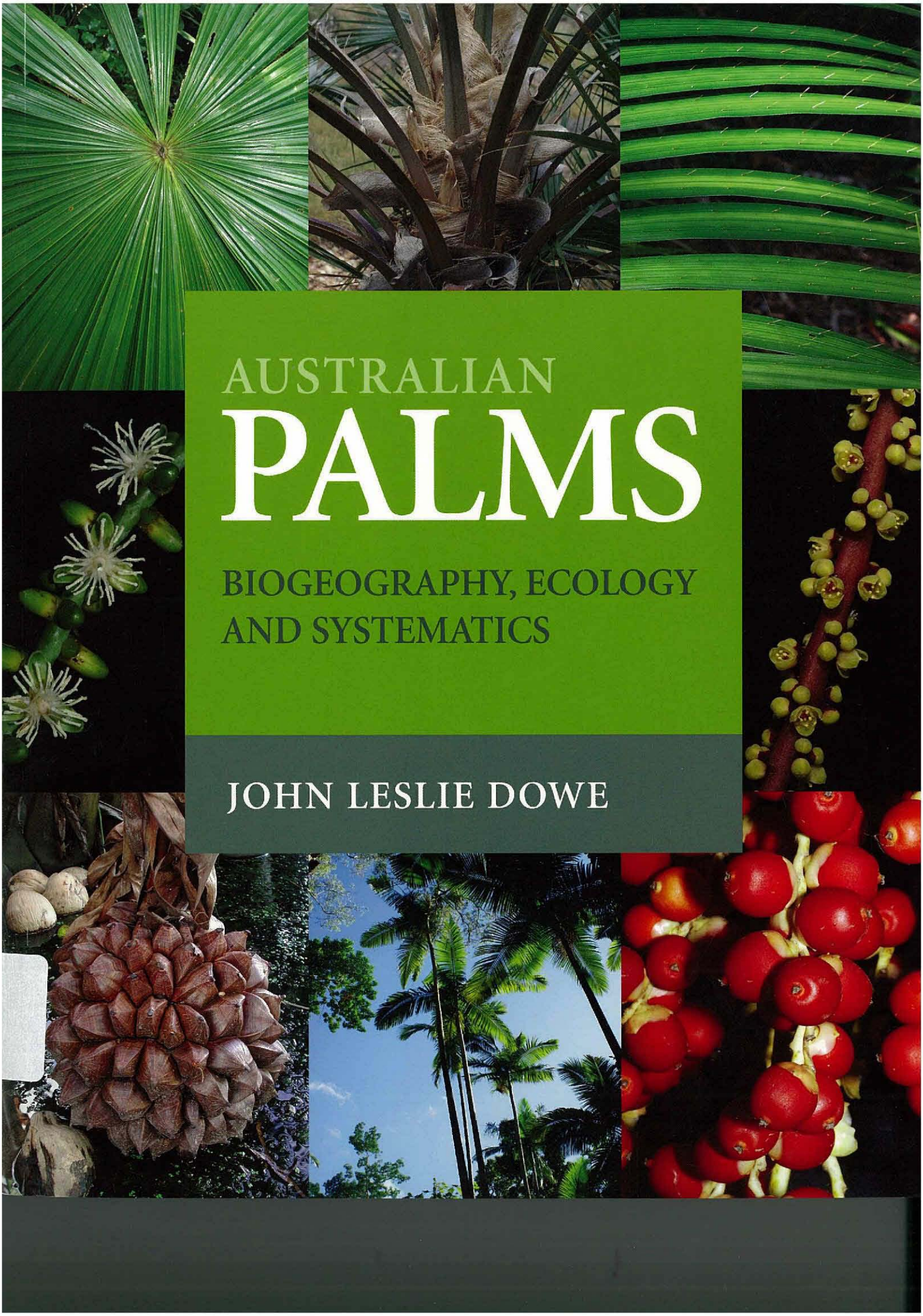

AUSTRALIAN PALMS

BIOGEOGRAPHY, ECOLOGY AND SYSTEMATICS

JOHN LESLIE DOWE

Glossary

abaxial (abaxially) side of an organ that faces away from the axis bearing it
acaulescent lacking an above-ground stem
acropetal maturation from a lower to a higher level on an axis in flowering
acuminate gradually tapered to a point
acute distinctly and sharply pointed
adaptation process of evolutionary modification that results in improved survival and reproduction efficiency
adaptive radiation diversification of a species or single ancestral type into several forms, each adaptively specialised to a specific environmental niche
adaxial (adaxially) side of an organ that faces the axis bearing it
adjacent-ligular with the new shoot developing next to the side of the seed and enclosed in a ligule in seed germination
adnate with one organ joined to another
allopatric of populations occurring in separate, non-overlapping geographic areas and unable to cross-breed
anastomosing forming a network
anatropous bent parallel to its stalk with the micropyle adjacent to the hilum in an ovule
anther pollen-bearing chamber of a stamen
anthesis time of flower opening
aperture an opening in a pollen grain through which the pollen tube emerges
apex (apical) end portion, borne at the top
appressed lying flat or pressed closely
arcuate curved like a bow
autecology (autecological) the branch of ecology that deals with the biological relationship between an individual organism or individual species and its environment
autochthonous a species having evolved *in situ*
axil (axillary) upper angle of the junction between the petiole and stem
basal at the base of an organ or structure
basifixed attached at the base
basionym the original or first validly described name for a species
basipetal maturation from a higher to a lower level on an axis, characteristic of some species in the tribe Caryoteae
bicarinate with two keels
bicentric (bicentricity) having two centres
bifid divided into two ± equal parts
bifurcate forked
biogeography study of the geographic distribution of organisms
bipinnate doubly pinnate, a characteristic of the leaves of species of *Caryota*
bract a modified enclosing leaf
bracteole a small bract on the flower stalk
caducous falling away early
campanulate of three-dimensional shape, bell-shaped
carinate keeled
carpel a single unit of the gynoecium
Cenozoic geological era from the end of the Cretaceous to the present day, from 65 million years ago
chartaceous papery
ciliate fringed with hairs
cincinnus arranged with each successive flower arising in the axil of a bracteole on the stalk of the previous flower
cirrus (cirrate) a whip-like extension of the leaf rachis armed with reflexed spines used as a climbing organ, characteristic of rattans in the subfamily Calamoideae
clade a monophyletic group or branch of a phylogenetic tree
clustered (clustering) basally composed of two to many stems
colliculose (colliculate) covered with small rounded projections
concolorous with each surface of the same colour
conic (conical) having the form of a cone
connate joined
connective tissue joining the locules of one anther to another
coriaceous leathery
costapalmate describing a palmate leaf with a strong rib (costa) extending through the lamina, characteristic of species of *Livistona*
Cretaceous geological period between the Jurassic and the Tertiary, from 144 to 66.4 million years ago
crownshaft cylinder formed by the leafbases, characteristic of most species in the subfamily Arecoideae
crustaceous dry and brittle
cucullate hooded or hood-shaped
cuneate in two-dimensional shape, wedge-shaped and widest distally
cupule (cupular) resembling a cup

