

GLOSSARY

Simplified definitions of botanical/environmental and scientific/technical words/terms.

WORD/TERM	EXPLANATION
abiotic	referring to inert non-living physical conditions (temperature, pH, humidity, salinity, sunlight) and chemical agents (gases and mineral nutrients) present in the air, water and soil in an ecosystem.
achene	referring to a type of fruit defined as simple, dry and indehiscent, found in many flowering plants. The achene is a hardened capsule, of various shapes, enclosing/protecting the seed within. Examples include: the wing-like samara of field maple (<i>Acer campestre</i>), the balanced/weighted parachute hairs of the London plane (<i>Platanus x hispanica</i>); and the disc-winged samara of wych elm (<i>Ulmus glabra</i>).
aeolian	referring to dispersal (of plant seed) by wind.
age class	referring to classification of trees (by arborists and foresters) into age categories – as in, for example only, year/decade time periods such as 01-20, 21-40, 41-80, 80-120 and so on – which may indicate biological, ecological, economic and social sustainability. Typically, age classes are applied as ‘even-aged’ (where all trees are the same age) or ‘uneven-aged’ (where trees are of different ages).
alien	referring to any non-native plant; otherwise described as ‘introduced’ or ‘exotic’.
angiosperm	vascular flowering plants with seeds enclosed within an ovary.
anthropic	allied to ‘anthropomorphic’, meaning involving, induced or undertaken by human beings.
anther	the bulbous pollen-bearing/emitting part of the male stamen.
arboriculture	the growth/maintenance/management and conservation/protection of individual trees in private and public gardens, parks, reserves and streets for amenity purposes.
archaeophyte	referring to an intentionally or unintentionally introduced plant which became naturalised in Britain between the Neolithic period and prior to 1500CE.
ASL	abbreviation for the term ‘above sea level’ which generally refers to the vertical height measured ‘above mean sea level’ (AMSL).
autotroph	a ‘primary producer’ organism, capable of creating its own food from the combination of raw nutrients and water (in the presence of sunlight) via the complex process of photosynthesis. Trees (and plants) are autotrophs.
axil	refers to the upper angle junction/union between one plant part and another, for example as in main stem and side branch, primary vein and secondary vein. Growth from an axil is referred to as being axillary.
BCE	timescale, referring to Before Common Era. Opposite to CE (Common Era). Equivalent neutral/secular timescale to AD/BC (Anno Domini/Before Christ).
binomial	format of a tree’s scientific/taxonomic name, always written in two parts and <i>italicised</i> (or, otherwise, separately underlined) – beginning with the genus, followed by the specific epithet, which combine to make the species.

biotic	referring to living reproducing organisms (algae, lichen, fungi and all spore-bearing/seed-bearing plants plus insects, birds and animals) in an ecosystem.
bract	a modified or specialised leaf, with a flower or flower cluster in its axil. Bracts often larger, more highly-coloured and showier than the plant's true flower as with, for example, Nuttall's (syn. Pacific) dogwood (<i>Cornus nuttallii</i>) or dove (syn. ghost or handkerchief) tree (<i>Davidia involucrata</i>).
broadleaves	flowering trees within the angiosperm or gymnosperm clade.
bryophyte	mosses – primitive plants that reproduce by spores (not seeds) with no vascular system, merely capable of absorbing moisture.
C3	referring to the process of photosynthesis undertaken by the majority of plants in a range of environments, where three atoms of carbon (C) are created through a series of complex reactions.
C4	referring to the process of photosynthesis undertaken by some plants in arid/hot/dry environments, where four atoms of carbon (C) are created through a series of complex reactions.
calyx	referring to the collective group of sepals.
cambium	a complex layer of dividing cells (referred to as a meristem in plant biology) responsible for secondary growth in the trunks and branches of woody trees. Simply, two cambiums exist: a) the vascular cambium, capable of creating differentiated cells (comprising xylem, the internal wood or phloem, the external bark); and b) the cork cambium, capable of creating differentiated cells (parenchyma [phelloderm], the inner functioning phloem or cork [phellum], the outer deteriorating-dead phloem known as bark).
