

## **Popular classifications**



Trees have been grouped in various ways, some of which more or less parallel their scientific classification: <u>softwoods</u> are conifers, and hardwoods are dicotyledons. <u>Hardwoods</u> are also known as broadleaf trees. The <u>designations</u> softwood, hardwood, and broadleaf, however, are often imprecise. The wood of some hardwoods—for example, certain <u>willows</u> and <u>poplars</u> and the softest of all woods, <u>balsa</u>—is softer than that of some softwoods—e.g., the longleaf <u>pine</u> (*Pinus palustris*). Similarly, some broadleaf trees (tree heaths, *Erica arborea*, and some <u>tamarisks</u>) have narrower leaves than do those of certain conifers (*Podocarpus*).

A popular and convenient grouping of trees is evergreen and deciduous. This is most useful at the local rather than the worldwide level; whether a particular species retains its foliage throughout the year and thus qualifies as evergreen may depend on climate. At the limits of their occurrence in the Northern or Southern Hemisphere, and at high elevations, species that under morefavourable circumstances retain their foliage may become leafless for a period. Many tropical and subtropical species that in uniformly humid climates are never without foliage are deciduous in regions in which dry and wet seasons alternate. In northern North America, the term evergreen is often used as a synonym for conifer and thus excludes foliage-retaining angiosperms. But five coniferous genera—Larix (larch), Metasequoia (dawn redwood), Pseudolarix (golden larch), Taxodium (swamp cypress), and Glyptostrobus—are composed of or include deciduous species.

Other tree groups are popularly recognized: <u>tree ferns</u>, <u>palms</u>, and, among desert plants, the tree forms of <u>agaves</u>, <u>aloes</u>, <u>cactuses</u>, euphorbias, and <u>yuccas</u>. Sometimes the layperson includes as trees plants that botanists cannot accept as such—e.g., the <u>banana</u>. Such confusion arises from the fact that what appears to be the trunk of the "<u>banana tree</u>" is actually leafstalks rolled tightly around each other. The banana <u>plant</u> is entirely <u>herbaceous</u>, has no true trunk, and thus is not considered a tree by botanists.

## The importance of trees

Forests are of immense importance in soil stabilization and erosion control, especially in mountainous and hilly regions; they also protect and conserve water supplies and prevent floods. Small groups of trees and even single trees have a similar role locally in preventing washouts and in holding stream banks. As mentioned above, trees contribute significantly to nutrient recycling, <u>carbon dioxide</u> absorption, and oxygen generation.

## **Economic importance**

Of all the products that come from trees, those that are wood-based are by far of the greatest importance (*see* wood). Carbonized and fossilized wood (coal) supplies fuel for energy needs; other fossilized products of trees include <u>amber</u>, which is formed from the gum of <u>pines</u>, and <u>kauri</u> gum. From earliest times wood has been employed for such items as homes, rafts, canoes, fuel, and weapons.

<u>Primitive</u> peoples were dependent on trees for many materials in addition to wood. Fruits and nuts of many kinds were important foods for both humans and animals. Leaves of palms and other trees were used for thatching roofs. Cloth and woven fabrics made from <u>bark</u>, leaves, and other tree parts were used for clothing. Utensils were fashioned from <u>calabashes</u>, <u>coconuts</u>, and other fruits. Medicines, including <u>quinine</u>, were obtained from trees, as were dyes, <u>tanning</u> materials, and spices.

Modern civilizations are no less dependent on trees. Although substitutes now are commonly used for some tree products, the demand for trees remains strong, as in the manufacture of newsprint and other papers, as well as cardboard and similar packagings. The <u>plywood</u> industry <u>converts</u> immense numbers of trees into building materials.

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Many tree products other than wood and its derivatives are important. Edible fruits produced by trees include apples, cherries, peaches, pears, walnuts, chestnuts, pecans, and others in temperate climates; avocados, figs, persimmons, and citrus fruits in warm-temperate and subtropical regions; breadfruit, jackfruit, mangoes, and mangosteens in tropical regions; and the important fruit of desert regions—the date. The coconut (Cocos nucifera), the oil palm (Elaeis guineensis), and the olive (Olea europaea) are important sources of oils and fats used as food and for other purposes. From trees come such spices as cinnamon, cloves, and nutmeg; substances used in beverages, such as cocoa, coffee, and kola nuts; and chicle, the basis of chewing gum. Nonedible tree products exploited commercially include rosin, turpentine, tanbark, creosote, cork, and kapok fibre.

The history of <u>wood</u> use includes incidences of waste, sometimes bordering on elimination of a species from a particular region. Great forests of <u>cedars of Lebanon</u> (*Cedrus libani*), for example, were virtually eliminated during early historic times in lumbering operations for such purposes as the construction of King Solomon's <u>great temple</u> and palace. Forests that covered much of the Mediterranean region and the <u>Middle East</u> were extravagantly exploited by the Assyrians, Babylonians, Greeks, and Romans. Today the once vast <u>tropical</u> <u>forests</u> of the <u>Amazon</u> basin and parts of <u>South Asia</u> are in <u>imminent</u> danger of being deforested primarily for farmland.

