Glossary

This glossary provides brief explanations for the technical terms used in Chapter 1 and the 'Conclusions' sections of the site reports, along with some of the botanical terms to be found in this volume. These explanations are not rigorous scientific definitions but are intended to help the general reader. Detailed stratigraphical terms are omitted as they are given context within the tables and figures. The systematics of the Plant Kingdom are given on pp. 10–12 of the text (Chapter 1).

Abaxial: the side of a leaf facing away from the stem or main axis. In most leaves, this is the lower surface.

Abscission: the controlled shedding of a leaf, branch, fructification or other organ.

Adpression: Fossil preserved by compression of the plant tissue into almost two dimensions. If carbonized plant tissue still remains, the fossil is known as a *compression.* If the plant tissue is lost, the result is an *impression.*

Angiosperms: flowering plants.

Arborescent: tree-like.

Axil: the upper angle between a stem and a lateral branch or leaf. Structures growing out of that angle (tubercles, branches, sporangia etc.) are said to be axillary.

Biostratigraphy: the subdivision and correlation of sedimentary strata based on their fossil content.

Bioturbation: burrows and feeding traces in sediment, made by the organisms living on or in it.

Biozone: in biostratigraphy, a restricted unit of sedimentary rocks defined by its fossil content, most usefully by species of narrowly defined temporal, but wide spatial, range, and named after one or more abundant or characteristic species.

Brackish: waters with salinities intermediate between fresh and marine waters.

Bract: a leaf-like structure.

Bryophytes: non-vascular land plants known as mosses, liverworts and hornworts.

Cainozoic: the youngest era of geological time extending from about 65 million years ago to the present and consisting of the Tertiary and Quaternary sub-eras. Literally it means 'recent life'.

Charcoal: carbonized remains of plant tissue burnt at very high temperatures, in which some internal structure of the plant may be still preserved.

Chine: sharply incised valley intersecting a sea cliff.

Chronostratigraphical unit: a sequence of rocks deposited during a particular interval of geological time.

Chronostratigraphy: the correlation and subdivision of rock units on the basis of relative age — a hierarchy of sequential units to which the layers of sedimentary rocks are allocated. The hierarchy of principal chronostratigraphical units is system, series and stage, which are related, respectively, to the geological time units of period, epoch and age. Rocks of the Jurassic System (a chronostratigraphical unit) were laid down in the Jurassic Period (a geological time unit).

Circinate: a type of leaf development in which the young leaf is inrolled with its apex central. When the leaf starts to unroll, it forms a crozier, as seen in many living ferns.

Compression: see adpression.

Concretion: rounded or irregular mass of mineral matter concentrated around a nucleus formed during diagenesis in a sedimentary rock.

Correlation: tracing and identification of a stratigraphical unit away from its type area. Cortex: zone of tissue outside the stele. Cretaceous: the last period of the Mesozoic Era, ranging from about 140 to 65 million years ago.

Cupule: cup-shaped protective structure containing one or more seeds or ovules.

Cuticle: outer protective 'skin' covering the aerial parts of most land plants.

Diagenesis: small-scale changes of mineralogy and/or texture developed after deposition of sediment (e.g. cementation of sediment grains; excludes changes due to subsequent metamorphism)

Dichotomous: a type of branching where an axis divides into two equal branches.

Disconformity: a minor unconformity without angular discordance.

Dicotyledon: flowering plants whose seeds produce two seed leaves (cotyledons) on germination.

Disseminule: a part of the plant, such as a seed, that is released from the parent to achieve propagation.

Embryo sac: the megaspore in gymnosperms and angiosperms, containing the female gametophyte.

Eocene: middle epoch of the Palaeogene Period.

Eon: the largest unit of geological time, divided into eras.

Epidermis: outermost cells of a plant, usually (but not always) in a single layer.

Epoch: a unit of geological time, of shorter duration than a period and itself divisible into ages (e.g. the Late Jurassic Epoch).

Era: a large unit of geological time composed of several periods. The Phanerozoic Eon is divided into the Palaeozoic, Mesozoic and Cainozoic eras, and their constituent periods are defined on the basis of their charac teristic contents of invertebrate, vertebrate and plant fossils.

Facies: the sum total of a rock's lithological and gross faunal/floral characteristics that together reflect the particular environment in which it formed.

Fault: a fracture surface in rock along which there has been some movement of one side relative to the other.

Formation: a succession of contiguous rock strata that is distinctive enough in its lithology from the surrounding rocks to be mappable as a unit; the fundamental unit of lithostratigraphy. See also Member, Group.

Frond: a leaf, especially of ferns and some primitive gymnosperms.