CE	timescale, referring to Common/Current Era. Opposite to BCE (Before Common Era). Equivalent neutral/secular timescale to AD/BC (Anno Domini/Before Christ).
cellulose	an organic compound, forming the structural component of a primary cell wall in plants.
chlorophyll	referring to specialised pigment/s constituting the green colour in plant leaves (or shoots/stems) capable of absorbing radiant electro-magnetic energy (sunlight) as part of the process of photosynthesis.
ciliate	leaf margin, fringed with hairs.
clade	taxonomic grouping of plants with common ancestry, defining the two main groups – flowering plants (angiosperms) and non-flowering plants (gymnosperms).
compartmentalise	referring to a woody tree's activation of its inherent wound response mechanism, in a chemical and physical change process. The reaction of compartmentalisation is immediately initiated in response to biotic/abiotic attack/infection and/or wherever physical damage is inflicted. Cells at an affected site are instantaneously and progressively sealed (compartmentalised). Compartmentalisation (which may otherwise be considered as 'isolation') effectively: limits the entry/spread of invading pathogens; seals any damaged/dysfunctional/infected area to minimise the level/volume of dysfunction; activates chemical defences against invading organisms; initiates new functional growth beyond the sealed/compartmentalised area; and enables/promotes recovery/survival. Compartmentalisation is achieved in a two-part process (known as CODIT - Compartmentalisation of Damage/Decay/Dysfunction in Trees). The first part of the CODIT process results in the sudden formulation of multiple internal interrelated chemically-infused defensive 'compartments' comprising a 3-D latticework of

	vertical/radial/tangential cellular blockades – known simply as the ‘protective zone’. The second part of CODIT reinforces the protective zone with a stronger chemical and structural composite interface – known simply as the ‘barrier’ zone, outside of which all new/incremental growth continues. The activation and application of ‘compartmentalisation’ is highly complex. Cellular hydraulics and water movement/pressure are key related aspects of compartmentalisation overall. Current scanning microscopy research confirms trees synthesise and allocate an intricate plant-chemical arsenal plus activate and enforce internal cellular boundaries. In contrast, it must be noted, pathogenic fungi have equally formidable capacities and strategies to infiltrate and overwhelm plant/tree defences – and, thereby, the tree-fungi tussle for growth and succession is never-ending (and, indeed, part of Life). Ongoing studies are refining our scientific knowledge of the intricacies of the CODIT response process.
compound	referring to: a leaf shape consisting of several leaflets, which may be palmate or pinnate; a flower arrangement comprised multiple flowers (example panicle); or to any plant parts made up of the same or similar components/parts.
concolorous	referring to leaves with the same colour on both the upper and lower surfaces (opposite to discolorous).
conifer	non-flowering cone-bearing trees within the gymnosperm clade.
cork	the botanical term for bark: part of the periderm protecting the inner plant tissues from mechanical injuries/water loss/pathogens, comprising cells that are dead at maturity.
corolla	the arrangement of petals in a flower; appearing in all colours.
cotyledon	referring to the first (rudimentary) leaf or leaves to emerge from a plant’s embryo, present in seed at germination. Cotyledons are capable of photosynthesis and, on emergence, commence absorbing sunlight. They develop within seed (during embryogenesis) prior to germination. They are functionally different to ‘true’ leaves (which develop from shoot apical meristems, to form the subsequent aerial canopy of the plant). In general, the number of cotyledons is a characteristic used in plant classification/taxonomy: that is, within all flowering plants (the angiosperms) species that initiate one cotyledon are monocotyledonous (the ‘monocots’); species that initiate two cotyledons are eudicotyledonous (the ‘eudicots’ [syn. dicotyledonous or ‘dicots’]).
corymb	referring to an inflorescence (lacking a terminal flower) where all flowers are arranged at the same height, despite arising from different levels on a stem.
cupule	referring to a small woody cup, comprised tightly pressed scales, formed to hold a fruit (typically seen in oak [<i>Quercus</i>] species); the size and coverage (over the partly-covered fruit) of a cupule varies according to species – some enclosing only a small segment ($\pm 10\text{-}20\%$) others a larger part ($\pm 60\text{-}70\%$); appearance half-rounded to saucer-like, scaly/smooth to glabrous/hirsute.
cyme	referring to an inflorescence where each branched end of the grouping terminates with a flower (a cymose inflorescence).
deciduous	plants that lose their leaves in autumn, are leafless over winter, growing new foliage in spring.
decomposer	referring to bacterial and fungal organisms, which convert organic waste (mainly decayed plant material) into inorganic materials (such as nutrient-rich soils) thereby completing the process of nutrient recycling for consumption/use by autotrophs. Decomposers, together with detritivores, are vital to the cycling/recycling processes by all natural trophic networks.

