

CLASSES OF VASCULAR PLANTS

***RHYNIOPSISIDA** (Rhynophytes) – Earliest known vascular plants (from about 420 to 365 MYBP). Sporangia borne terminally on tips of forking stems; no roots or leaves. Homosporous. Probably ancestral to all other vascular plants.

***ZOSTEROPHYLLOPSIDA** (Zosterophyllophytes) – The second known group of vascular plants (from 400 to 355 MYBP). Sporangia borne laterally near tips of forking stems; no roots or leaves. Homosporous. Probably ancestral to Club Mosses.

LYCOPSISIDA (Club Mosses) – 5 genera, about 1,000 species. (390 MYBP to present) Stems, roots, and microphyllous leaves (usually with one unbranched vein). Sporangia borne singly on upper surfaces of certain leaves (sporophylls); sporophylls usually aggregated into terminal strobili ("cones") and usually spirally arranged. Homosporous or heterosporous.

***TRIMEROPSISIDA** (Trimerophytes) – The third known group of vascular plants (from 375 to 340 MYBP). Robust plants with main stems and lateral branches; no roots or leaves. Sporangia borne in large terminal clusters on stems and branches. Homosporous. Probably ancestral to Horsetails, Ferns, and Progymnosperms.

EOUISETOPSISIDA (Horsetails) – 1 genus and 23 species. (370 MYBP to present) Upright plants with stems, roots, and leaves (megaphylls). Sporangia borne 3-10 at tips of specialized branches (sporangiophores); sporangiophores aggregated into a terminal strobilis; sporangiophores and leaves borne in whorls. Homosporous.

FILICOPSISIDA (355 MYBP to present) (Ferns) – 6 subclasses, 19 orders, 41 families, and about 320 genera and 12,000 species. Stems, roots, and megaphyllous leaves (with a leaf gap and one or more main veins that divide to supply the whole leaf). Sporangia borne in large numbers on undersides or margins of leaves. Homosporous or a few heterosporous.

PSILOTALES (Whisk Ferns) – 2 genera and 10 species. No fossil record. Stems horizontal or erect, branched; no roots or leaves (prophylls). Sporangia borne at tips of reduced branches, fused into 2-3-lobed synangia. Homosporous.

***PROGYMNOSPERMOPSISIDA** (Progymnosperms) – Tree-like stems with secondary growth, roots, and large megaphyllous leaves or leaf-like branches. Sporangia borne on leaves or leaf-like branches. Homosporous to heterosporous. Lived about 370 to 330 MYBP; probably ancestral to seed plants.

***PTERIDOSPERMOPSIDA** (Seed Ferns) – Stems with gymnospermous secondary growth, roots, and mainly compound and large megaphyllous leaves. Microsporangia (with pollen) and seeds borne on leaves. Lived 350 to 70 MYBP.

CYCADOPSIDA (Cycads.) – About 10 genera and 100 species (230 MYBP to present). Stems mostly short, "telescoped", and unbranched, with gymnospermous secondary growth, roots, and compound megaphyllous leaves. Microsporangia (with pollen) and seeds borne on sporophylls aggregated into strobili; dioecious.

CONIFEROPSIDA (Conifers) – About 55 genera and 550 species (325 MYBP to present). Highly branched stems with gymnospermous secondary growth, roots, and reduced megaphylls that resemble microphylls. Microsporangia (with pollen) borne in simple strobili, seeds borne in complex strobili; plants monoecious or dioecious.

GINKGOPSIDA (Maidenhair Tree) – Monotypic (one species) (275 MYBP to present). Highly branched stems with gymnospermous secondary growth, roots, and fan-like megaphyllous leaves with bifurcating veins. Microsporangia (with pollen) borne in simple strobili, seeds borne at the tips of small specialized branches; dioecious.

GNETOPSIDA (Gnetophytes) – 3 genera and about 80 species (195 MYBP to present). Stems branched or unbranched, with gymnospermous secondary growth, but vessels present, roots, and simple or reduced megaphylls. Microsporangia (with pollen) and seeds borne in compound strobili, micropyle of seeds prolonged into a long tube; dioecious or monoecious. Recent evidence indicates them to be related to Angiosperms.

MAGNOLIOPSIDA (Angiosperms) – About 400 families and 270,000 species (120 MYBP to present). Stems branched or unbranched, with gymnospermous secondary growth (reduced or absent in some), vessels usually present, roots, and megaphyllous leaves. Microsporangia (with pollen) and megasporangia aggregated into flowers that are mostly bisexual; seeds born inside an enclosing ovary. Some dioecious or monoecious.

*Extinct

NB: Numbers given for genera and species are those living today.