decumbent a reclining stem with the apex ascending
deflexed bent downwards
demography the study of populations
dentate (dentiform) toothed or tooth-like in appearance
dichotomous equally forking
dimorphic occurring in two different forms
dioecious (dioecy) when plants bear either staminate or pistillate flowers
discolorous with each surface of a different colour
distal farthest from the point of attachment
distichous arranged in two rows
disulcate with two apertures in pollen
divaricate spreading widely
dyad in pairs
echinate prickly or with low broad spines
ecological amplitude the limits of environmental conditions within which an organism can live and function
edaphic of or relating to soil, especially as it affects living organisms
ellipsoid(al) in three-dimensional shape, elliptical in reach rotational plane
elliptic(al) in two-dimensional shape, oblong with regularly rounded ends
embryo the rudimentary plant within a seed
endemic restricted in natural distribution to a specific geographic region
endocarp the innermost layer of the fruit wall
endosperm nutrient source for the developing embryo in a seed
Eocene subdivision of the Tertiary period, from 58 to 36 million years ago
eophyll the first functional leaf of a seedling
epicarp the outermost layer of the fruit wall
epipetalous united with or borne on petals
excrescence an outgrowth of hardened wart-like tissue
exine the outer layer of pollen
exserted projected beyond
extant presently in existence, not lost or extinct
falcate sickle-shaped
filament the stalk bearing the anther
fimbriate fringed with fine hairs or thread-like segments
flabellate fan-shaped
flagellum a whip-like climbing organ armed with reflexed spines, adnate to or emergent from the leafsheath, and characteristic of rattans in the subfamily Calamoideae
flexuous wavy, bent alternately in opposite directions
fossulate a furrowed or minutely trenched surface
foveolate a minutely pitted surface
free organs that are not fused
frugivore (frugivorous) an animal that feeds primarily on fruit
fusiform in three-dimensional shape, spindle-shaped, tapering at each end
gibbous pouched, more convex in one place than another
glabrous a smooth surface lacking indumentum
glaucous a surface reflecting a white, pale-blue or greyish sheen, usually by wax or finely divided particles
globose in three-dimensional shape, spherical
Gondwana southern supercontinent which comprised the now-separated continents of South America, Africa, Antarctica and Australia, as well as the subcontinent of India and the smaller landmasses of Madagascar, New Zealand, parts of Arabia and probably parts of south-east Asia
granular a surface appearing grainy
grapnel series of single or clustered recurved hooks associated with the abaxial surface of the leaf rachis, cirrus, flagellum or inflorescences of rattans in the subfamily Calamoideae, used as a climbing or support aid
gynoecium the ovule-bearing organ consisting of one to many carpels, each with an ovary, a style and stigmas
habitat the kind of environment in which a plant lives
hapaxanthic the process of an individual plant (or stem of a cluster) flowering once then dying, characteristic of species in the tribe Caryoteae
hastula a flap of tissue borne at the insertion of the lamina on the petiole of a palmate leaf
head compact arrangement of sessile flowers and fruits, a capitulum
hemianatropous the ovule turned so that the micropyle is at right angles to its stalk
hermaphrodite (hermaphroditic) bisexual, male and female together in one flower
hilum the attachment scar on a seed
holotype a single specimen or illustration designated by the author of a plant name at the time of original publication, which fixes the application of the name
homogeneous uniform and similar throughout
hyaline translucent, thin
imbricate overlapping
imparipinnate a pinnate leaf with a terminal pinna
indumentum a covering of scales or hairs
induplicate V-shaped in cross-section
inflexed bent inwards
inflorescence collective term for the aggregation of flowers
infrafoliar borne below the leaves
infructescence the grouping in which fruits are borne on a plant
interfoliar borne among the leaves
internode portion between two successive leafscars on a stem
introrse opening toward the centre of the flower, of anthers
isolectotype duplicate of a lectotype
isotype a specimen that is a duplicate of the holotype
keel(ed) a ridge, resembling a boat keel
Kimberley Region that part of Western Australia lying north of 19°S
knee a swelling at the junction of the leafsheath and the petiole, characteristic of rattans in the subfamily Calamoideae
lacerate jagged, appearing torn or irregularly cleft

