing the chromosomes.

nudicaulis: Bare-stemmed.

nutans: Nodding, generally referring to the inflorescence.

nutant: Bending downwardly; drooping.

nutrient: The chemical or substance needed for growth.

nutrient solution: A liquid solution of chemicals or organic materials used for growth or germination.

nutrition: The process by which nutrients are absorbed by a plant and converted into living tissue.

0

ob-: Inversely or oppositely.

obconic: Inversely conical; cone attached at the small point.

oblanceolate: Inversely lanceolate; with the broadest part of a lanceolate body away from the point of attachment.

oblique: Slanting; having unequal sides; not in symmetry .

oblong: Longer than broad, and with the sides nearly or quite parallel most of their length.

obovate: Inverted ovate; egg-shaped with the narrow end at the base.

obovoid: An ovoid body attached at the smaller end; inversely ovoid.

obsolescent: Nearly obsolete; becoming rudimentary or imperfectly developed.

obsolete: Not evident or apparent; rudimentary; imperfectly developed.

obtuse: Blunt; rounded at the tip

ocellated: Eyed; a circular spot of one color inside a larger spot or area of another color.

odorata: Odorous; fragrant.

offset: A short lateral shoot that may produce another plant; an offshoot; a pup

-oideae: Ending added to the stem of a subfamily within a plant family, i.e., *Bromelioideae*.

-oides: Resembling; like.

oleaginous: Fleshy and oily.

olens: Odoriferous.

olig-: Few.

oligantha: Few-flowered.

oligotroph: An organism adapted to grow in nutrient-deficient habitats. eg. some *Tillandsias*

olivaceous: Olive green; resembling an olive.

opaque: Not transparent; dark; obtuse.

orbicular: Having a rounded shape; circular.

orbicularis: Disc-shaped; round.

order: A group of related families or a single family when no affinity with other families at the same level is shown; a group between genus (tribe, suborder) and class.

organogenesis: The origin and development of organs in plants and animals.

ornate: Most showy; adorned; embellished.

ornithophily: Pollination by birds eg Many *Bromeliaceae*

orth-: Straight; erect; upright.

osmosis: The tendency of water to diffuse through a semipermeable membrane, such as a cell wall, from a lower to a higher concentration of water.

osmunda: The fibrous roots of osmunda fern used as a growing medium for epiphytes.

-osus: Abundance or marked development.

ovary: The part of the pistil that contains the ovules or young seeds (Appendix VI).

ovate: With an outline like that of a hen's egg cut in two lengthwise, the broader end downward.

ovoid: Egg-shaped; the larger end toward the stem or axis.

ovule: The body in the ovary which after fertilization becomes the seed.

P

paleacea: Covered with chaff; similar to the bracts in grass flowers.

pallidiflora: Pale-flowered.

panicle: A loosely arranged branched inflorescence blooming from the center on the lower branches to the outer ends or top.

panicle with side branches 1st order example *Tillandsia grandis*

panicle with side branches up to 2nd order example *Tillandsia extensa*

paniculate: An inflorescence that is compound; i.e., consisting of more than a single spike or branch

paniculigera: Bearing a panicle.

pantropical: Widely spread through the tropics.

papillate: Referring to an epidermal cell that forms a conical protuberance like a minute hair.

papilliform: Having the form of a small nipple.

pappus: the parachute type end of some seeds

papyraceous: Like paper; the consistency of papyrus.

PAR: Acronym for photosynthetically active radiation; that spectrum of light which is used in photosynthesis.

parameter: A measure or quantity fixed for a particular case but potentially variable in other cases.

parasite: A plant that grows and lives on another organism, deriving its sustenance from this organism.

paratype. A specimen cited in the protologue that is neither the holotype nor an isotype, nor one of the syntypes if two or more specimens were simultaneously designated as types .

parenchyma: The fundamental (soft) cellular tissue of plants, as in the softer parts or leaves, the pith of stems, etc.

parted: Cleft or cut not quite to the base.

partial: Of secondary importance or rank.

parviflorus: Small-flowered.

patent: Expanded or spreading widely; an open habit of growth.

pathogen: A disease-producing organism.

pathological: Diseased.

pathology: The science dealing with diseases, their causes, results, and control.

patula: Spread out; broad; flat.

pauciflora: Few-flowered.

peat: Any mass of semi-carbonized vegetable tissue formed by partial decomposition in water of various plants, especially species of the moss *Sphagnum*.

pectinata: Shaped like a comb, with narrow parallel divisions or parts.

pedicel: The support or stem of a single flower; stem of one flower in a cluster.

pedicellate: Having a pedicel

peduncle: Wrongly used for stem of a flower cluster. **should be** the stalk of the inflorescence

peduncle bracts: bracts on the peduncle

pellucid: Wholly or partially transparent; clear.

peltate: Attached to its stalk inside the margin; peltate leaves are usually shield-shaped. **pendent:** Hanging down from its support.

pendula: Hanging; pendulous.

penduliflora: Pendulous-flowered.

pendulous: Hanging or drooping.

perennial: Having a life cycle of more than two seasons.

perfect: Referring to a flower that has both stamens and pistils; i.e., both sexual organs

peri-: Around.

perianth: The floral envelope taken as a whole, consisting of the calyx (sepals) and corolla (petals).

pericarp: The wall of the ripened ovary.

perigynous: Referring to flower parts borne or arising from around the ovary .

perlite: A heat-expanded igneous glassy rock used in soil mixes to lighten them.

permutate: To change; to arrange in a different form.

persistent: Remaining attached; not falling off.

petal: One of the separate leaves of the corolla or inner portion of the perianth. In bromeliads there are three petals

petaloid: Petal-like; of color and shape resembling a petal. Often used for sepals and bracts.

petal appendages or scales: The tiny flaps of tissue present on the inner surface of each petal.

petiole: The stalk or stem of a leaf.

petri dish: A small shallow dish of thin glass with a loosely fitting, overlapping cover, used for seed culture.

pH: A measurement for the degree of acids or alkalis present. Expressed as the negative logarithm (base 10) of the concentration of hydrogen ions; pH = 7 is neutral, values below 7 are acid, and values above 7 are alkaline.

phanerogams: That division of the plant kingdom which produces flowers and seeds.

phanerophleba: Conspicuously veined.

phloem: A complex tissue that conducts food materials from the leaves down the stem.

photoperiodism: The response of a plant to the daily duration of daylight, correlated to seasonal changes.

photosynthesis: The process by which plants capture the sun's energy and convert it into chemical energy which they use in their metabolism.

phototropism: Growth towards a light source

phyllode: A flat expanded petiole replacing the blade of a foliage leaf and fulfilling the same functions.

phyll-, -phyllus: Referring to leaves; leaf.

phylogenetic: Pertaining to the evolutionary history of an animal or vegetable type; the evolution of a genetically related group of organisms, as a species, family, or order. **phylogeny:** Ancestral history of a kind as deduced from its component individuals.

phylum: A primary division of the animal or vegetable kingdom, so-called because the members are assumed to have a common descent.

phytotelm: As with many Bromeliaceae – leaves inflated at base and impounding water

pictus: Painted; ornamental.

pineapple: The popular name for *Ananas* the edible fruit.

pine bark: see also fir bark

pinnate: Formed like a feather, with the leaflets of a compound leaf placed on either side of the rachis. Sometimes used to describe the architecture of the fertile part of the inflorescence which is incorrect

pistil: The ovule-bearing and seed-bearing organ. consisting of ovary , style, and stigma

pistillate: Of a flower having pistils and no stamens; female.

Pitcairnioideae: One of the 8 subfamilies of the *Bromeliaceae*

placenta: The part in the ovary where the ovules are attached.

platy-: Broad.

platynema: Wide thread, referring to the broad filament of the stamen.

platyphylla: With wide leaves.

platystachys: Wide spike.

-plenus: Double or full.

plicate: Folded like a fan; marked with parallel ridges. Applied to the filament (stalks holding the stamens) when these are much folded.

plumosa: Like a plume; feathery.

plumose: With fine hairs; feather-like. Plumose-appendaged applies to seeds of the subfamily *Tillandsioideae* in which each seed has appendages of many fine, long hairs.

pluvial: Relative to the incidence of rainfall, especially when alternating with a comparatively dry period; also very rainy, as in pluvial forests.

Poales: The phylogeny order to which *Bromeliaceae* belongs with many other grasses

pod: A dehiscent fruit containing the seed.

polita: Polished.

pollen: Spores or grains borne by the anther containing the male element

pollen tube: an outgrowth from a germinating pollen grain which conveys the sperm down the style to an ovule.

pollination: The mechanical or physical operation of transferring pollen from stamen to pistil.

polster: Cushion.

poly-: Numerous or many.

polyantha: Many flowered.

polycephala: Many headed.

polyethylene: A nearly transparent plastic material that can be used as a temporary greenhouse covering or as inside insulation.

polygamous: Bearing imperfect and hermaphrodite flowers on the same or on different plants of the same species.

polymorphic: Having or assuming several distinct forms: a variation within a species when involving the appearance of different forms.

polypetalous: Petals separate; not connected to each other.

polyploid: An organism with more than twice the basic chromosome number for the species.

polystachia: With many spikes.

polystichous: Arranged in several rows one above the other eg *Tillandsia pentasticha*; Rare in Bromeliaceae. See spirostichous

posterior: Usually incorrectly applied to sepals as at or toward the back; opposite to the front; near or toward the main axis but **should be** adaxial, but inapplicable in long and/or twisted pedicels

potsherd: A piece or fragment of a broken earthen pot often used to increase drainage in a pot.

poultry grit: Finely crushed rock used by some growers in their potting mixture; sometimes used alone with added nutrients.

prickle: A small and weak spine-like body borne irregularly on the outer surface of a plant.

primary bract: A structure at the base of each branch, present only in a compound inflorescence; often leaf-like but may be colored.

primitive: Refers to the earliest form of a plant family.

primordium: The first recognizable, histologically undifferentiated stage in the development of an organ.

princeps: Of princely quality; distinguished.

procerus: Tall.

prodigiosa: Prodigious; great.

proliferation: Producing offsets; growing by multiple division.

prophyllate: Having a bracteole.

protandrous: stamens mature before stigma

protologue. Everything associated with a name at its valid publication, i.e. description or diagnosis, illustrations, references, synonymy, geographical data, citation of specimens, discussion, and comments.

prototype: The ancestral form.

proximal: The part nearest the axis.

pruinosa: Covered with a fine white, frost-like powdery layer on bloom; excessively glaucous.

pseudo-: False; spurious.

pseudobulb: A thickened portion of a stem resembling a bulb but borne above the ground. Related more to orchids. Also refers to the hollow inflated bases of bromeliads. **pseudoscaposus:** Having a false scape.

psittacina: Parrot-like.

puberulent: Somewhat or minutely pubescent with the hairs very fine and soft.

pubescent: Covered with short, soft hairs; downy.

pulchella: Pretty; beautiful.

pulvinata: Cushioned; cushion-like.

pulviniform: In the form of a cushion.

pumilus: Dwarf; low growing.

punctata: Spotted; marked with dots.

punctissima: Minutely dotted; very spotted.

punctulata: Minutely dotted; spotted.

pungent: Piercing or sharp-pointed.

pungens: With a sharp, stiff point.

punicea: Crimson reddish-purple.

pup: An offset; an offshoot.

pure: Of a community, consisting of a particular species almost to the total exclusion of other species.

purpureus: Purple.

pusilla: Very small; insignificant.