dehiscent	referring to mature fruit (or anthers) which open by splitting along a predefined line of weakness to release contents (that is, seed or pollen, respectively). Opposite: indehiscent (where seed [or pollen] is enclosed in a non-opening/non-splitting manner).
denizen	referring to introduced/naturalised plants (archaeophytes) able to compete with existing vegetation and behave (botanically and/or biologically) similarly to a native.
detritivore	referring to organisms that consume non-living plant/animal remains; scavengers 'cleaning up' waste matter that would otherwise accumulate in polluting noxious/toxic volumes. Detritivores, together with decomposers, are vital to the cycling/recycling processes undertaken by all natural trophic networks.
dioecious	with male or female cones, flowers, fruits or sexual parts on the same plant.
diurnal	referring to the period of daylight/daytime within a full (24-hour) daylength, when most (C3) plants are physically/physiologically active. Note – other states (nocturnal) and other pathways for photosynthesis (C4) exist.
dichasium	referring to part of a cymose inflorescence (comprising multiple floral units) – each unit called a dichasium, which is typically structured around a central flower with two lateral flowers (one each side).
discolorous	referring to leaves with different colours on the upper and lower surfaces (opposite to concolorous).
dormant	referring, in simple terms, to buds 'hidden' internally, beneath the bark, which grow (when stimulated by incidents of damage/decline or loss) to replace/restore photosynthetic biomass.
DNA	referring to deoxyribonucleic acid (a specific nucleic acid, meaning it is comprised large biomolecules essential to all cells) which carries the genetic instructions for the development and functioning of the organism. DNA molecules provide for the long-term storage of genetic information.
drupe	or 'stone fruit'; referring to fruits formed with an outer fleshy part (covered by a skin) surrounding a single hard-shelled pip (enclosing 2-4 seeds).
dysfunctional	referring to wood that is damaged and/or decayed, often discoloured, usually exposed (and not enclosed internally) and non-functioning, so having no capacity to move or store water/sugars and with greatly reduced or nil structural strength.
ecoregion	referring to an ecologically and geographically defined area, typically large in scale, covering significant land and water, which contains biodiverse yet distinct assemblages of fauna and flora in natural communities.
ecosystem	referring to organisms and the dynamic physical environment in which they interact. Ecosystem components are biotic and abiotic, collectively contributing to nutrient cycles and energy flows. Ecosystems provide innumerable outputs upon which people depend.
edaphic	relating or referring to soil conditions – such as soil type, drainage characteristics and nutrient absence/availability.
embryo	referring to the rudimentary plant present in a mature seed (prior to germination).
endemic	having a natural distribution within a particular geographic region; native.

epicormic	referring to buds, shoots or flowers arising on the old wood of trees; term usually applied to shoots growing from dormant buds, initiated in response to a stress agent/factor causing damage/loss (such as mechanical/physical injury).
epidermis	referring to the outermost single layer of cells protecting plant parts (including flowers, leaves and stems). In trunks of woody plants the epidermis comprises cork (bark) which is multi-functional and multi-layered (in simple terms, containing inner phloem for sugar circulation/transport, dividing cambium for cell differentiation and discardable/replaceable outer phloem for defense and protection).
eudicotyledon	plants having two cotyledons (seed leaves) at germination. Term is considered botanically/taxonomically more accurate/comprehensive. Derived from the original term 'dicotyledon'. Etymologically meaning <i>eu</i> = true, <i>di</i> = two, <i>cotyledon</i> = seed leaf. See 'cotyledon'.
evergreen	plants that retain their foliage all year, appearing to be 'ever-green' as leaves that drop are constantly replaced, within the angiosperm or gymnosperm clades.
