

The tree growth habit is an evolutionary adaptation found in different groups of plants: by growing taller, trees are able to compete better for sunlight. Trees tend to be tall and long-lived, some reaching several thousand years old. Several trees are among the oldest organisms now living. Trees have modified structures such as thicker stems composed of specialised cells that add structural strength and durability, allowing them to grow taller than many other plants and to spread out their foliage. They differ from shrubs, which have a similar growth form, by usually growing larger and having a single main stem; but there is no consistent distinction between a tree and a shrub, made more confusing by the fact that trees may be reduced in size under harsher environmental conditions such as on mountains and subarctic areas. The tree form has evolved separately in unrelated classes of plants in response to similar environmental challenges, making it a classic example of parallel evolution. With an estimated 60,000-100,000 species, the number of trees worldwide might total twenty-five per cent of all living plant species. The greatest number of these grow in tropical regions and many of these areas have not yet been fully surveyed by botanists, making tree diversity and ranges poorly known. Tall herbaceous monocotyledonous plants such as banana lack secondary growth, but are trees under the broadest definition. The majority of tree species are angiosperms. There are about 1000 species of gymnosperm trees, including conifers, cycads, ginkgophytes and gnetales; they produce seeds which are not enclosed in fruits, but in open structures such as pine cones, and many have tough waxy leaves, such as pine needles. Most angiosperm trees are eudicots, the "true dicotyledons", so named because the seeds contain two cotyledons or seed leaves. There are also some trees among the old lineages of flowering plants called basal angiosperms or paleodicots; these include Amborella, Magnolia, nutmeg and avocado, while trees such as bamboo, palms and bananas are monocots. Wood gives structural strength to the trunk of most types of tree; this supports the plant as it grows larger. The vascular system of trees allows water, nutrients and other chemicals to be distributed around the plant, and without it trees would not be able to grow as large as they do. Trees, as relatively tall plants, need to draw water up the stem through the xylem from the roots by the suction produced as water evaporates from the leaves. If insufficient water is available the leaves will die.