Puyoideae One of the 8 subfamilies of the *Bromeliaceae*. Type *Puya*

pyramidal: Of conical shape; formed like a pyramid.

pyramidalis: Like a pyramid in shape.

Q

quadri-: Four (quadricolor = four-colored.)

quadripinnate: refers to leaves not a branched inflorescence **better to use** panicle with side branches up to third order, thrice branched or 3 times branched

quilling: A condition in certain thin-leaved bromeliads in which the center leaves form a tight tube, the leaves adhering to each other by means of a glutinous substance. Sometimes due to lack of adequate moisture.

quill-like: More or less tapering; forming a tight, elongated shape.

R

raceme: A simple inflorescence in which the elongated axis bears flowers on short stems (pedicels) in succession toward the axis. Examples *Neoregelia carolinae*, *Aechmea racinae*, and even *Vriesea splendens* (check for pedicels!)

racemiform: In the shape of a raceme.

racemose: Having a raceme or growing in the form of one.

racemosus: With flowers borne in racemes; resembling a raceme.

rachilla: axis or rachis of a branch of an inflorescence

rachis (rhachis): Axis bearing flowers or leaflets; the central elongated axis of an inflorescence

radians: Radiating outward from a common center.

radiate: Spreading from a common center.

radical: Of or arising from the root or base of the stem.

radicle: The lower part of the embryo below the cotyledons; the primary root.

rainforest: A moist, wet, closed plant community dominated by a canopy of dense lianas and epiphytes and a lower assemblage of smaller trees, shrubs, herbs, and ferns.

ramosa: Branched.

ramulus: A secondary or tertiary branch.

ranks: Rows, as the arrangement of flowers on an inflorescence.

raphides: Needle-like crystals, usually of calcium oxalate, which occur in the cells of many plants.

rariflora: Few-flowered.

reciprocal cross: A repeat of a cross in which the original roles of the male and female parents are reversed.

reclinata: Bent backward; reclining.

recondite: Concealed; difficult to make out; not easily recognized.

rectiflora: With upright flowers.

recumbent: Leaning or reposing on the ground.

recurvata: With recurved leaves.

recurved: Bent or curved downward or backward.

reduncate: Turned or bending backwardly.

reflexed: Abruptly recurved or bent downward or backward.

regalis: Regal; royal.

regeneration: The ability of an organism to repair or replace a part lost or removed to produce again a whole individual.

regina: Of the queen; queenly.

registration: Making a record; i.e., the recording of the name and parentage of a new bromeliad hybrid according to the rules of the ICNCP as interpreted by the Registrar of the Bromeliad Society International.

regression: The tendency of the progeny to revert back to the condition typical of the species. regular: Uniform or symmetrical in shape or structure.

regular flowers: Flowers with the parts in each series or set alike; as stamens all like each other; petals all like each other.

remote: Separated by spaces longer than common; scattered

remotiflora: Flowers widely separated.

reniform: Kidney-shaped.

repand: Having a wavy surface or margin; undulate.

repent: Creeping; prostrate; rooting at the nodes.

replicate: Doubled-back; folded.

resupinate: Turned completely around so as to appear upside down.

reticulate: In the form of a network; having veins, fibers, or lines crossing like those on a leaf.

retorta: Twisted back.

retroflexa: Bent backward; reflexed.

retorse: Directed backwards or bent back; retroverse.

retuse: Having the apex rounded or obtuse, with a slight notch, as a leaf.

reversion: A change backward to an earlier condition.

revoluta: Rolled backward from the margin or apex.

revolute: Rolled backward or downward, as the margins or tips of some leaves.

rhachis: See rachis.

rhizomatous: With underground stem.

rhizome: An underground root-bearing stem, the apex of which progressively sends up leafy shoots.

rhombic: Shaped like a top; an oblique-angled equilateral figure.

ribbing: a term given to intermittent raised longitudinal ribs on leaves generally seen in the spineless *Aechmea fasciata*

rigida: Stiff; unbending; rigid.

ringens: Gaping; open-mouthed.

riparia: Of or located on the bank of a river.

robustus: Of sturdy habit.

rogue: Referring to a progeny displaying features not normal to the average rosette: A circular cluster of leaves radiating from a crown or very short internode.

roseum: Rose-colored; delicate pink.

rostrate: Having a beak.

rostratus: Having a projection like the beak of a bird.

rosulate: In the form of a rosette.

rub-, rube-, rubr-, rubri-: Referring to the color red.

rubig: Referring to rust color.

rudimentary: Arrested in an early stage of development.

rufescent: Reddish or bronze in color.

rufus: Reddish.

rugose: Wrinkled; having the veinlets sunken and the spaces between elevated. **rugulose:** Finely wrinkled.

runner: A slender stolon-like stem rooting at the apex and producing a new plant. **rupestris:** Growing in rocky places; rock-loving.

rupicolous: Living among or growing on rocks.

rutilans: Becoming reddish in color.

S

saccate: Forming a pouch or sac.

sacciform: Bag-shaped; sac-shaped.

sagenarius: Like a fishnet.

sagittata: Shaped like an arrowhead, with the basal lobes directed downward.

sanguinea: Blood-red; bloody.

sanguinolenta: Bloody; having blood-red spots.

sarmentosa: Bearing runners; producing slender prostrate branches.

sativa: Sown; cultivated.

savanna: An open grassy prairie with brush or scattered trees.

saxatilis: Found among the rocks.

saxicola: Growing on rocks.

scabrous: Rough; feeling roughish or gritty to the touch.

scale: Minute absorbing trichomes or hairs through which many bromeliads obtain their water and nutrients. Also, one of a number of kinds of minute sucking insects that attack bromeliads, the adult scales being flattened, disk-like, and immobile.

scalloped: With rounded teeth.

scandent: Climbing.

scalaris: Ladder-like.

scape: wrongly said to be the stem of the inflorescence usually extending beyond the leaves. It may bear bracts but no foliage leaves and may be one or many flowered. In reality refers to a leafless peduncle as in Amaryllidaceae. **Better to use** peduncle

scape bracts: wrongly said to be the structures borne on the scape; may be leaf-like or colored. **Better to use** peduncle bracts

scapose: Bearing or resembling a scape.

scaposus: Bearing or resembling a scape.

scariosa: Thin; dry; membranous in texture.

sceptriformis: In the shape of a wand or scepter .

sciophyte: A plant adapted to conditions of constant shade.

scleroid: Of hard texture.

scorpioid: Said of a cluster in which the flowers are two-ranked and borne alternately at the right and the left.

scurf: The hairs of an epidermis when stellate or scale-like.

secund: One-sided; borne along one side of an axis

secunda: Side-flowering.

seed: The ripened ovule, consisting of the embryo and its covering with a supply of food.

seedling: A young plant raised from seed usually from the time it produces its first leaves and roots until it reaches maturity.

seed pod: The fruit of the ripened ovary after fertilization.

segment: One of the parts of a leaf, petal, calyx or perianth that is divided but not definitely compound.

selection: In agriculture, breeding through the selection of parents with outstanding characteristics for the type, particularly in the development of so-called "improved species".

self: To pollinate a flower by its own pollen or by pollen from another flower of the same plant. self-fertilization: The transference of pollen from an anther to the stigma of the same flower.

semi-: Half.

sepal: One of the separate parts of a calyx; the flower parts that surround or contain the petals. In bromeliads there are three sepals

sepaloid: Resembling a sepal.

septate: Partitioned; divided by partitions.

septicidal: Dehiscence along or in partitions, not directly into the locule.

septum: Any dividing wall or partition.

serra: Saw-edged.

serrata, serrate: Toothed like a saw; having sharp teeth pointing forward

serrulate: Finely serrate or saw-edged.

sessile: Attached directly at the base; not stalked. Flower rests directly on the stem

sessiliflora: With a flower having no stalk.

seta: A bristle.

setacea: Bristle-like or bristle-shaped.

setaceous: Bristle-like; of a surface covered with bristle-like hair.

setiform: Like a bristle.

setigera: Bristly; bristle-bearing.

setose: Bristly; setaceous.

sheath: Any protective leaf-like structure that envelops the stem; the flattened covering that protects the developing inflorescence.

shoot: A new growth arising from the root of the old plant.

sigmoid: S-shaped; curved in two directions.

silvestris: Growing in woods.

simple: Of one piece; not compound; a single unbranched inflorescence; an inflorescence with a single flower spike.

simplex: Unbranched; undivided; simple.

simulans: Resembling; similar to.

simulator: That which assumes the appearance of another.

sinuate: Wavy; having leaves with wavy margins or with strong indentation; sinuous.

