FERN
GLOSSARY
Chapter 9

FERN GLOSSARY

Abaxial: Refers to the side of the frond that is away from the central axis of the stem. This is the surface on which the sori are produced.

Acidic: A habitat poor in basic minerals, giving a low pH reading.

Acuminate: Narrowly tapering to a sharp point.

Adaxial: Refers to the surface of the frond that faces the axis of the stem or faces inward when the fronds are arranged in a roughly circular clump.

Adnate: Attached by the whole width of the base.

Annulus: The row of specialized cells with thickened walls surrounding each sporangium in ferns.

Antherozoid: The motile male gamete of the fern.

Antheridia: Small spherical structures that produce flagellate sperm.

Apiculum: The pointed apex of the cones of the evergreen horsetails.

Apogamous: A peculiar breeding system in which prothalli give rise directly to sporophyte plants without fertilization.

Archegonia: A flask-shaped structure that produces a single egg at the bottom, reached by the sperm by swimming down the neck.

Auricles: Rounded, ear-like projections of a pinna or pinnule.

Basic: A habitat rich in basic minerals, giving high pH reading.

Biennial: A fern, which completes its life cycle in two years, the spores being produced in the second year.

Bipinnate Blade: A blade that is divided into pinnae and each pinna is again fully divided into smaller segments (called pinnules).
**Bipinnate-pinnatifid:** A blade that is divided into leaflets and each leaflet has its own leaves that are cut.

**Blade:** The flat, green portion of a frond. Some fern books refer to the blade as the lamina.

**Bulbils:** Buds that break away from the adult sporophyte to form new, whole plants.

**Chromosome:** The thread-like bodies contained within every cell, which carry the genetic make-up of the individual. The number of them is constant within a species.

**Circinate:** Coiled in a flat spiral like a watch-spring, resembling the ornamentation at the head of a violin.

**Circinate Vernation:** The characteristic expand by the unrolling of a tight spiral (called crozier or fiddlehead) of new fern fronds with the return of favourable environmental conditions.

**Crozier:** The immature, tightly curled emerging fern frond; Fiddlehead.

**Cone:** The specialised portion of the shoot of fern-allies, which bears the sporangia, from which the spores are released.

**Confluent:** Blended into one.

**Convoluted:** Rolled up longitudinally from one margin to the other.

**Cordate:** Heart-shaped.

**Coriaceous:** Leathery.

**Costa:** The central axis or midrib of a pinna; plural: Costae.

**Crenate:** Scalloped, or with broad rounded teeth.

**Cuspidate:** Ending in a sharp rigid point.

**Decurrent:** The blade appearing to continue down the sides of the stem, as in a leaf.

**Deltoid:** Shaped like a gothic arch, the sides more curved than straight.

**Denticulate:** With small teeth, usually with reference to the margin of the frond.

**Dimorphic:** Having fronds or shoots of two distinct types (one of which is normally vegetative, the other fertile).

**Echinate:** With long, hedgehog-like spines, as in the spores of *Cystopteris fragilis.*
**Eusporangiate:** A group of ferns, in which the sporangium develops from the inner derivatives of several epidermal cells.

**Eutrophic:** A habitat type (usually aquatic) rich in minerals.

**Farinose:** Covered with whitish glands, giving the surface a mealy appearance.

**Fertile Frond:** A frond bearing sori; compared with a sterile frond, which has no sori.

**Fiddlehead:** The immature, tightly curled emerging frond; Crozier.

**Fimbriate:** Fringed along the edge.

**Flushing (of fronds):** The sudden resumption of vigorous growth with the return of favourable growing conditions, usually in spring.

**Frond:** The leaf of a fern. The fern stems are often at or below the soil surface and are very inconspicuous, so the fronds are the portion of ferns that one sees.

**Fusiform:** Spindle-shaped.

**Gametophyte:** The minor generation of the fern life cycle, which is non-vascular and liverwort-like, *i.e.* the prothallus.

**Genome:** A single, usually identifiable, set of chromosomes.

**Glabrous:** Surface without hairs.

**Glands:** Tiny structures found on the surface of some fern fronds. They often appear as very short hairs with an enlarged distal (free) end. Glands are very fragile and may be worn away on older fronds. Observation of glands often requires the use of a hand lens.

**Globose:** Nearly spherical.

**Habitat:** The place where a plant occurs and grows, and which is often characteristic of each species.

**Hyaline:** Translucent and whitish, as in the margins of the teeth of *Equisetum palustre*.

**Hydathode:** In some taxa, such as *Dryopteris*, the veins end in raised, broadened tips, without reaching the margin of the blade segments. These ‘hydathodes’ are often whitish in colour, and better observed on the adaxial (upper) surface of the frond.

**Indusium:** The covering over a sorus. Indusia are often thin and fragile and may be easily broken. The shape of indusia, how they attach to the frond, and their
location on the frond are often important characters in keys to the ferns; plural: Indusia.

Lamina: The leafy tissue of the blade of a frond; plural: Laminae.

Lanceolate: Lens-shaped, having a fairly narrow curved outline, broadest at or just below the middle and tapering increasingly towards both ends.

Leptosporangiate: A group of ferns, in which the sporangium develops from the outer derivative of a single epidermal cell.

Lunate: Half-moon shaped.

Lyrate: Applied to a pinnatifid leaf, with the terminal lobe rounded and much larger than the lower ones.

Morphology: The structure of a plant, its architecture.

Mucronate: Tipped with an abrupt point.

Oblong: Longer than broader, with nearly parallel sides.

Obtuse: Tapering abruptly to a point.

Oligotrophic: A habitat type (usually aquatic) poor in minerals.

Orbicular: More or less circular.