exfoliate	referring to 'exfoliation', describing the natural process of branch and trunk bark peeling to a) allow for circumferential expansion plus b) to replace aging protective bark covering. Examples of trees that display exfoliating bark include some maple (<i>Acer</i> spp.), birch (<i>Betula</i> spp.) and plane (<i>Platanus</i> spp.) and many others. The term exfoliation may also refer to the loss or removal of leaves from a tree (plant).
exotic	(alien) taxa accidentally and/or deliberately introduced to Britain by human activity or influence; otherwise 'non-native' or 'introduced'.
exserted	projecting beyond the surrounding object/surface.
flower	sexual organ of a plant, containing male and/or female parts.
gaseous exchange	the swapping of gases into and out of a plant, via stomata, involving the absorption and/or liberation of carbon dioxide (CO ₂) and oxygen (O ₂). The inwards/outwards flow of either gas depends upon the interrelated processes of photosynthesis, respiration, transpiration and associated environmental stimuli.
genus	taxonomic ranking, denoting the group a plant belongs to; the first part of a two-part binomial name. Always written in italic font. Example: <i>Pinus sylvestris</i> – where the genus is <i>Pinus</i> . See also 'species' and 'specific epithet'.
glabrous	hairless (relating to leaf surfaces, petioles, twigs and other parts).
gymnosperm	non-flowering cone-bearing plants (but having male and female reproductive parts) producing 'naked' unenclosed seeds.
hardwood	a general term, referring to broadleaved tree species (which does not denote the actual/physical characteristic of hardness or softness of timber).
heartwood	referring to the inner wood (comprised xylem cells) that is original/old, dead/discoloured and inert, its tube-like tissue blocked/coagulated and infused with defensive and nutritional organic biochemicals, providing mechanical support and strength to the whole tree structure, stored carbohydrate reserves plus vital protection from debilitating/fatal pests and pathogens.
hermaphroditic	referring to trees (plants) with male and female reproductive organs composed together, within the same flower; alternatively known as 'bisexual' or 'perfect' flowers.

heterotroph	a 'secondary consumer' organism, dependent upon energy inputs derived from autotrophic ('primary provider') organisms. People (and animals) are heterotrophs.
hirsute	plant surfaces (say, leaves/shoots) covered with hairs.
hybrid	a cross between two plants, producing offspring with traits from both parents: specific hybrid, between two species within the same genus; generic hybrid, between two species from unrelated genera.
hyphae	long, branching, filamentous structures of fungi, capable of absorbing/transporting nutrients.
indehiscent	referring to mature fruit (or anthers) which do not open by splitting along a predefined line of weakness to release contents. Indehiscent seeds rely on decay or predation to release contents. Opposite: dehiscent (where seed [or pollen] is enclosed in a manner predisposed to opening/splitting).
indigenous	native to the area; endemic; not introduced.
inflorescence	referring to the arrangement of singular or multiple flowers.
inosculation	refers to a natural phenomenon affecting branches, roots, stems and trunks, where they may grow closely together, eventually touching, then fusing in a bonded union (similar to an artificial graft).
introduced	plants imported into Britain by human activity. Also referred to as 'alien' or 'non-native'.
involucre	a single (or several) whorl of bracts surrounding a flower or inflorescence.
lacinate	referring to leaf shape; deeply divided; margin cut into narrow lobes or blunt-serrated teeth.
lamina	referring to a simple undivided leaf blade.
lanceolate	referring to the leaf shape: being lance-shaped, three-five times as long as wide, broadest below leaf/leaflet middle, tapering to the apex.
lenticel	seen on the bark surface of some trees (being characteristic of alder, birch, elder, hazel, rowan and others) as raised, rough, warty markings, protecting air-porous tissue beneath (that enables gaseous exchange between internal stem tissues and the outside atmosphere).
lichen	a composite symbiotic organism (harmless and non-parasitic to trees). Lichen usually comprise a fungi (a multi-cellular eukaryotic heterotroph) partnered with an alga (a eukaryotic autotroph) and/or a cyanobacteria (a prokaryotic autotroph) though some species include a yeast (a eukaryotic heterotroph). Lichen partners are technically referred to as photobionts. Lichen exhibit a wide diversity of form, depending upon species and the environmental conditions they inhabit. Numerous forms are described, however the three most common are defined as crustose, foliose and fruticose. Typically the fungal partner furnishes the physical formation within which the photobionts are protected, whilst the photosynthesising alga or cyanobacteria provide shared nutrients – and where yeast are present (it is thought) their role is to deliver chemical defences against invasive microbes and predators.
lignin	an organic polymer, adding rigidity and strength to plant cell walls.