slow release fertilizer: A chemical, in pellet form, placed in the growing medium and exuding nutrients over a period of time.

smooth: A surface devoid of hair; not rough.

socialis: Forming colonies.

solitary: Borne singly or alone, as a solitary flower.

sordid: Dull-colored; dirty .

spanish moss: *Tillandsia usneoides*

sparse: Scattered distribution; occurring in a number of unconnected localities.

spathacea: Provided with a spathe.

spathe: A large, stiff, leathery bract or pair of bracts subtending or enclosing an inflorescence.

spatulate: Shaped like a spatula; in the form of a spoon.

speciation: The evolutionary process by which species are formed; the process by which variations become fixed.

species: A unit in classification; a group of organisms that have in common one or more characteristics which definitely separate it from any other group.

specific: Of or pertaining to a certain species.

specimen: An individual exemplifying a group; a specimen plant is one that is a noteworthy example of cultivation to an unusually high degree.

speciosa: Handsome; showy; fair.

spectabilis: Spectacular; deserving notice because of its intrinsic worth; showy .

sphacelata: Dead; withered.

sphaerocephala: With a globose head.

sphaerica: Spherical.

sphagnum: A soft moss of the genus *Sphagnum* found chiefly on the surface of bogs; used dried or alive in potting.

spheroidal: A solid that is nearly spherical.

spicate: Having the form of spikes.

spiciform: In the form of a spike.

spiculosa: Covered with fine, fleshy, erect points.

spike: An unbranched inflorescence with stalkless (sessile) flowers. Examples *Tillandsia xiphioides*, *Aechmea gamosepala*

spindle-shaped: Fusiform; widest at the middle and tapering both ways.

spine: A sharp-pointed hard or woody outgrowth on a plant.

spinescent: A leaf terminating in a spine-like point; more or less spiny.

spinose: Bearing spines or thorns.

spinulosa: Having small spines; spinulose.

spiralis: Having flowers arranged in a spiral.

spirostichous: leaf or flower arrangement when inserted spirally. More common than polystichous

splendens: Splendid; outstanding; brilliant.

sporadic: Scattered; of a distribution when not continuous.

spore: A simple reproductive body; usually composed of a single detached cell and containing no embryo.

sport: an apparent mutation which has occurred on part of a plant (Comment - eg variegated offset)

spp: Abbreviation for the plural of species.

sprawling: Leaning upon or lying on the ground or some object.

spreading: Of a structure when extending outwardly or transversely.

spur: An elongated structure that may be part of a petal or sepal.

squami-: Scale; hence, covered by scales.

squamosa: Full of scales.

squarrosus: Covered with scurf, with parts spreading or recurved at ends.

ssp: Abbreviation for subspecies.

-stachys: Spike.

stalk: The supporting stem of an organ, such as petiole, peduncle, pedicel, filament, or stipe.

stamen: The pollen-bearing male organ of a flower. In bromeliads there are usually six stamens consisting of the anther at the top supported by a special stalk called a filament.

staminate: Having stamens and no pistils; male.

staminea: Bearing prominent stamens.

staminode: A sterile or abortive stamen without an anther.

status novus (stat. nov.). Assignment of a taxon to a different rank within the taxonomic hierarchy, e.g. when an infraspecific taxon is raised to the rank of species or the inverse change occurs .

stellate: Resembling a star; star-like.

stem: The main axis of a plant; the leaf-bearing and flower-bearing as distinguished from the root-bearing axis. see Fig 6

steno-: Narrow.

stenophylla: With narrow leaves.

stenostachya: With narrow spikes.

stenotopic: The distribution of a species within a restricted geographic range.

sterile: Barren; imperfect. A sterile flower is one without pistils.

stigma: The top of the female portion of a flower that receives pollen from the anther

stigmatic: Pertaining to the stigma.

stipe: In general, a supporting structure or stalk. Specifically the sterile part of the branch of a panicle.

stipitate: Having, or borne on, a stipe.

stolon: A shoot that bends to the ground and takes root; more commonly, a horizontal stem at or below the surface of the ground that gives rise to a new plant at its tip. **stoloniferous:** Sending out or propagating itself by runners or stolons which are disposed to root.

stoloniform: In the shape of a stolon.

stoma: Any of various small apertures, especially a minute orifice in the leaves; a breathing pore (pl. stomata).

stramineous: Straw-like in texture; straw-colored.

strepto-: Twisted.

streptocarpa: With twisted fruit.

streptophylla: With twisted leaves.

striata: A form of variegation - striped; marked with longitudinal lines.

strict: Rigidly upright.

stricta: Upright; erect; very straight.

strigillose: With short straight and stiff hairs or bristles.

strigose: Bearing appressed, stiff, short hairs.

strobilacea: Resembling a cone.

strobile: An inflorescence with imbricate scales like a cone.

strobilate: In the shape of a cone; conical in form.

strobiliform: In the shape of a cone.

style: The elongated part of the pistil between the ovary and the stigma

sub-: Somewhat; slightly; or rather. Also, below or almost.

subcoriaceous: Somewhat leathery in texture.

subcorymb inflorescence: Somewhat flattened

suberect: Nearly or almost upright.

subgenus: One of the divisions into which large genera are sometimes taxonomically divided.

suborbicular: Almost circular.

sessile: Almost stalkless.

subspecies: A category below the level of a species: a group within a species united by geographic or ecologic distinction. Often used as a synonym of variety. Sometimes used as a higher ranking than variety

substratum: The medium upon which a plant or germinating seed grows.

subtended: Enclosed or embraced in its axil.

subterete: Somewhat or imperfectly terete.

subulate: Slender; more or less cylindrical and tapering to a point.

subulifera: With a fine, sharp point; awl-shaped.

succulent: Juicy; fleshy; soft and thickened in texture.

sucker: A shoot arising from the roots or beneath the surface of the ground.

sulcate: Grooved or furrowed lengthwise.

superba: Very showy; excellent; splendid.

superior: Growing or placed above another organ; said of an ovary that is free from the perianth; standing above the sepals and petals.

supinate: Leaning backwards.

symbiotic: Referring to the living together of two dissimilar organisms in a mutually beneficial relationship.

symmetrical: Said of a flower which is regular as to the number of parts and their arrangement in the perianth.

sympetalous: Gamopetalous; petals more or less united.

sympodial: A form of growth in which each new shoot, springing from the rhizome of the previous growth, is complete in itself and terminates in a potential inflorescence.

syncarp: United carpels; a fruit consisting of many cohering or consolidated carpels. eg. Pineapple

synonym. A name considered to apply to the same taxon as the accepted name .

synsepalous: With sepals more or less united; gamosepalous.

syntype. Any specimen cited in the protologue when there is no holotype, or any of two or more specimens simultaneously designated as types .

systemic: A type of biocide which, when applied to the plant, is dispersed throughout the entire plant and makes it lethal to certain insects, such as aphids, scale, and mealy bug.

T

tableland: A plateau; sometimes restricted to one whose slope is steep and cliff-like and rises from the surrounding terrain in bold relief.

tabuliformis: Having a flat surface; table-like.

tapering: Gradually becoming smaller or diminishing in diameter or width toward one end.

taxon: A group of organisms sharing a relationship that may be assigned to one of the categories of a classification, such as family, genus or species (pl. taxa).

taxonomy: Consists of identification, classification and naming (nomenclature)

tectorum: Of roofs or houses.

tenuispica: Slender spike.

tenuifolia: Finely leaved; with slender leaves.

teratological: Monstrous; abnormal; malformed.

terete: Circular in transverse section; imperfectly cylindrical because the object may taper both ways.

terminal: Apical; produced at one end; usually indicating the placement of structures at one end.

terminology: The system of terms dealing with a given science or subject.

ternate: In threes; of leaves when arising in threes from the same node.

terrestrial: Growing in the ground and supported by soil as opposed to growing in trees or water.

tessellata: Arranged in a checkered or mosaic pattern.

testa: Seed coat

testudo: A turtle.

tetrantha: Four-flowered.

tetraploid: A condition of, or an organism having, four sets of chromosomes or twice the normal number.

thyrs: Referring to a flower cluster.

thyrs: A compact, more or less compound panicle; more correctly a panicle-like cluster with the main axis indeterminate. Can be ovoid-pyramidal or cylindrical. Lilac is a good example. Should not be encountered in *Bromeliaceae* but sometimes used to 'define' shape of an inflorescence. See App 2

thyrsiflora: A compact clustered panicle.

tigrina: With tiger-like markings.

Tillandsioideae: One of the 8 subfamilies of the *Bromeliaceae*

tissue: A fundamental structural unit of an organ; an aggregation of cells with a specific function.

tissue culture: The propagation of new plants by using shoot tips or meristems as a means of formation of new shoots.

tomentose: A dense, woolly covering; short hairs matted in appearance.

tomentulose: Somewhat or delicately tomentose.

tomentum: Pubescence; composed of densely matted woolly hairs.

tortuous: Twisted, with irregular bending and twining.

translucent: Partially transparent to light.

transpiration: The act or process of exhaling water vapor from the stomata of plants. **transverse:** At right angles to an axis; broader than long in a cross-wise direction. **trapeziform:** An unsymmetrical four-sided figure; with four unequal sides.

tree fern: Large tropical ferns whose fibrous trunk is used as a potting medium for epiphytes. Used shredded, as logs, or as slabs.

tri-: Three or three times.

tribe: A taxonomic category at a level below a family and above a genus: a taxonomic group within a family sharing a relationship among certain of its genera.

tricholepis: With hairy scales.

trichome: The scale or hair found on the leaves and other organs of most bromeliads; an absorptive organ

tricophylla: Hairy leaved.

trinomial: A scientific name for an infraspecific rank; i.e., having three elements--generic name, specific epithet, and infraspecific epithet. The latter follows a rank qualifier such as ssp. or var.

tripinnate: refers to leaves not a three branched inflorescence **better to use** panicle with side branches up to second order, twice branched

triploid: A condition of, or an organism having, one extra set of chromosomes in its genetic constitution. as such it is sterile

tristis: Sad; dull; dull-colored.

triticina: Having a wheat-like appearance.

tropism: The tendency of an organism to respond to the influence of an environmental factor, such as light, with a great intensity in a direction which may be positive or negative to the site of the stimulus.

truncate: Appearing as if cut off at the end; abruptly terminated; the end nearly or quite straight across.

tube: The cylindrical shape of some bromeliads, such as billbergias, caused by overlapping of leaf bases and an erect growth habit.

tubercle: A rounded protruding body or nodule.

tuberous: With the nature or appearance of a tuber.

tufa: A porous limestone rock that can be used for mounting bromeliads.

tufted: Stems in a close cluster: having a cluster of hairs.

tumid: Swollen.

turgid: Swollen; full of moisture.

twining: Rising by coiling around a support.

type form: The originally collected plant from which a botanical description is written.

typical: Relative to the aggregate of characteristics shared by a large number of individuals of a particular group.