lageniform in three-dimensional shape, swollen at the base and narrow at the apex
lamina the blade of a leaf
lanceolate narrow and tapering at both ends
lanuginose a surface with a dense cover of long, soft woolly hairs
lateral on or at the side
laterite(ic) a hard, iron-rich, rock-like soil layer formed by heavy leaching of soil under markedly seasonal tropical conditions
latrorse opening lateral to the filament in anthers
leafbase portion of leaf proximal to the petiole, narrowly or broadly clasping the stem as typical of many Coryphoideae genera, or forming a closed tubular crownshaft as in many Arecoideae genera
leafscar the remnants or impression of the former attachment of a leaf on a stem
lectotype a specimen that serves in place of a lost or unplaced holotype
lepidote a surface covered in scales
ligule a usually fibrous appendage associated with the leafbase
linear long and narrow with ± parallel sides
lobe projection or division of a leaf or other organ
locule the cavity that contains the ovary in the gynoecium
macrofossil a fossil large enough to be examined by direct inspection
Malesia biogeographical province extending from Malaysia east to New Guinea
marine transgression when an influx of the sea covers areas of previously exposed land
medifixed attached at the middle
megathermal high-temperature as in humid subtropical or tropical climates, with the coldest monthly mean temperature above 18°C
membranous thin and translucent
meristem undifferentiated plant tissue from which new cells are formed
mesic being neither wet nor arid
mesocarp middle layer of the fruit wall
mesothermal moderate temperatures in the range 20–30°C
microfossil a fossil which requires magnification for it to be examined, usually by microscope
micropyle a minute opening in the ovule of a seed plant through which the pollen tube usually enters
midrib the main vein of a pinna or segment
Miocene a division of the Tertiary, from 23 to 5 million years ago
molecular phylogenetics a process of determining the rates and patterns of change occurring in DNA and proteins in order to reconstruct the evolutionary history of genes and organisms
monocarpic flowering and fruiting once, then dying
monoecious plant bearing both staminate and pistillate flowers
monogeneric with one genus
monophyly (monophyletic) a branch of a phylogenetic tree that includes all descendants of a common ancestor
monosulcate pollen with a single aperture (sulcus)
monotypic with one species
monsoon(al) a wind regime that brings heavy summer rainfall to northern Australia
mucilage (inous) gelatinous-like substance
neotype a specimen selected in place of a holotype in the absence of original material
obovoid in three-dimensional shape, egg-shaped and broader distally
obpyriform in three-dimensional shape, pear-shaped and attached at the narrower end
Oligocene a division of the Tertiary, from 36.6 to 23.7 million years ago
ovate in two-dimensional shape, egg-shaped, if attached by the broad end
ovoid in three-dimensional shape, egg-shaped
ovule structure in which the female cycle of reproduction occurs in flowers
Palaeocene division of the Tertiary, from 66.4 to 57.8 million years ago
palmate with segments radiating from a central point resembling a fan in a leaf
panicle (paniculate) inflorescence with iterative branching patterns (racemes) from a central axis
pappilate (pappilose) a surface with minute, rounded elongated projections
paripinnate a pinnate leaf without a terminal pinna
partial inflorescence the first-order branch and the branches it carries, characteristic of some inflorescence types in the subfamilies Calamoideae and Coryphoideae
pedicel the stalk of each individual flower or fruit
peduncle the proximal unbranched portion of an inflorescence
peduncular bract(s) a single bract or multiple bracts on the main axis of the inflorescence, attached between the prophyll and rachis bracts
pendulous hanging pendant
perianth the sepals and petals together
persistent parts not shed after flowering
petal a unit of the corolla
petiole (petiolate) the stalk between attachment and the lowest pinnae or leaf segments on a leaf
phylogeny (phylogenetic) evolutionary relationships between groups of living things, inferred using a variety of techniques to establish the relative importance of various shared features
phytogeography (phytogeographical) study of the geographic distribution of plants
phytoliths microscopic silica-based structures formed within and between the living cells of most monocotyledons and some dicotyledons, and often preserved as microfossils
Pilbara a region of Western Australia bounded by the Tropic of Capricorn and 19°N, extending from the coast almost to the Northern Territory border

