

## The Tree

The best known member of the forest community is, of course, the tree. What is a tree and how does it grow? Although we may often take the tree for granted, it is, in fact, one of nature's marvels.

Trees are the world's largest plants. They have a single **woody stem**, a **root system** and a **crown of branches and leaves**. Each of these parts performs a special function or job. The cellulose fibres in the woody stem give the tree strength; the roots collect water and nutrients from the soil and transfer them through the stem to the leaves.

The **needles or leaves** of a tree may appear to be its smallest least important part, but the work they do is needed. They allow the tree to breathe, to release moisture and oxygen and use sunlight to manufacture food through a process called **photosynthesis**. This "food", mostly sugar and other carbohydrates, provides the energy needed for the tree to grow.

The stem, or trunk of the tree, is made up of several specialized parts. The **heartwood**, the non-living core of the tree's system, gives it strength. The living **sapwood** surround the heartwood. It is through the sapwood that water and nutrients travel, from the roots and up to the leaves, where they are changed into food by photosynthesis. The downward passage of food from the leaves, to other parts of the tree occurs in the **inner bark**. The **cambium**, the thing yellowish-white layer found between the sapwood and the inner bark, performs the important job of making new cells every year, allowing the tree to grow. Covering the outside of the tree is the **outer bark** which acts as a protective shell for the tree.

Each tree has its own growth chart. Within the tree's structure, the story of how it has interacted with its surroundings is told. A tree grows in layers, one layer for each year. If you cut through the trunk you will see the inside of the tree and the layers will look like rings. The age of the tree can be told by counting the rings. Any changes in climate, soil or light will affect how the tree grows. Good conditions means the tree will grow well and the rings will be farther apart. A cold, dry year will mean less growth and the rings will be closer together. Overcrowding between trees means less growth as trees fight for sunlight, moisture and nutrients. Thinning (removing trees) can prevent overcrowding.