Fusain: see charcoal.

GCR: Geological Conservation Review, in which nationally important geological and geomorphological sites were assessed and selected with a view to their long-term conservation as SSSIs.

Gametophyte: the sexual, gamete-forming phase (or generation) of the life-cycle of a plant.

Group: a stratigraphical unit combining several formations.

Gymnosperms: plants that reproduce by 'naked' seeds (i.e. seeds not enclosed in a carpel).

Holotype: the single specimen selected to epitomize a particular named species.

Impression: see adpression.

Integuments: protective structures enclosing the nucellus in ovules.

Jurassic: the middle period of the Mesozoic Era, ranging from about 195 to 140 million years ago.

Kimmeridgian: a stage of the Upper Jurassic Series. It is followed by the Portlandian and preceded by the Oxfordian stages.

Leaf scar: an abscission mark left on the stem or leaf cushion after a leaf has become detached.

Liana: climbing plant with woody rope-like stem.

Lias: the oldest Group of the Jurassic System, approximately equivalent to the Lower Jurassic Series.

Lignin: a complex polymer deposited in the walls of vessels, tracheids and fibres to increase their strength.

Lithology: the composition and form of rocks. Lithostratigraphy: the organization and division of strata into mainly mappable rock units and their correlation based entirely upon their lithological characteristics. Lumen: central cavity of a cell.

Maastrichtian: the youngest stage of the Cretaceous Period.

Medullary ray: radial extension of pith penetrating between the vascular bundles of a stem.

Megaspore: a spore that produces a female gametophyte.

Member: a subdivision of a formation.

Mesozoic: the middle era of the Phanerozoic Eon, spanning the Triassic Period to the base of the Tertiary sub-Era, (i.e. after the Palaeozoic, but before the Cainozoic era), from about 230 to 65 million years ago. Literal meaning is 'middle life'.

Metamorphism: the processes whereby rocks undergo changes in the solid state by heat and/or pressure but without melting.

Microphyll: a small leaf with just a single, or in some cases a pair of veins running along its length.

Micropyle: a small pore remaining from the incomplete closure of the integuments in an ovule, through which a pollen grain or pollen tube has to pass to effect fertilization.

Microspore: a spore that produces a male gametophyte.

Miocene: older of the two epochs of the Neogene Period.

Monocotyledon: flowering plants whose seeds produce a single seed-leaf (cotyledon) on germination.

Neogene: the younger period of the Tertiary sub-Era, preceded by the Palaeogene Period.

Nucellus: the tissue surrounding the embryo sac in an ovule.

Oligocene: youngest epoch of the Palaeogene Period.

Ovule: a female reproductive structure in gymnosperms and angiosperms, which contains an embryo sac surrounded by the nucellus and integuments. It is known as a seed after fertilization.

Oxfordian: the oldest stage of the Upper Jurassic Series. It is followed by the Kimmeridgian, and preceded by the Cabovian.

Palaeobiogeography: a branch of palaeontology dealing with spatial distribution of plants and animals in the geological past, in particular referring to environmental conditions and climate.

Palaeocene: oldest epoch of the Palaeogene Period.

Palaeoecology: a branch of palaeontology dealing with the relationships between plants and animals, and their palaeoenvironment.

Palaeoenviroment: an environment in the geological past.

Palaeogene: the older period of the Tertiary sub-era.

Palaeontology: the study of fossil flora and fauna, including their evolution and reconstruction of past animal/plant communities and ancient environments.

Palaeozoic: 'ancient life', the first major division (era) of geological time, characterized by abundant life; succeeded by the Mesozoic Era

Palynology: the study of pollen, spores and certain other microfossils such as dinoflagellates.

Papilla: small 'bump' on the plant's surface.

Pappus: tuft of fine hairs or teeth on a seed, to aid dispersal. A well-known example is the parachute-like structures on dandelion seeds.

Parenchyma: tissue of thin-walled, unspecialized cells that often make up a large part of non-woody plants and plant-organs.

Period: a major division of geological time, of shorter duration than an era and itself divisible into epochs.

Permineralization: the deposition of mineral matter within organic tissues (and sometimes also called petrifaction).

Petiole: the stalk of a leaf.

Phloem: conducting tissue responsible for the movement of sugars and other nutrients throughout a plant.

Pinna: a subdivision of a compound leaf or frond.

Pinnule: the ultimate division of a compound leaf or frond.

Pith: a zone of central parenchyma within the stele of a stem or root.

Pleistocene: the older epoch of the Quaternary sub-Era.

Pliocene: the younger epoch of the Neogene Period.

Pollen: the microspores of angiosperms and certain groups of gymnosperm.