macro/micro (nutrient)	referring to seventeen (17) essential macro-/micro-nutrients, comprising elements absorbed from the air (C, H, O) plus those obtained from the soil (all others). A nutrient is considered essential if/when: i) the plant cannot complete its lifecycle without the nutrient; ii) the action of the nutrient is specific/unique; and iii) there is no substitute for the nutrient. Macronutrients are: nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), sulphur (S), magnesium (Mg), carbon (C), oxygen (O), hydrogen (H). Micronutrients are: iron (Fe), boron (B), chlorine (Cl), manganese (Mn), zinc (Zn), copper (Cu), molybdenum (Mo), nickel (Ni). Macro and micro-nutrients are equally essential. Nutrient doses required for normal plant function are measured in parts-per-million (ppm) with macronutrients approximately >0.1% (or 1,000ppm) and micronutrients approximately <0.02% (or 200ppm).
meristem	referring to regions of a plant capable of cell division and growth, producing new cells. Meristems are location-specific: apical meristems occur at root/shoot tips, giving rise to primary growth which extends the plant/tree; lateral meristems occur within the (trunk) vascular cambium and (bark) cork cambium, giving rise to secondary branch/stem/trunk expansion/thickening.
mesophyll	referring to an upper/lower zone of cells within leaves (containing chlorophyll, able to photosynthesise); very simply, (upper) palisade mesophyll cells receive absorbed/transferred light energy, (lower) spongy mesophyll cells process all accumulated light energy.
mire	referring to an area of peat-forming upland, divided into several types (depending on plant communities present and intrinsic ecological/hydrological/topographical characteristics) which provide significant natural values and habitats for a wide range of plant, invertebrate/vertebrate and animal/bird species.
monocotyledon	plants having one cotyledon (seed leaf) at germination. Etymologically meaning <i>mono</i> = one (singular), <i>cotyledon</i> = seed leaf. See 'cotyledon'.
monoecious	with male and female cones, flowers, fruits or sexual parts on separate plants.
moribund	a physical state in which a tree exhibits signs of ill health, sickness, lethargy – such as small and/or deformed leaves, fewer than normal shoot/flower buds, small/weak flowers, stunted extension growth, lack of natural development and overall poor performance in comparison to a 'typical' specimen.
morphology	referring to the vegetative and reproductive structures of plants (trees) and their development/growth.
mycelium	referring to multiple hyphae: collectively forming a mass of slender branching net-like threads (sometimes visible, often microscopic) responsible for vegetative growth in fungi; dispersed through soils or inside/surrounding other organic substrates; able to derive nutrients from source by secretion (breakdown) and absorption (intake) to enable organic growth/development and reproduction.
mycorrhiza	(plural: mycorrhizae) referring to fungi forming symbiotic (beneficial) associations with tree (plant) roots; where the fungal organism assists the plant in the absorption of nutrients and water and, conversely, the plant provides the fungi with synthesised sugars. In simple terms, there are two main types of fungal mycorrhizae: a) ectomycorrhiza, where the fungal hyphae form a sheath surrounding the plant's roots, growing into the plant's root cells plus externally into the soil and b) endomycorrhiza, where the fungal hyphae grow internally within the plant's root cells plus externally into the soil.
native	taxa that naturally colonised Britain, following the retreat of the last glacial ice flows and prior to any human presence. Additionally, a neonative tree (plant) is a native taxa that

	has naturally expanded its geographic range (in response to altered environmental conditions) into previously hostile/inhospitable regions as their original habitats are degraded and/or become unliveable.
naturalised	a non-native plant capable of self-sustaining reproduction and dispersal without human assistance or intervention.