U

ubiquitous: Growing in all kinds of habitats; of widespread occurrence.

-ulentus: Abundance; full or marked development.

umbel: An inflorescence in which the pedicels or peduncles of a cluster spring from the same point on the flower axis; resembling the framework of an umbrella.

umbellet: A small or secondary umbel in a compound umbel

umbrinus: Brown; umber.

unarmed: Without thorns, spines, or barbs.

uncinate: Hooked near the apex, as in "uncinate teeth," on leaf margins of some species of the subfamily *Bromelioideae* .

undulate: Wavy; with a wavy margin or surface.

unguiculate: Contracted into a claw-like structure.

uni-: One; single.

unicornis: One-horned.

unilateralis: Unilateral; one-sided.

uniseriate: Arranged in one row or series.

unisexual: Refers to flowers having only stamens or pistils; those flowers of one sex only.

urceolate: Urn-shaped; ovoid but contracted at or near the mouth like an urn.

usneoides: Resembling a lichen of the genus *Usnea*.

utricularia: A small sac or bladder.

V

vacuole: A small cavity or space in the tissues or cells of an organism containing air or fluid.

vagans: Wandering; of wide distribution.

vaginate: Provided with or surrounded by a sheath.

valvate: Opening or pertaining to valves; meeting at the edges without overlapping, as leaves or petals in a bud,

valve: A separable part of a dry fruit; the units or pieces into which a capsule splits or divides indehiscing.

variabilis: Variable in form or color.

variant: An individual or species departing in some characteristic from the mean characteristics shared by that group.

variation: The character differences of an individual or group of individuals as a result of genetic modifications or in response to an environmental factor, or a combination of both.

variegata: Irregularly colored or blotched; but in Bromeliaceae generally accepted as longitudinally striped.

variegated: same as above. A non-Latin term used in Cultivars – see J Brom Soc 55(4): 189. 2005. Bromeliaceae are monocots and generally speaking variegation occurs as longitudinal lines which can be any color and any width that contrasts with the normal leaf color

variegation: The condition of a leaf when certain sections are reduced or totally devoid of green pigments with the result that the leaf has pale stripes, blotches, or bands.

variety: A plant having slight but distinct differences that distinguish it from the type species; a botanical variety as opposed to a cultivar, which is a horticultural variety.

vascular: With vessels or ducts, or relating to them.

vascular bundle: An elongated group of cells specialized for conduction and for support. **vegetative:** The part of the plant not directly concerned with reproduction, such as the stem and the leaves.

vegetative reproduction: In *Bromeliaceae*, the increasing of a plant population through offshoots; also through various meristemic cultural techniques.

velamen: A membrane or sheath; the thick, spongy epidermis covering the roots of certain epiphytes.

velutina: Velvety; soft.

venose: With several prominent veins.

ventricose: Distended; swelling on one side; unevenly inflated.

venusta: Beautiful; graceful; charming.

ventrical: Towards the belly; opposite of dorsal.

vermiculite: A laminated heat-expanded hydrated silicate used in horticulture to lighten soil mixes and retain moisture.

vernal: Occurring in the spring.

vernation: The arrangement of veins within a leaf or leaf-like part.

verniosa: Varnished; shiny as though varnished.

verrucosa: Covered with wart-like protuberances.

vertic: Referring to a whorl.

verticil: A whorl of foliar organs, flowers, or inflorescences about the same point on the axis.

vestigial: Reduced to a vestige of a part once more developed.

vestite: Clothed; covered with soft hairs.

viability: The possibility for growth; capability of development, as in the germination of seed.

villose: Provided with long, soft hairs; shaggy .

viminalis: Like wicker-work; having long flexible shoots.

vinosa: Wine-red in color.

violacea: Violet-colored.

vires-: Referring to the color green.

viridiflora: Green-flowered.

virginalis: Pure white; virginal.

virus: A sub-microscopic particle that causes disease.

viscid: Sticky, glutinous.

vitro: Glass; usually referring to plant capture under glass or in a flask.

vittata: Marked with longitudinal stripes; but generally in Bromeliad terms, banded.

viviparous: Germinating while still attached to the parent plant; proliferous.

volubilis: Turning; twining.

volute: Rolled up.

vulgaris: Common; ordinary

W

warm house: A greenhouse for tropical plants, with a minimum night temperature of 60° F .

wetting agent: A substance, when added to water or liquid solution, which reduces the surface tension .of the soil so as to let the water penetrate.

whorl: Three or more leaves or flowers at one node; a radiation from a common level of the stem.

wing: A thin dry membranous expansion, extension, or appendage of an organ, as winged seeds.

woolly: Provided with long, soft, and more or less matted hairs; like wool.

X

x: Indicates a hybrid, when used before the epithet of a specific name.

xanth-: Yellow.

xanthobractea: With yellow bracts.

xeric: Pertaining to dry places; adapted to arid conditions. **xerographica:** Dry writing, referring to the delicate pastel coloration. **xerophyte:** A plant that survives under dry conditions.

xiph-: Referring to a sword.

xiphifolia: Iris-leaved; sword-like.

xiphioides: Sword-like.

Z

zebrina: Striped rather regularly with white or yellow, like a zebra.

zonata: Zoned; banded with distinct colors.

zygomorphic: Divisible into two similar halves in one plane only; said of an irregular flower in which the parts are not alike. Not to be used to describe sepals or petals

Appendix 1

Bringing Bromeliaceae Back to Homeland Botany by Uwe Scharf & Eric J. Gouda in *J Brom Soc* 58(3): 123-9. 2008

Summary

The terms used by Mez (1896, 1934), and Smith & Downs (1974, 1977, 1979), such as "bi-/tripinnate"; ".scape" and "inflorescence" for example, in ways that deviate from those proposed by Linnaeus, and other terms used in a non-Linnaean tradition in Bromeliaceae literature (anterior, posterior, actinomorph, zygomorph, irregular, imbricate) are presented together with their use in general botany. Furthermore, a catalogue of all parts of a bromeliad plant (Gouda 2007) is published as a guideline to describe, for example, specimens of a new taxon. Definitions of differently understood organs (inflorescence, scape, bi-/tri pinnate) are given. This article was previously published in German language in *Die Bromelie* 2007(2): 68-73.

Throughout its history, descriptive botany acquired its value by always using the same terms for the same organs. This consistent terminology is the base for a broad and immediate understanding of species descriptions, especially descriptions of new species, and transmits effectively the knowledge from the author to the reader.

Modern descriptive terminology is mainly based on the works of Linnaeus (1707-1778). His perfect drawings are still used as illustrations, e.g. in Stearn (2004: 309, fig. 1). In Germany Johann Wolfgang von Goethe (1749-1832) from Weimar, and Wilhelm Troll (1897-1978), who mainly worked in Halle/Saale and Mainz, developed descriptive botany in the Linnaean tradition towards becoming a finely detailed science (the studies of W Troll concerning comparative morphology were based on the tradition of von Goethe and thus still on Linnaeus).

While Baker (1889 still used the general morphological terms, with Mez (1934) Bromeliad terminology was led onto a path deviating from that of the main plant terminology. Obviously, some terms were misinterpreted, misunderstood, misused, or even wrongly used by him. Afterwards, the terminology of Mez was copied and used on a broad scale by Smith & Downs (1974, 1977, 1979) for their important monograph of all then known species of Bromeliaceae. Subsequently, these terms were extensively used and multifariously copied by gardeners, bromeliad lovers, enthusiasts, amateurs, and even scientists who based their work on the monograph of Smith & Downs e.g., Gouda (1989).

For bromeliad specialists, these terms do not raise any uncertainties as long as the specialist stays in this field. However, for botanists working in other plant families, the terms of Mez and Smith & Downs cause considerable confusion, because the same terms are used to name different morphological details in other families. Mez and Smith & Downs used terms in botanical Latin and English despite the fact that descriptive botany was undertaken in Germany long before English-speaking scientists entered the field.

For Bromeliaceae, the basic importance of Linnaean-based works and treatments (Linnaeus 1751, 1789-1791); (Troll 1937-1943, 1954-1957, 1964-1967); (Von Goethe 1790, 1984) is frequently overlooked in recent times due to the presence of the monograph of Smith & Downs.

World communities are coming closer together, and the different fields of botany are interacting more intensively than ever before. The exchange of information takes place much faster than a few decades ago. Therefore, it is very important to speak a common language to avoid the misunderstanding and misinterpretation of genuinely correct information.

In the meantime, some bromeliad specialists have again started to use the main plant terms in their original sense e.g., Gouda (1997), and the first articles explaining why and how the terms are used have appeared e.g., Gouda (2002). In 1998 a provisional catalogue was published by E.J. Gouda on a webpage. Since then, many improvements and replacements have taken place, from which finally the recent version has resulted (Gouda 2007). This catalogue of all parts of a bromeliad plant is a guideline to describe, for example, specimens of a new taxon.