pinna(e) segment(s) of a pinnate leaf
pinnate pinnae arranged in a feather-like arrangement on a leaf, i.e. with similar number of pinnae on each side of the rachis
pinnule the pinnae of a bipinnate leaf, characteristic of species of *Caryota*
pistillate bearing a pistil
pistillode a sterile gynoecium
plate tectonics theory that explains the global distribution of geological phenomena such as seismicity, volcanism, continental drift and mountain-building in terms of the formation, destruction, movement and interaction of the earth's lithospheric plates
Pleistocene division of the Quaternary, from 1.6 million years ago to the last 10 000 years
pleonanthic the process of an individual plant flowering repeatedly
Pliocene division of the Tertiary, from 5.3 to 1.6 million years ago
plumose segments feathered or plume-like in a leaf
pollen a mature microspore and carrier of genetic information in a staminate flower
polygamodioecious having bisexual and male flowers on some plants and bisexual and female flowers on others
polygamomonoecious having bisexual and unisexual flowers on the same plant
polygamous having bisexual and unisexual flowers on the same or different plants
praemorse with the apex appearing torn-off or bitten, characteristic of the pinnae apices in subtribe Ptychospermatinae
pre-Linnean informal plant names prior to 1753 and the commencement of the Linnean classification system
pro parte [Latin] in part
propagule any structure that can give rise to a new plant, either vegetative portions, seeds or spores
prophyll the first bract borne on the inflorescence
protandrous when pollen shed precedes stigma receptivity on a single inflorescence
protogynous when stigma receptivity precedes pollen shed on a single inflorescence
proximal nearest to the point of attachment
pseudomonomerous a gynoecium with one fertile carpel and one locule but with parts of two other carpels present
punctiform a surface with small dots
pyriform in three-dimensional shape, resembling a pear, attached at the broader end
Quaternary the last 1.6 million years of the geological scale
rachilla(e) the flower-bearing branch of an inflorescence
rachis the axis beyond the petiole or beyond the peduncle of the leaf or of an inflorescence
radiation the process of dispersal of organisms across a landscape
ramenta variously shaped ragged-edged scales, large and irregular, sometimes present on the midrib and veins on the abaxial surface of pinnae
raphe a ridge or depression that is the source of vascular branches on a seed
rattan a climbing palm of the subfamily Calamoideae
reduplicate inverse V-shaped in cross-section
reflexed folded or turned back
relictual species species that are persistent examples of floras now mainly vanished
remote-ligular the young plant joined to the seed by a petiolar cotyledonary tube and bearing a ligule in seed germination
remote-tubular the young plant joined to the seed by a petiolar cotyledonary tube but lacking a ligule in seed germination
reniform in two-dimensional shape, kidney-shaped
reticulate large rounded or angular holes through the tectum of pollen
retrorse bent backward or downward
rhombic in two-dimensional shape, quadrilateral with obtuse lateral angles and acute basal and apical angles
rugose with a wrinkled surface
ruminate appearing streaked due to intrusion of the seed coat into the endosperm
sagittate arrow-shaped
sarcotesta(al) a fleshy layer developed from the outer seed coat, characteristic of most fruit in the subfamily Calamoideae
scabrate a roughened surface
sclerophyllous vegetation characterised by thick hard foliage due to well-developed sclerenchymatous tissue
segment a single division of a palmate or costapalmate leaf
sepal a unit of the calyx
sessile flat against, lacking a stalk
sister the closest relative in a phylogenetic tree
solitary with a single stem, not basally clustered
speciation the process of the evolutionary formation of new biological species, usually by the division of a single species into two or more genetically distinct species
spicate an unbranched inflorescence
stamen the stalk bearing the anther in a flower
staminate a flower that bears stamens
staminode vestigial stamens, often reduced to tooth-like flaps of tissue
sterile lacking functional sex organs
stigma (stigmatic) the portion of the pistil that receives the pollen
stigmatic remains the usually dried remnants of the stigma and perianth on the surface of the fruit
striate a lined surface
style the part of the pistil connecting the ovary and the stigma
subdistichous arranged in two rows but with items not perfectly aligned