neophyte	a non-native naturalised tree capable of self-sustaining reproduction/dispersal without human assistance/intervention introduced in recent history ($\pm 1500\text{CE}$). A long-established non-native plant capable of self-sustaining reproduction/dispersal without human assistance/intervention introduced prior to 1500CE is called an 'archaeophyte'.
non-vascular	a non-woody (bryophyte) plants without specialised conducting tissue, infusing moisture and nutrient by absorption – hydrated when wet and dehydrated when dry – able to withstand lengthy periods of input surplus or deficit and still survive.
occlusion	the process, over time, of wound closure – instigated by a tree to cover over and internalise/isolate an area of damaged or decayed tissue (in a complex chemical/physical response referred to as compartmentalisation) – in order for live annual growth to continue.
osmosis	the absorption of water and raw nutrients (in solution) from soil by a tree (plant), whereby water molecules naturally move from an area of high concentration (in the soil) across a semi-permeable membrane, to an area of low concentration (in the plant cell).
palmate	referring to a leaf shape with leaflets or lobes evenly or unevenly radiating from the leaf base.
panicle	referring to arrangements of compound flowers; having a main axis and lateral axes, each having a terminal flower or flower bud.
parasitic	referring to a plant or fungi growing and feeding upon a host plant. A hemi-parasite is partly parasitic, partly autotrophic. Opposite to symbiotic.
parenchyma	a 'ground' (meaning basic/all-purpose) tissue; versatile, with thin cell walls, found in various forms in the soft parts of plants and typically specialised for food storage.
pedicel	stalk of an individual flower; and/or subsidiary stalk on peduncle (seen on flower spikes holding multiple individual flowers).
peduncle	the stalk of a flower (inflorescence) and/or fruit.
perennial	in tree terms, a plant that maintains a perpetual life cycle of growth and regrowth over multiple years (throughout a genetically predetermined lifespan that may be either short, say, 01-25 years or long, say, 01-1,000+ years). Botanically opposite to 'annual' where a plant completes its life cycle within the timeframe of one year.
periderm	the three-layered outer covering of woody plants. The outermost layer is made up of cork cells (simply called bark, which provide physical protection), the mid-layer cork cambium (which [as a meristem] actively divides into outer bark or inner phloem) and the inner-layer phelloderm (an area of cortex containing sugar transporting phloem).
petal	outer part of flower structure; sometimes discreetly coloured and hidden amongst foliage but often colourful, showy, emitting scent to attract pollinators.
petiole	the stalk of a singular leaf.

pH	abbreviation for 'potential Hydrogen' – referring to a logarithmic scale of 14 points (with 7 as the mid-point) measuring soil or water acidity and/or alkalinity, where the concentration of Hydrogen atoms in a soil or water mass is either acidic (low pH concentration, being 0-7) or alkaline (high pH concentration, being 7-14). The pH of soil and/or water directly affects plant growth, vigour and survival.
phenology	the study of changes in the timing of seasonal events such as budburst, flowering, seed production and dormancy. Some phenological responses in plants are triggered by temperature, whilst others are more responsive to day length.
phloem	cells forming the external cork of trees, divided into dual functioning and protective layers comprising: inner conducting cells joined by perforated plates (referred to as sieve elements) designed to transport sugars synthesised in the leaves downwards and outwards to all parts of the living plant; and outer sacrificial cells called bark designed to provide physical/chemical defence against abiotic/biotic agents.
photosynthesis	a complex conversion process occurring in leaves where, in the presence of sunlight, water and carbon dioxide are synthesised into glucose, creating stored energy for the plant.
physiology	referring to plant (tree) function and behaviour, including the dynamic processes of growth, metabolism, reproduction, defence, communication and interaction.
pinnate	referring to a leaf shape comprising two rows of leaflets, arranged in alternate or opposite pairs along a petiole, with or without a terminal leaflet.
polymer	natural formulations of fundamental organic substances (such as cellulose, lignin, starches/sugars and others) in trees (plants).
precipitation	referring to forms of condensed atmospheric water vapour – experienced as rain, sleet, snow and ice.
process	referring to outgrowths/projections (termed 'processes') from a surface (of, say, leaves, shoots, stems).