For a description of a bromeliad the same terms should be used as for a description of plants of other families. The following can be considered the main organs: 1. roots; 2. stem; 3. (vegetative) innovation zone, stolons/runners with bracts, addorsed prophyll; 4. leaf, 4a. leaf sheath, 4b. leaf blade, lamina, 4c. leaf margin (with marginal teeth); 5. inflorescence, floral region, 5a. peduncle, basal/sterile/unbranched part of the inflorescence with peduncle bracts, 5b. apical/fertile/branched part of the inflorescence with 5b1. bracts along main axis/rachis in branched part (spike bracts), 5b2. side-branches = spikes (of first, second, ... order), 5b3. floral bracts; 6. flower, 6a. sepals (forming the calyx), 6b. petal with 6b1. claw (part of the petals that is covered by the sepals), 6b2. throat, 6b3. blade of petal, 6c. stamen with 6c1. filament and 6c2. anther, 6d. pistil with 6d1. ovary (inferior: develops mostly into a berry, superior: develops mostly into a capsule), 6d2. style, and 6d3. stigma (with stigmatic lobes); 7. fruit (capsule or berry); 8. seeds.

In the following table, the terms used by Mez (1896, 1935) and Smith & Downs (1974, 1977, 1979) in a deviating way (bi-/tripinnate, scape, inflorescence) and other incorrect uses in Bromeliaceae are explained and presented together with their use in general botany. Definitions of differently understood organs (inflorescence, scape, bi-/ tri-pinnate) are given after the table. **Details in the table have been transferred to Butcher's Glossary**

An inflorescence consists of all parts of the plant that are genuinely connected with the sexual organs or fruits and developed for their presentation during anthesis (for pollination) and fructification (for distribution of the seeds). In contrast to a vegetative plant (bearing roots, stems, leaves, vegetative innovation zones only) a fertile plant bears an inflorescence, which comprises a sterile part (peduncle, flower stalk), branches within the inflorescence (if present), reduced leaf like structures (bracts), and flowers or fruits - in addition to the vegetative parts.

In bromeliads inflorescences are constructed of spikes (flowers sessile) or racemes (flowers on a stalk) or compound structures of them (panicle) or reduced to 1-flowered spikes. The arrangement of the flowers along the axis (or rhachis) is usually spirostichous (spirally arranged) or distichous (two rows, opposite to each other). Rarely organs are arranged polystichously (in rows above each other, seen from the top), like in the leaves of *Tillandsia pentasticha* Rauh & Wulfingh. or *T. tomekii* L. Hrom. This was confused frequently. Mostly spirostichous was meant when e.g., Smith & Downs wrote "polystichous".

A scape is the part of an inflorescence between a (more or less clearly visible) leaf rosette and the (clustered) flowers. The character of a scape is the absence of nodes and therefore, necessarily the absence of leaves and bracts. Well known examples are, e.g., onion, garlic, leek and their relatives (*Allium*), the African Lily (*Agapanthus*), Snowdrops (*Galanthus*), Daffodils (*Narcissus*), Knight's Star (*Hippeastrum*, traded under the wrong name "Amaryllis"), and Hyacinth (*Hyacinthus*).

Word combinations with "...pinnate" are terms used for the description of compound leaves. With pinnate (= feather-like, with feathers) a leaf-axis (rhachis or rachis) with leaflets at both sides is described, no matter, if this axis is terminated with a terminal leaflet or not. Examples are:

pinnate: False Acacia or Black Locust (*Robinia pseudoacacia*), Vetches (*Vicia* spp.); bipinnate: Male Fern (*Dryopteris filix-mas*);

tripinnate: Lady Fern (*Athyrium filix-femina*).

A further use of pinnate is to describe venation patterns, e.g., the leaf of the banana (*Musa*) or the Bird-of-Paradise Flower (*Strelitzia*) is pinnately veined.

The correct way to describe compound inflorescences is to count the order of the side branches. Bromeliad inflorescences are always a spike or a raceme (only main axis) or represent a compound inflorescence (panicle, with side branches). Examples: (unbranched) spike/raceme (e.g., *Vriesea splendens*, *Tillandsia xiphioides*),

panicle with side branches 1st order *Tillandsia grandis*, *T. oerstediana*.)

panicle with side branches up to 2nd order (e.g., *Tillandsia extensa*, *T. samaipatensis*.)

The term "imbricate" includes that the described organs overlap each other

Appendix 1

clearly, other organs below these imbricate structures (e.g., the peduncle or rhachis) are completely covered and conclusions about their structure and look-alike are impossible without removing the imbricately arranged organs. Examples are e.g., the floral bracts in the fertile part of the inflorescence in *Vriesea splendens* and the cataphylls along the stolons of *Aechmea distichantha*.

Appendix 1a

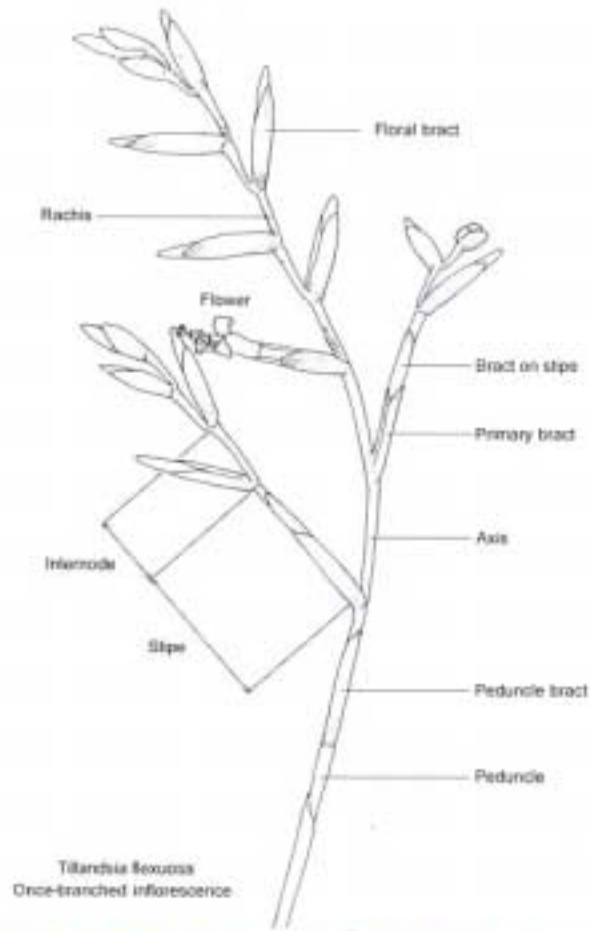
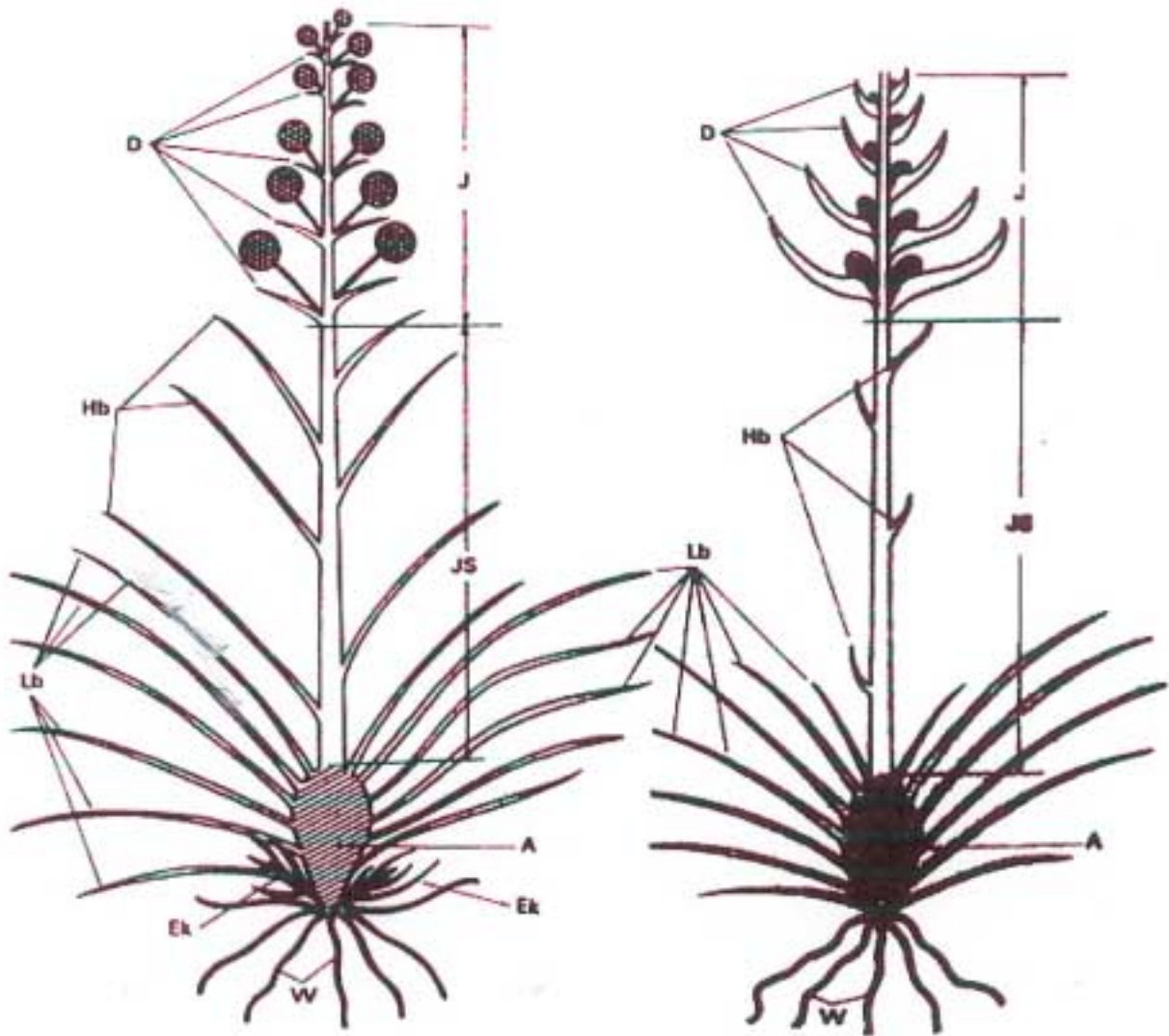


Figure 2. Parts of a bromeliad inflorescence. Drawing by E.J. Gouda.