## **Trees of special interest**

Besides their utility to people, many trees are noteworthy for their habits and habitats, their size, or their longevity. The amazing diversity of tree form and function is a direct result of the complex and elegant organization of the tree body and the response of that body to environmental and biological stimuli. Structural features unique to woody plants are capitalized upon by trees to allow them to grow in a myriad of remarkable forms, sizes, and habitats. Mangroves, for example, colonize tidal shores and brackish waters in the tropics and subtropics throughout the world, and in so doing they not only stabilize shorelines but also create new land by trapping debris, silt, and mud among their interlacing roots. Mangroves are actually an unrelated heterogeneous group of species with similar adaptations to this particular environment. Mangroves spread out into the water by sending from their branches roots that reach into the mud and develop into sturdy supporting props. A distinctive feature of mangroves is their large fruits, the seeds of which germinate and grow into sturdy seedlings before they leave the parent plant. When the seedlings fall, they either become fixed in the mud or float away, to be washed up at some site at which the opportunity to become established may occur.

Mangroves are not the only trees that spread by dropping prop roots from their branches. The habit is well developed in several tropical figs (*Ficus*), including one popular in small sizes as a houseplant—the <u>rubber plant</u> (F. elastica). Most noteworthy of the group is the banyan tree (F. benghalensis) of India; its numerous prop roots develop into secondary trunks that support the widespreading head of massive, constantly extending branches. One specimen in Calcutta covers an area more than 250 metres (about 275 yards) wide. The wonderboom (F. salicifolia) of Africa grows in a similar manner; a specimen at Pretoria has a spread of 50 metres (55 yards). Because of their unusual growth habits, some tropical ficuses are called <u>strangler figs</u>. Often they begin life high in a palm or some other tree in which a monkey, bat, or bird that has fed on the fruits deposits seeds that have passed through its <u>alimentary tract</u>. The seeds germinate, and the roots grow into organic matter collected in crotches or crevices of the host tree. Under humid conditions the seedlings grow rapidly, sending roots down along the trunk of the host tree. Upon reaching the ground the roots branch and establish themselves. Above the ground the roots thicken until they have formed an interlacing cylinder around the trunk of the host, often leading to the death of the host tree.

The ombu (*Phytolacca dioica*) is a remarkable South American relative of the pokeweed (*P. americana*). A tree capable of attaining heights of 20 metres (65 feet) and a spread of 30 metres (100 feet), it has a wide trunk; the branches contain as much as 80 percent water and very little wood tissue. From its base radiates a circle of rootlike outgrowths wide enough for a person to sit on.

The <u>traveler's tree</u> of Madagascar (*Ravenala madagascariensis*) has a palmlike trunk up to 9 metres (30 feet) tall topped by a huge symmetrical fan of long-stalked paddle-shaped leaves often much shredded by wind. The <u>vernacular</u> name <u>alludes</u> to the leaves' having hollow bases from which, it has been

reported, travelers could obtain potable water.



**Britannica Quiz** 

**Plants: From Cute to Carnivorous** 

The <u>talipot palm</u> (*Corypha umbraculifera*) of tropical <u>Sri Lanka</u> and India may live as long as 75 years before it flowers and fruits just one time and then dies. The huge panicle (many-branched cluster) of creamy white blooms rises up to 5 metres (16 feet) from the centre of the cluster of fan-shaped leaves topping the trunk, which may be 24 metres (about 80 feet) tall and 90 to 120 cm (3 to 4 feet) in diameter. Another palm of special interest is the <u>double coconut</u> (*Lodoicea maldivica*), a native of two tiny islands of the Seychelles group in the Indian Ocean; it has fruits that require about 10 years to mature, weigh up to 30 kg (66 pounds), and have the appearance of a pair of coconuts joined together. Long before their source was known, these fruits were washed up by the sea in India, and magical properties were ascribed to them.

The tallest trees are Pacific Coast redwoods (Sequoia sempervirens), specimens of which exceed 110 metres (about 350 feet) in height in Redwoods National Park and Humboldt Redwood State Park in California, U.S. The species is confined to a narrow coastal belt extending from southern Oregon to central California. The next tallest trees are the Australian mountain ash (Eucalyptus regnans), specimens of which in Victoria, Australia, exceed 90 metres (300 feet), the greatest heights known for nonconiferous trees. A close relative of the redwood, the giant sequoia (Sequoiadendron giganteum) develops the greatest total bulk of wood, but not the biggest girth, among trees. This tree, which attains heights in excess of 90 metres (300 feet) and may have a trunk diameter of about 7.5 metres (25 feet) some distance above its flaring base, is restricted to a strip about 420 km (260 miles) long and less than 24 km (15 miles) wide in the Sierra Nevada in California.

Records for tree girth (measured a metre or so above the ground) are held by the <u>baobab</u> (*Adansonia digitata*) of Africa and the <u>Mexican swamp cypress</u> (*Taxodium mucronatum*). The baobab attains a maximum height of about 23 metres (75 feet); its barrel-shaped trunk attains a diameter of more than 5 metres (16 feet), but a few individuals range from 7.7 to 15.9 metres (25 to 53 feet). The most-famous specimen of Mexican swamp cypress is "El Gigante," located at Tule, <u>Oaxaca</u>. The trunk of this massive tree is buttressed and not circular; if the bays and promontories of the buttresses are followed, the basal circumference is nearly 46 metres (151 feet).

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