pteridophyte	ferns – primitive plants that reproduce by spores (not seeds) with a basic but well-defined vascular system.
pubescence	dense, short hairs, appearing downy, typically silver/white though variable, frequently found on leaf surfaces, petioles, twigs and other plant parts.
raceme	referring to an unbranched inflorescence, where a flowering shoot bears multiple flowers, each borne on a short stalk, with those near the shoot base flowering first.
rachis	the axis of a pinnate leaf (comprised multiple leaflets) to which all are attached.
rebound	referring to the land (areas of Earth's crust) slowly rising to its original elevation, following widespread ice melt and the consequent loss/removal of the immense weight of glacial ice sheets.
recurved/reflexed	referring to cone scales, bent backwards, downwards or outwards.
respiration	a complex conversion process occurring in leaves, where oxygen breaks down the glucose created in photosynthesis, releasing the energy to enable the tree (plant) to conduct its essential life processes.

riparian	referring to vegetation adapted to or preferring to grow in the marginal zone alongside rivers or streams, wetlands or floodplains.
saprophyte	referring to a fungal organism deriving nourishment from dead organic (plant) matter, typically lacking chlorophyll.
sapwood	referring to the outer wood (comprised xylem cells) that is recently created living and functioning, its tube-like tissue transporting raw nutrients in solution from the roots upwards to the leaves, enabling the energy-creating processes of photosynthesis and respiration to occur.
samara	winged fruit (seed), dispersed by wind, able to travel distance from parent. Examples include: maple (<i>Acer</i> sp.); ash (<i>Fraxinus</i> sp.); and elm (<i>Ulmus</i> sp.).
scabrous	referring to 'scabrid', where of leaf and/or shoot surfaces feel rough to touch, due to minute hard/short/rigid hairs or processes.
seed	the reproductive part of angiosperm and gymnosperm plants, comprising an embryo, food source and protective covering.
seed leaf	an alternative term for cotyledon.
sepal	referring to outer leaf-like structures protecting/surrounding the flower bud.
serrate	referring to leaf margin with regular clearly saw-toothed edge.
serrulate	referring to leaf margin with regular finely saw-toothed edge.
sessile	stalkless, referring to the point of attachment for a fruit or leaf.
silviculture	the growth/maintenance/management and harvesting of trees in plantations for production purposes.
softwood	a general term, referring to conifer tree species (which does not denote the actual/physical characteristic of hardness or softness of timber).
sp.; spp.	in botany, an abbreviation for 'species', in both a singular and plural sense; plus (using an imaginary example of a group of larch) where specifically a) stating 'sp.' indicates the genus is known and all trees in the group <i>are the same species</i> (example: "prune the <i>Larix</i> sp. alongside the intake wall"; or where specifically b) stating 'spp.' indicates the genus is known, but <i>there is more than one species</i> of larch in the group (example: "prune the <i>Larix</i> spp. alongside the intake wall". Always written in normal lower case font with a full-stop.
species	a singular, unique plant with consistent identifiable repeatable characteristics and traits. Always written in italic font. Example: <i>Pinus sylvestris</i> – where the genus <i>Pinus</i> plus the specific epithet <i>sylvestris</i> are combined to create a singular (binomial) name. Abbreviated to 'sp.' (written in normal lower case font).
specific epithet	the individual plant type, when associated with a genus, that forms a one-off unique species. Always written in italic font. Example: <i>Pinus sylvestris</i> – where the specific epithet is <i>sylvestris</i> .
stamen	male part of flower, comprised a filament tipped with an anther, which emits/disperses pollen. Typically (but not always) enclosed within a surrounding arrangement of petals.