Portlandian: the final stage of the Upper Jurassic Series, preceded by the Kimmeridgian stage and followed by the Cretaceous System.

Propagule: any part of a plant capable of growing into a new individual, e.g. seeds and spores.

Pteridophytes: a generalized term used for vascular plants, including ferns, horsetails and club mosses, that reproduce by spores.

Pteridosperm: a heterogeneous group of, mainly Palaeozoic, gymnosperms with large dissected leaves that superficially resemble fern fronds.

Pyrite: an iron sulphide mineral (FeS_2) common within sediments, resulting from the biochemical action of bacteria within anaerobic environments.

Pyritized: altered to the mineral pyrite (FeS_2).

Quaternary: the younger sub-Era of the Cainozoic Era, the beginning of the Quaternary is taken as about 2.4 million years ago in this volume and it extends to the present.

Rachis: the supporting axis of a compound leaf or frond, to which the leaflets or pinnules are attached.

Rays: radially arranged lines of parenchyma cells in vascular tissue.

Rhizome: a horizontal stem, usually underground, that facilitates vegetative propagation.

SSSI: Site of Special Scientific Interest. The designation of an area of land for statutory protection under the provisions of the *Wildlife and Countryside Act 1981;* the principal designation under which GCR sites are protected.

Sclerotic: thickened with lignin.

Secondary growth: the increase in girth of a plant by cell divisions in the cambium. Secondary wood in particular is an important means of increasing the girth of many plants, especially in gymnosperms and angiosperms.

Seed: a reproductive structure formed from a fertilized ovule.

Series: a major stratigraphical division of a geological system comprising all the rocks formed during a particular epoch.

Sorus: reproductive structures on ferns and certain algae, consisting of a cluster of sporangia, usually arranged in a regular pattern.

Sporangium: a spore case or capsule that produces spores.

Spore: a reproductive unit of one or more cells, produced by a sporophyte.

Sporophyll: a modified leaf, usually in a strobilus, on which a sporangium is borne.

Sporophyte: the spore-producing, non-sexual phase (or generation) in the life-cycle of a plant.

Stage: a chronostratigraphical subdivision of a series.

Stele: sometimes known as the vascular cylinder, consisting of xylem and phloem.

Stomata: small pores in the epidermis, which facilitate the movement of moisture and gases in and out of the plant (singular: stoma).

Strata (singular: **stratum)**: layers within sedimentary rocks. The term is often used instead of beds.

Stratigraphy: the study of rock strata and their distribution in space and time. See also lithostratigraphy, biostratigraphy.

Stratotype: 'layer pattern', a sequence of strata at a particular location that has been internationally recognized as the definitive section for a particular stratigraphical subdivision.

Succession: in stratigraphy, a continuous sequence of sedimentary rock units.

System: a chronostratigraphical unit comprising all the rocks formed during a geological period, e.g. the Jurassic System comprises all the rocks of the Jurassic Period.

Taphonomy:**the process of fossilization. Taxonomic group**: a unit of classification of organisms (e.g. phylum, class, order, family, genus, species).

Tertiary: the younger sub-era of the Cainozoic Era, ranging from about 65 to 2 million years ago.

Thanetian: the younger stage of the Palaeocene Epoch.

Trace fossil: a structure preserved in a sedimentary rock that indicates biological activity, e.g. burrows, trails and footprints.

Tracheids: discrete, elongated, water-conducting xylem cells, joined by pits and open ends.

Triassic: the first period of the Mesozoic Era preceding the Jurassic Period.

Trichomes: epidermal hairs, which may have a protective function. In some cases, a gland occurs at the trichome tip from which an exudant may be produced.

Trilete mark: a 'Y'-shaped mark on a spore, formed through the development of the spores in tetrahedrally symmetrical groups.

'Type locality: The location where the type section (or stratotype) for a stratigraphical unit is located, or where the original type section or fossil was first described.

Type section: see Stratotype.

Unconformity: a break in the relationship between successive strata resulting from a lack of deposition during an intervening phase of tectonism and erosion; the unrepresented time interval may be substantial, and there is often an associated angular discordance.

Vascular plants: plants with conducting tissue (xylem and phloem) in the roots, stems and usually the foliage.

Venation: the pattern of veins on a leaf or pinnule.

Vessel: a series of open-ended cells, arranged end-to-end, to form an elongate tube, found in the xylem of many angiosperms, and in some ferns and gymnosperms.

Xylem: woody conducting tissue responsible for the movement of water and solutes around a plant.

Zone: see biozone, but also used, more or less formally, as a 'building block' of a Stage in the chronostratigraphical hierarchy.

References