Appendix 1b



Based on Rauh 1981

Left – plant with raceme note pedicels Right – plant with spike note sessile flowers
A = Plant, D = Floral bracts, Ek = Grass offsets, Hb = Scape bracts, J = inflorescence,
JS = scape, Lb = Leaves, W = Roots

Appendix 2

Thyrse - What is it and Why is it in the Bromeliad Glossary By: Derek Butcher

Tillandsia thyrsegera is a Mexican plant not that common in collections, but it has a striking inflorescence and was the start of this investigation. There are other "thyrseoid" inflorescences including *T. parryi*, *T. sueae* and others. Renate Ehlers, Pamela Koide and others have been collecting roughly in the same area in Mexico and have had exciting finds. No doubt we will see new species being named. The name "thyrse" had me intrigued because as far as I was aware it was a botanical description of how the flowers were arranged in the inflorescence.

So I looked up Benzing's Biology of Bromeliads where it states that all Bromeliad inflorescences can be described as a panicle or a condensation of a panicle. No reference to a thyrse and I couldn't understand the definition in the Bromeliad Glossary of the B.S.I. I quote... "Thyrse - a compact, more or less compound, panicle; more correctly a panicle-like cluster with the main axis indeterminate. Can be ovoid-pyramidal or cylindrical". To me this sounds gobbledygook and not particularly informative. To clear things up in my own mind I paid a visit to a Botanist acquaintance at the Adelaide Botanic Gardens. I couldn't understand the explanation over the telephone!

Gradually it dawned that there was a THYRSE in the general sense and a THYRSE in the strict sense! How do you know if someone is writing in the general sense or the strict sense? Apparently in recent years botanists including Weberling, Troll and others have been redefining the arrangements of inflorescences but it was all too technical for me. What relevance did it have to Bromeliads?

If you are interested, just have a look at the convolutions in the inflorescence of *Syringa vulgaris*, commonly called 'Lilac'. This is said to be an example of a thyrse.

So I decided to write to me mate, Harry Luther. As is usual with Harry I got a short reply, "No Bromeliad has a thyrse"..

If only for my own peace of mind we should try to influence those who write descriptions of new species not to use the term "thyrse" or even "thyrseoid" when clearly they are describing the shape rather than the arrangement of a compound inflorescence.

There are 4 or maybe 5 main shapes and we must remember they are 3 dimensional. This I can understand, and perhaps examples will show what I mean.

- | | |
|-----------------------------------|--|
| (1) CYLINDRIC | e.g. <i>T. bourgaei</i> or <i>T. cossonii</i> |
| (2) OVOID (like an egg) | e.g. <i>T. cerrateana</i> , or <i>T. heteromorpha</i> |
| ELLIPSOID (like a flattened egg): | |
| (3) GLOBOSE | e.g. <i>T. mauryana</i> , or <i>T. sphaerocephala</i> |
| SPHEROID | or <i>T. heteromorpha</i> or <i>T. capitata</i> |
| CAPITATE | |
| (4) CONICAL | e.g. <i>T. guatemalensis</i> , <i>T. leiboldiana</i> , <i>T. secunda</i> . |
| (5) RHOMBOID | e.g. Some forms of <i>T. fasciculata</i> . |

Rarely will a compound inflorescence correspond exactly with these shapes but they do give a guide. You will also read of combinations of these such as ovoid-cylindric and the use of the word "sub" which means "almost" to make things even more vague. Oh, by the way, "conical" is the upsidedown version when the icecream falls out!

So when the Tillandsias with ovoid-conical shaped compound inflorescences become more common, as they are sure to do, and someone describes them as having a thyrse or are thyrseoid please ask them to explain it to you.

When is a thyrse not a thyrse? Can anyone tell me why it is in the Glossary?

Appendix 3

Why do I have a Work sheet?

1. I use it as a prompt to help me identify an unidentified plant. I then write down my findings.
2. All species plants must be described when they are named. Some portion or all must be in Latin. This protologue is the best to refer to but sometimes you have to rely on a second hand description such as in Smith and Downs. If you are really desperate you may even use the description in Padilla's books or really desperate desperate look at the photos in Shane Zaghini's books!
3. Tillandsia plant descriptions can vary between the long drawn out and detailed ones like those done by Renate Ehlers and the short ones done by Harry Luther. The problem with a short description is that you do not know if a factor is missing, been forgotten, or the answer is no! My work sheet is based on Renate Ehlers work.
4. When I have completed my worksheet I then check it against what written information I have. Before I had a worksheet I used to presume or anticipate answers and got lead awfully astray.
5. ALBURY GUINEA PIGS
 - a. I believe using a worksheet teaches you a lot about taxonomy and where things are to look for. Few Bromeliad growers do this and only know about their plants superficially and what they look like from the outside!
 - b. When I first started dissecting Tillandsias and things I used to run to Harry and say "I've found something different to what is in the description. Have I found a new species?" Harry would say, "Wait until you find at least 3 or 4 real differences!" "One or two means you are probably within the range of the species!" Herein lies the problem, because if you do not catalogue these differences you never find out the true range of characteristics for the species.
 - c. I will supply a worksheet for each working group of 2 (Three might be a crowd!). You can work on your own if you want! AND a drawing of the various parts of a Tillandsia to help you remember what their names are!
You bring a Tillandsia or two in flower (any one YOU have not dissected before!) to Albury, with a biro, a measuring stick, a magnifying glass if you are really old, a sharp knife and your brain.
 - d. When you have completed the worksheet you can check it against the description I have on file!
 - e. WHAT WILL IT ACHIEVE? More people than myself prepared to butcher a plant in the name of science!

Appendix 3a Worksheet

plant stem	high	wide	
No. leaves	shape		
sheath shape	length	width	
lepidote Adaxial	Lepidote Abaxial	colour Adaxial	
colour Abaxial	distinct from blade?		
blade shape	length	width	
lepidote Adaxial	lepidote Abaxial	colour Adaxial	
colour Abaxial	keeled		
scape shape	length	thick	
hidden by bracts?			
scape bract sheath shape	length	width	
lepidote Adaxial	lepidote Abaxial	colour Adaxial	
colour Abaxial	texture	relation to stem	
relation to internodes	keeled?		
scape bract blade shape	length	width	
lepidote Adaxial	lepidote Abaxial	colour Adaxial	
colour Abaxial	texture	Difference between upper and lower?	
Inflo poly/dist	shape	length	

width	relation to leaves	no. spikes	
axis shape	thick	colour	
lepidote	internodes		
primary bract sheath shape	length	width	
lepidote Adaxial	lepidoteAbaxial	colour Adaxial	
colourAbaxial	texture	keeled	
nerved			
Primary bract blade shape	length	width	
lepidote Adaxial	lepidote Abaxial	colour	
texture			
Spike poly/distichous	shape	length	
width	No. flowers	peduncle	
Rhachis thick	shape	lepidote	
internodes	visible?		
Floral bract sheath shape	length	width	
lepidote Adaxial	lepidote Abaxial	colour	
texture	keeled	nerved	
Floral bract blade shape	length	width	
lepidoteAdaxial	lepidoteAbaxial	colour	
texture			
Flower erect?	length	width	

pedicel?	scented?		
Sepal shape	length	width	
lepidoteAdaxial	lepidoteAbaxial	colour	
texture	relation to bract	keeled	
nerved	connate		
Petal shape	length	width	
colour	Platte?	Tube?	
Stamens exceed petal?			
Filament shape	length	colour	
Anther shape	length	how joined	
colour			
Pollen colour			
Style length	Lobe shape	Lobe size	
colour			
Ovary			