subulate in two-dimensional shape, narrowing abruptly, awl-shaped
sulcus (sulci) an elongate aperture on one of the axes of a pollen grain
suprafoliar borne above the leaves
sympatric related species that occur in the same geographical range
sympodial changing direction by frequent replacement of the growing apex with a lateral growing point below it
systematics the process of organising biological information in a taxonomic or phylogenetic manner
taphonomy (taphonimic potential) study of the conditions and process by which organisms become fossilised
taxonomy the science of organising and classifying living things into groups reflecting their natural phylogenetic relationships, and naming them
tectate (tectum) the uppermost layer of the exine of pollen
terete cylindrical, circular in transverse section
Tertiary geological period from 66.4 to 1.6 million years ago
tomentum (tomentose) a surface with a cover of short hairs, scales, wool or down
Top End part of the Northern Territory north of about Mataranka
triad in threes, flowers grouped with a central pistillate and two lateral staminate flowers, characteristic of most species in the subfamily Arecoideae
trichotomosulcate having a three-armed sulcus in pollen
trilocular with three chambers, each bearing an ovary or seed in the gynoecium
triovulate bearing three ovules in the gynoecium, one in the locule of each carpel
trullate in two-dimensional shape, broadest below the middle, rhombic, with the two equal lower sides shorter than the two equal upper sides, shaped like a bricklayer's trowel
truncate as though cut off at the end
turbinate in three-dimensional shape, obconical, top-shaped
type specimen a specimen upon which the name was established and to which it is bound
ultramafic type of rock that is rich in heavy metals and that usually supports a distinctive flora
unisexual with one functional sexual role, i.e. with pistils or stamens only
vagile (vagility) able to move about or disperse freely in a given environment
valvate margins of segments meeting neatly without overlapping
ventricose swollen or inflated
verrucate (verrucose) a wart-like element of the exine of pollen
versatile when the anther appears hinged and is movable on the filament
vestigial diminished in size, structure or function
vicariance the process whereby an ancestral species splits as a result of the imposition of a barrier within the original population
vicariant species closely related and ecologically equivalent species that tend to be mutually exclusive, occupying disjunct geographical areas
Wallace's Line the boundary that marks unrelated biological realms east and west of a line drawn approximately through central Malesia. Thomas Huxley coined the term, based on the work of Alfred R. Wallace
zonasulcate with a ring-like meridional or equatorial aperture in pollen