Orchreolae: The basal sheaths out of which the whorled branches arise in Equisetum.

Paleae: Elaborate outgrowths that form flat plates of 3-20 or more rows of cells. They are very important in description and identification of ferns; Scales.

Palmate: Leaf that is palm-like to hand-like in shape.

Paniculate: Of the character of a panicle; bearing panicles.

Paraphyses: Sterile hairs, usually amongst the sporangia.

Pellucid: Translucent, but coloured.

Peltate: Shield-shaped.

Perennial: Living through more than two years.

Perispore: The outer coat of a spore, which is often ornamented.

Pinna: A segment of a blade produced by one level of division. If a blade is once pinnate, the segments formed are pinna. Each pinna can be further divided into segments called pinnules; plural: Pinnac.

Pinnate: A term describing a common method of division of fern fronds, in which the blade is divided into segments, arising from both sides of a central axis.
(rachis). Each segment of the blade could then be divided again in a pinnate fashion, making the blade bi-pinnate or twice pinnate. The process can be continued to further levels of division.

**Pinnate–pinnatifid**: Pinnate because it has separate leaflets on the rachis, and pinnatifid because each of those leaflets is cut.

**Pinnatifid**: Similar to pinnate, except the blade is deeply divided, but not deeply enough to produce separate segments, *i.e.* at least a narrow strip of green blade remains along the rachis (central leaf axis).

**Pinnule**: The segment of a blade produced by two levels of division. If a blade is once pinnate, the segments formed are pinna. Each pinna can be further divided into segments called pinnules.

**Prothallus**: The liverwort-like flattened structure which is the gametophyte generation of the pteridophytic life-cycle, growing from the spore and bearing male (antheridia) and female (archegonia) organs.

**Pubescent**: Finely and evenly downy, with short, soft hairs, as the surface of the stipe of *Phegopteris connectilis.* In some fern books, the word ‘indument’ is used to describe all hairs and scales collectively.

**Pustule**: A small blister-like outgrowth.

**Racemose**: Bearing racemoses or raceme-like.

**Rachis**: The central axis of the frond; midrib.

**Recumbent**: Leaning; applied to structures that appear to lean against the surface of the part from which they extend.

**Reniform**: Kidney-shaped.

**Reticulate**: Arranged like a network.

**Revolute**: Said of a leaf in which the two sides of the blade are rolled lengthwise over the surface towards the midrib.

**Rhizoids**: Root-like structures (not true roots), that consist of single, greatly elongated cell, water and mineral salts are absorbed over the whole structure; rhizoids anchor the prothallus to the soil.

**Rhizome**: An elongated subterranean stem or branch; usually horizontal.
**Roots:** The underground non-photosynthetic structures that take up water and nutrients from soil; always fibrous and structurally similar to the roots of seed plants.

**Rugose-verrucose:** With a wrinkled, warty appearance of ridges and low projections.

**Scalcs:** Small flat, leafy structures, sometimes attached to the rachis or stipe of a frond or to the costae. They are generally brown or blackish rather than green.

**Septate:** Divided by septa or cross walls.

**Serrate:** With sharp marginal teeth that point forward.

**Sessile:** Without a stalk, as leaf without a petiole.

**Setae:** Trichomes having two or three parallel rows of cells at the base and a single file of cells at the tip; bristles.

**Simple Leaf:** A leaf with an undivided blade.

**Sorus:** A cluster of sporangia (the structures that produce spores). The shape of the sorus and its location on the frond are often important characters in identifying ferns; plural: Sori.

**Spinose:** Bearing spines (usually few and widely spaced in ferns).

**Spinulose:** Bearing small spines (usually numerous and close together in ferns).

**Sporangium:** The roughly spherical structures that produce spores on the surface of fern fronds. When the sporangia mature, they open to release the spores. Usually several to many sporangia are attached near one another in conspicuous clusters. These clusters of sporangia are known as sori; plural: Sporangia.

**Spore:** An asexual reproductive cell produced within a sporangium.

**Sporophyll:** A fern leaf that produces spores; analogous to the scales of pinecones or stamens and pistil in gymnosperms and angiosperms respectively.

**Sporophyte:** The dominant generation of the fern life cycle, which is vascular and leafy, *i.e.* the fern plant proper.

**Sterile Frond:** A frond that bears no sporangia, and therefore has no sori. In some species sterile fronds are of the same shape and size as the fertile fronds; in others, sterile and fertile fronds may differ in size and/or shape.
**Stipe:** A continuation of the rachis below the base of the blade. It is in effect the petiole of the leaf (frond).

**Stellate:** Star-shaped, or radiating like the points of a star.

**Sub-marginal:** Set a short way in from the margin.

**Subulate:** Awl-shaped.

**Triangular:** In the shape of a triangle.

**Trichomes:** A general term for simple outgrowths made up of a single cell or a chain of several cells.

**Tripartite:** Having three major parts, as in the frond of *Gymnocarpium dryopteris*.

**Tripinnate Blade:** A blade that is divided into three levels of segments. The blade is divided into segments called pinnae, each of the pinnae is again divided into segments, and those segments are again divided.

**Trophophyll:** A fern leaf that does not produce spores, instead only producing sugars by photosynthesis; analogous to the typical leaves of seed plants.

**Ultimate Segment:** The smallest level of segments into which a blade is divided. If the blade is once pinnate, the pinnae are the ultimate segments. If the blade is twice pinnate into pinnae and pinnules, then the pinnules are the ultimate segments etc.

**Undulate:** With a wavy edge or surface.

**Vallecular Canals:** The large canals situated beneath the furrows in the stem and rhizome of *Equisetum*.

**Verrucose:** With minute parts or blunt projections.