stigma	female part of flower, often sticky/waxy, receiving pollen; located at terminus of the style, thereby connected to ovary.
stomata	(singular: stoma) microscopic pores on the under-surface of leaves, that open/close to control the rate of gaseous exchange.
style	female filamentous part of flower, connecting a stigma (at the tip) with the ovary (at the base). Typically (but not always) enclosed within a surrounding arrangement of petals.
subsp.	in botany, an abbreviation for 'subspecies'; a taxonomic ranking below species, differing in minor morphological characteristics (usually, size or shape of parts) and/or partially or completely geographically isolated by topography or natural ecological barriers (usually mountain ranges or seas).
succession	the effects of biotic and abiotic factors where one living organism is followed (succeeded) by another.
symbiotic	referring to a long-term biological interaction or partnership between two organisms of differing species, where both partners benefit. Opposite to parasitic.
syn.	abbreviation for 'synonym', meaning 'alternative'; a term used in botanical nomenclature where two botanical/scientific names may exist for one species and either is acceptable. Typically, the correct <i>new</i> name is given first, with the correct <i>old</i> name, denoted by 'syn.' and enclosed in brackets, given second. Note, in accordance with the rules of botanical nomenclature, the abbreviation 'syn.' is written in lower case normal font with a full stop and not italicised (unlike the new/old binomial names themselves). Example: <i>Larix x marschlinsii</i> (syn. <i>Larix x eurolepis</i>). Note, as used in this compilation – if both botanical names follow the common name then, as per convention, they are enclosed in parentheses, with the synonym additionally enclosed in square brackets, to distinguish between each name, as in – hybrid larch (<i>Larix x marschlinsii</i> [syn. <i>Larix x eurolepis</i>]).
taxa	(singular: taxon) a taxonomic grouping of plants (for example, family, genus, species).
terete	referring to fruits (say, for example, acorns) which have an elongated cylindrical shape.
transpiration	referring to water movement through a plant via absorption (input) to liberation (output) and its evaporation from aerial parts (such as leaves, stems and flowers) using a passive process that requires no energy expense by the plant. Transpiration is linked to the plant's hydraulic system. Transpiration moves water, changing the pressure of cells (according to a decreasing water potential gradient) and enables the mass flow (transportation) of raw mineral nutrients.
trophic	a term used to describe a network of interconnected food chains (comprising organisms involved in a process of producing and/or consuming food) within an ecosystem.
var.	abbreviation for 'variety'; a term used in botanical nomenclature where a plant exhibits slight differences to the nominated species plant. Note, in accordance with the rules of botanical nomenclature, the abbreviation 'var.' is written in lower case normal font with a full stop and not italicised (unlike the italicised binomial name and variety name themselves). Example: Corsican pine (<i>Pinus nigra</i> var <i>maritima</i>) where the variety (var.) is <i>maritima</i> .
vascular (tree)	a woody (angiosperm or gymnosperm) tree with specialised conducting tissue, comprising integrated/organised hair-thin tubes arranged in a replicating formation (of xylem [wood] to the inside and phloem [bark] to the outside) that circulate/conduct the movement of water/nutrients/sugars throughout the plant.

vascular bundle	a formation of conducting tissue, comprised xylem and phloem in parallel, divided by cambium. The 'bundle' ensures the continuous development of wood and bark, as the separating cambium divides to either the inside or outside, depending on the tree's sensory response to the need for new tissue. The formation is repeated/replicated each growing season, annually increasing the circumference/girth of a tree.
whorl	arrangement of leaves (or other plant parts) arising at the same, radiating from a single point in a repeated pattern, surrounding or wrapping around the shoot/stalk/stem.
x	abbreviation for a 'cross' or 'hybrid' between different plants. The placement of the 'x' symbol denotes the type of hybrid. In referring to binomial plant names: a) when placed between the genus and specific epithet 'x' signifies an interspecific hybrid (where two species of the same genus naturally cross, forming a new self-perpetuating species as in, for example, London plane (<i>Platanus x hispanica</i>); and b) when placed at the beginning, prior to the name, 'x' signifies the plant is an intergeneric hybrid where two species of different genera have crossed, forming a new self-perpetuating species as in, for example, Leyland cypress (<i>x Cupressocyparis leylandii</i>). Note, in accordance with botanical nomenclature conventions the 'x' is written in lower case normal font and not italicised (unlike the binomial name itself).
xylem	forming the internal wood of trees, comprising thin tube-like cells referred to as vessels (in angiosperms) and tracheids (in gymnosperms) designed to transport water and nutrients in solution from roots upwards to leaves. Xylem changes as the tree ages, by consolidating the older wood into inner (inert/dead) heartwood, leaving the younger wood as outer (functioning/living) sapwood.