Abbreviations

µm	micron (one-millionth of a metre)
AFLP	amplified fragment length polymorphism
alt.	altitude
Apr.	April
asl	above sea-level
auct. non.	(Latin) *auctorum non*, not of the author; used to show that the preceding name has been misapplied by some authors and is not used in the sense of the original author
Aug.	August
b.	borne
bp	before present
c.	(Latin) *circa*, about, approximately
Ck	creek
cm	centimetres
cpDNA	chloroplast DNA (deoxyribonucleic acid)
d.	died
dbh	diameter at breast height
Dec.	December
diam.	diameter
e.g.	(Latin) *exempli gratia*, for example
et. al.	(Latin) *et alii*, and others
f.	(Latin) *filius*, son of
Feb.	February
Fig.(s)	figure(s)
ft	feet
hort.	(Latin) *hortorum*, of gardens
hwy	highway
i.e.	(Latin) *id est*, that is
ICBN	International Code of Botanical Nomenclature
in litt.	(Latin) *in litteris*, in correspondence
ined.	(Latin) *ineditus*, unpublished
Is.	Island
Jan.	January
Jul.	July
Jun.	June
k	one thousand
km	kilometres
m	metres
Mar.	March
mm	millimetres (one-thousandth of a metre)
mss	manuscript
Mt	Mount, Mountain
My	million years
Mya	million years ago
N	north
NE	north-east
n.s.	new series
nom. alt.	(Latin) *nomen alternativum*, alternate name
nom. con.	(Latin) *nomen conservandum*, conserved name
nom. illeg.	(Latin) *nomen illegitimum*, illegitimate name under the rules of the International Code of Botanical Nomenclature
nom. inval.	(Latin) *nomen invalidum*, name not validly published
nom. nud.	(Latin) *nomen nudum*, name published without a description
nom. prov.	(Latin) *nomen provisorium*, provisional name
nom. rej.	(Latin) *nomen rejiciendum*, rejected name
Nov.	November
Oct.	October
orth. var.	orthographic variation
p.	page
pers. comm.	personal communication
pro syn.	(Latin) *pro synonyme*, an invalid name originally proposed as a synonym of an accepted name
R.	River
rd	road
s. lat.	(Latin) *sensu lato*, in a broad sense
s.n.	(Latin) *sine numero*, without number
SE	south-east
Sept.	September
ser.	series
sp.	species (singular)
spp.	species (plural)
sub.	(Latin) *subter*, under
subsp.	subspecies
tab.	tabula (plate)
var.	variety

Herbarium acronyms

A	Arnold Arboretum, Harvard University, USA
AAU	Aarhus University, Department of Systematic Botany, Denmark
B	Berlin, Botanischer Garten und Botanisches Museum, Germany
BH	Bailey Hortorium, Cornell University, USA
BM	[British Museum] Natural History Museum, London, UK
BO	Bogor, Herbarium Bogoriense, Indonesia
BRI	Brisbane, Queensland Herbarium, Australia
CANB	Australian National Botanic Gardens, Canberra, Australia
CBG	Canberra, Australian National Herbarium, Australia
CNS	Cairns, Australian Tropical Herbarium, James Cook University, Australia
DNA	Darwin, Northern Territory Herbarium, Australia
FI	Herbarium Universitatis Florentinae, Museo di Storia Naturale dell'Università, Italy
FTG	Fairchild Tropical Botanic Gardens, Miami, Florida, USA
GOET	Universität Göttingen, Abteilung Systematische Botanik, Germany
JCT	James Cook University of North Queensland, Townsville, Australia
K	Royal Botanic Gardens Kew, UK
L	Leiden, Rijksherbarium, Netherlands
LAE	Lae, Papua New Guinea Forest Research Institute, Papua New Guinea
LZ	Universität Leipzig, Institut für Botanik, Germany
M	Botanische Staatssammlung München, Germany
MEL	Melbourne, National Herbarium of Victoria, Australia
MO	Missouri Botanical Garden, Saint Louis, USA
NOU	Nouméa, Institut de Recherche pour le Développement, New Caledonia
NSW	National Herbarium of New South Wales, Sydney, Australia
NY	New York Botanical Garden, USA
PERTH	Perth, Western Australian Herbarium, Australia
PR	National Museum in Prague, Department of Botany, Czech Republic
PVNH	Port Vila, ORSTOM, Vanuatu
U	Nationaal Herbarium Nederland, Leiden, Netherlands
UC	University of California, Berkeley, USA
US	United States National Herbarium, Washington, USA

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