Figure 1

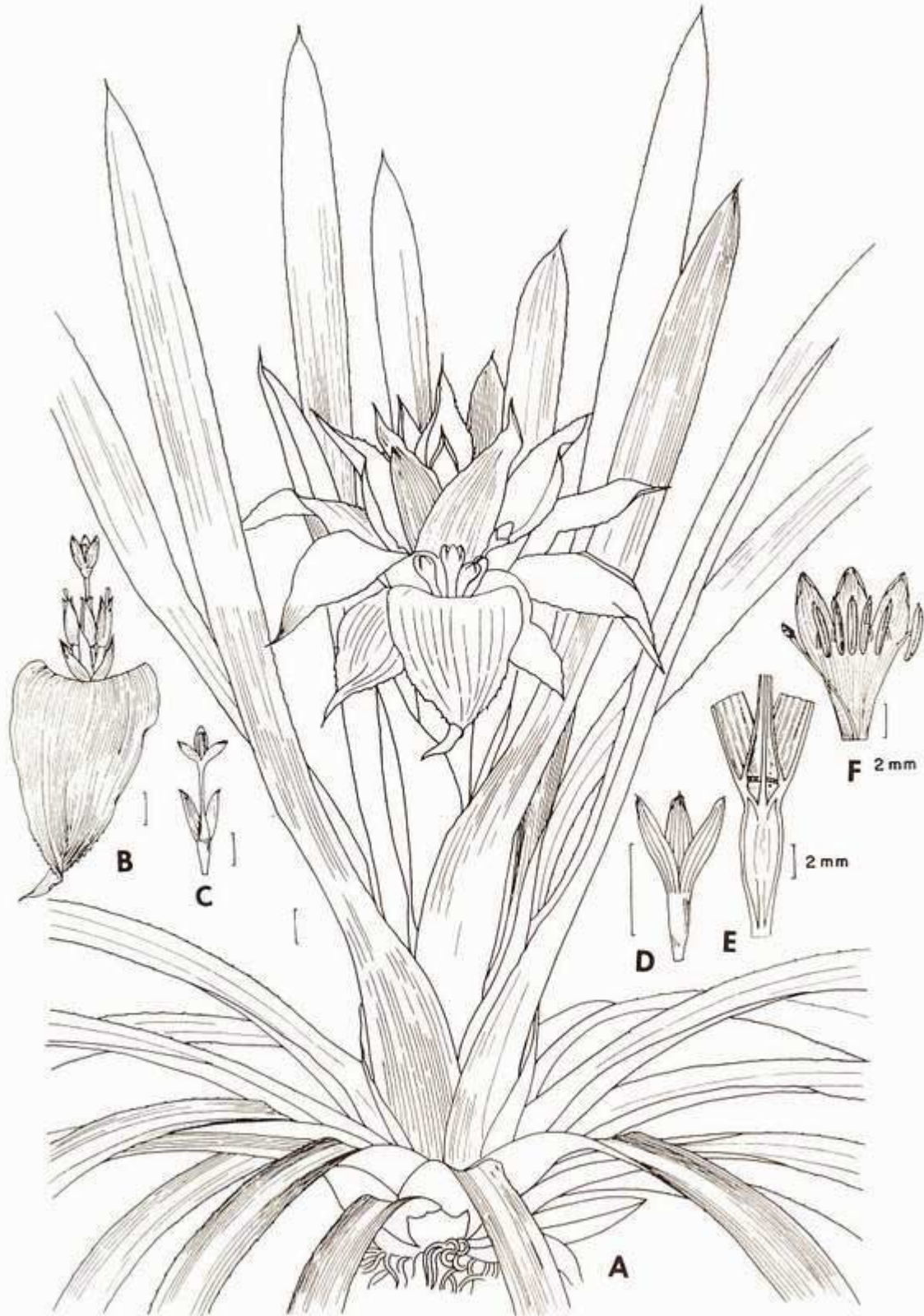


FIG 528. A-F, *Nidularium antoineanum* (Wawra, It. Sax. pls. 21, 35C): A, habit; B, spike and bract; C, flower; D, calyx; E, section of ovary; F, petals and stamens.

Figure 1a

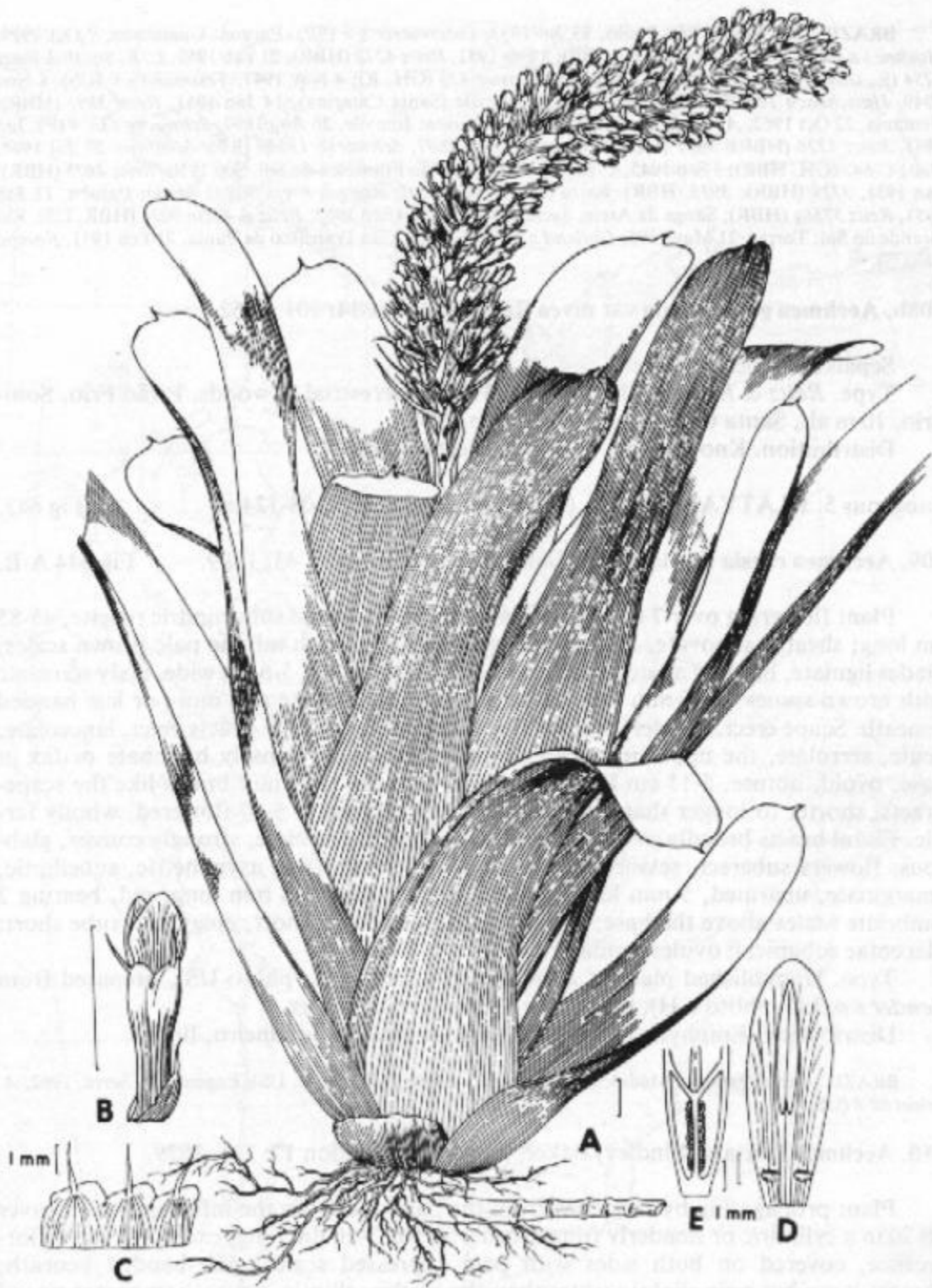


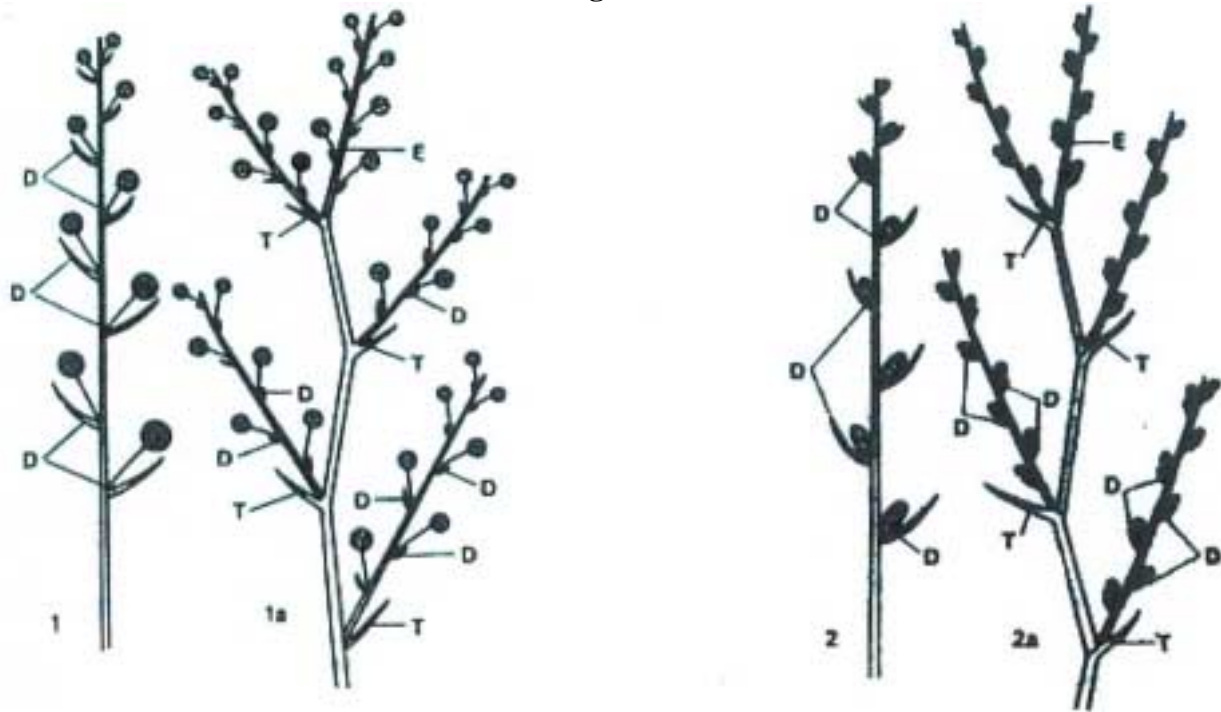
FIG 642. A-E, *Ae. gamosepala* var *gamosepala* (Fl. Bras. pl. 67): A, habit; B, flower and bract; C, sepals; D, petal and stamen; E, section of ovary.

Figure 3

Color Chart



Figure 4



Based on Rauh 1981

Left – 1. simple and 1a. compound raceme Right – 2. simple and 2a. compound spike

D = Floral bract, T = Primary bract

Figure 4a

Fig. 7 Principal inflorescence types. A, anthelate; B, capitate (in section); C, corymbose; D, dichasial; E, monochasial; F, paniculate; G, racemose; H, spikate; I, thyrsoid; J, umbellate. (JPJ)

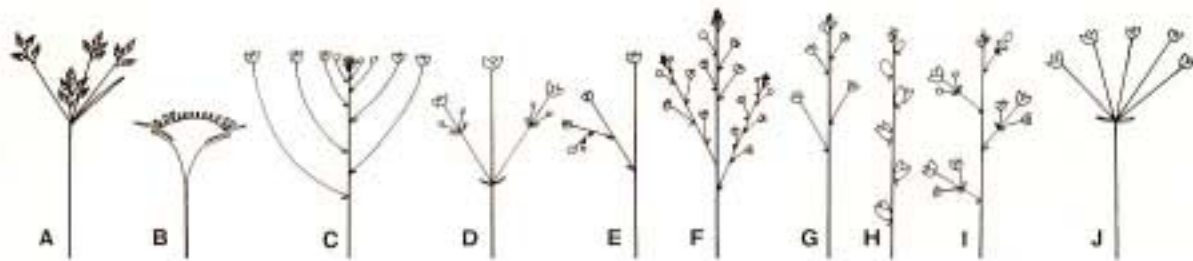


Figure 5

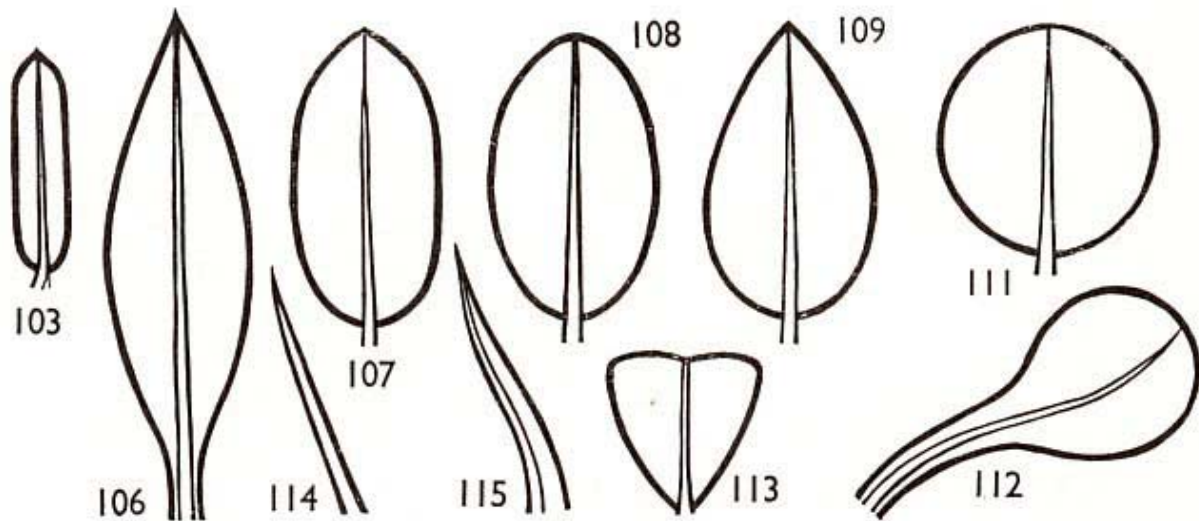


Fig. 21 Outlines of Leaves, etc.

103, linearis, sensu Lindleyi (= anguste oblongus); 106, lanceolatus, sensu Lindleyi (= anguste ellipticus); 107, oblongus; 108, ellipticus; 109, ovatus; 111, rotundus; 112, spatulatus; 113, cuneiformis; 114, subulatus; 115, acerosus (after J. Lindley, *Introduction to Botany*; 1832)

Figure 5a
C. THE APEX

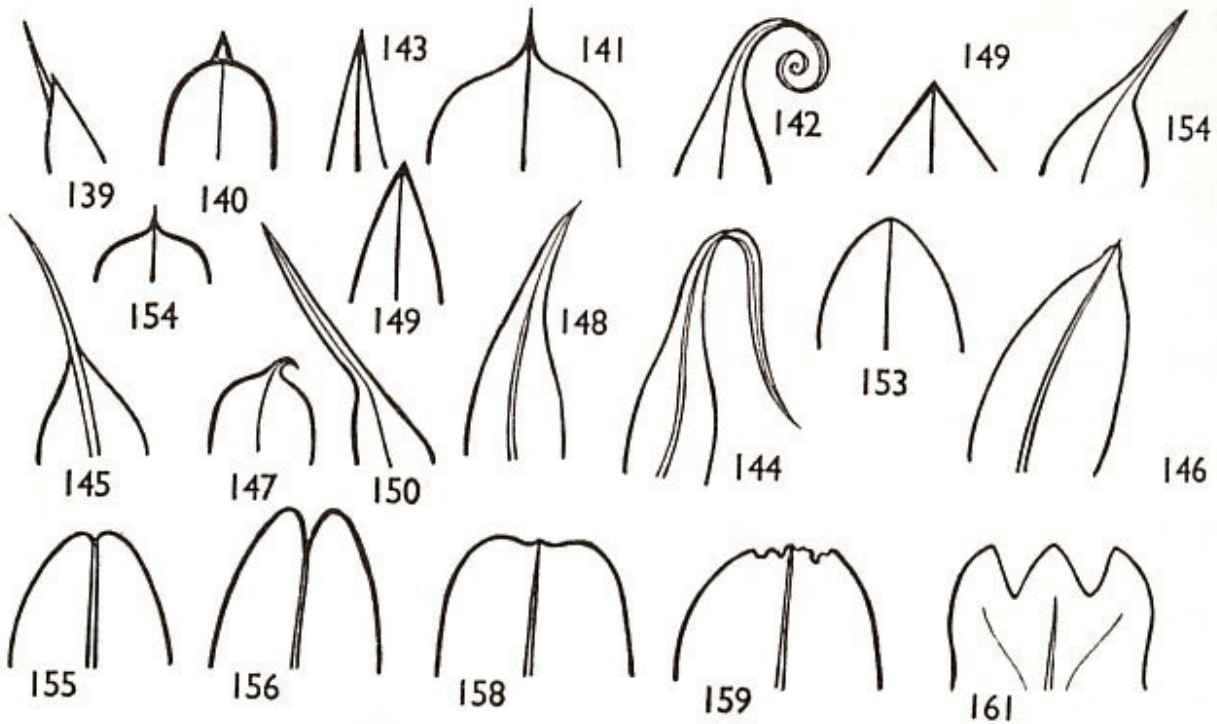


Fig. 23 Apices of Leaves, etc.

139, aristatus; 140, mucronatus; 141, cuspidatus; 142, cirrhosus; 143, pungens; 144, setosus; 145, piliferus; 146, apiculatus; 147, uncinatus; 148, rostratus; 149, acutus; 150, acuminatus; 153, obtusus; 154, obtusus cum acumine; 155, retusus; 156, emarginatus; 158, truncatus; 159, praemorsus; 161, tridentatus (after J. Lindley, *Introduction to Botany*; 1832)

Figure 5b

E. THE MARGIN

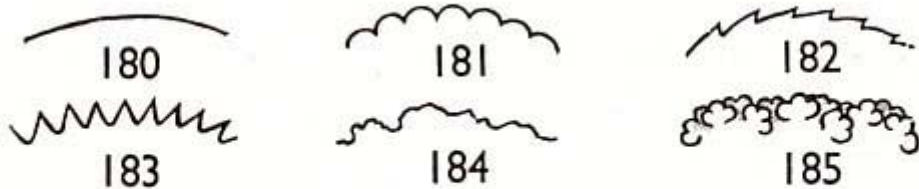
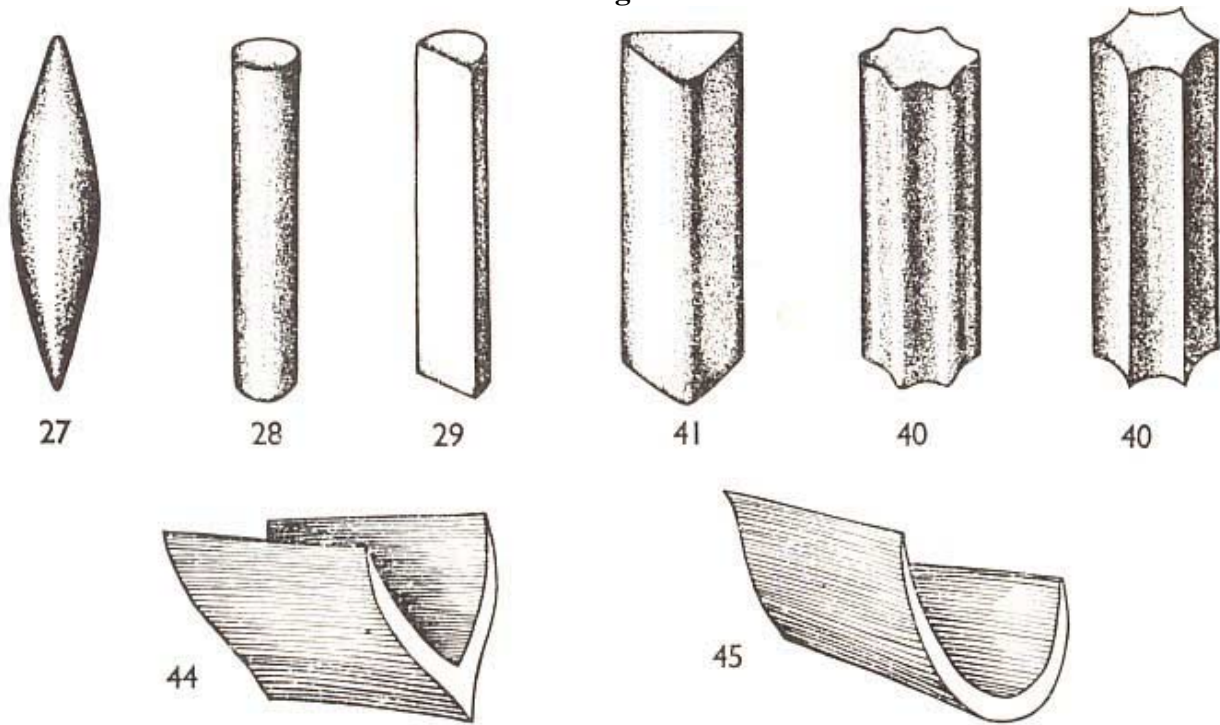


Fig. 25 Types of Margin

180, integerrimus; 181, crenatus; 182, serratus; 183, dentatus; 184, erosus; 185, crispus

Figure 6



27

28

29

41

40

40

44

45

Fig. 20 Sections of Stems and Leaves

27, fusiformis; 28, teres; 29, semiteres; 40, angulosus, 40 sinist., obtusangulus, 40 dext., acutangulus; 41, trigonus; 44, carinatus; 45, canaliculatus (after J. Lindley, *Introduction to Botany*; 1832)

Figure 7

