An Ecological Understanding of Trees and the Environment
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An Ecological Understanding of Trees and The Environment

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Trees are both a product of, and an influence on, their environment. They are, therefore, a part of the total ecosystem that includes air, soil, climate, water, animals, plants, etc.

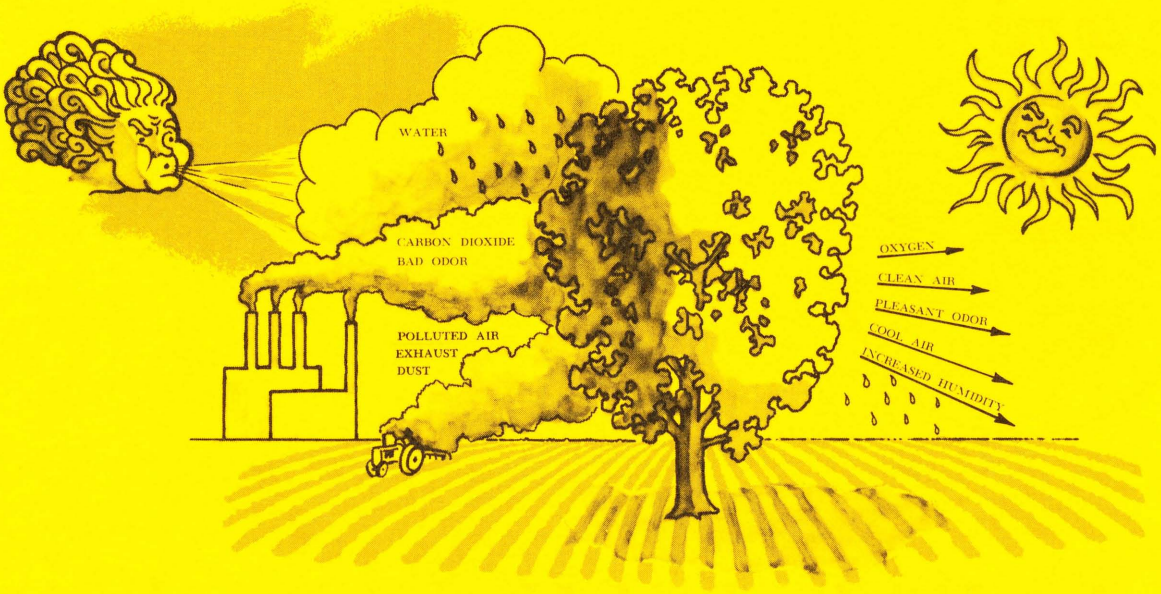
As a product of the environment, a tree is a living plant which draws on the soil for water and nutrients, the air for carbon dioxide, the sunlight for energy, and the earth for support. A tree is dependent on the wind and insects to pollinate its flowers. When seeds are produced, they are disseminated by the wind, birds, animals, and man. The seeds germinate producing a new seedling—a new tree. The cycle is thus complete and re-occuring.

Each tree species has a normal expected life span, longer for some than for others. Within a species, some individuals may live longer than others depending on the favorability of soil, site, and other climatic conditions. These conditions, of course, will vary by location and species. A tree growing on fertile soil with adequate moisture, an abundance of sunshine, and free from major stresses will usually grow faster, remain healthier and live longer than an individual of the same species growing on infertile soil with inadequate moisture, insufficient sunlight and/or other stresses.

Each species of tree is adapted to certain parts of the world with specific climate and soil requirements. Through evolution, they have developed particular genetic traits and become adapted to these conditions. Tropical trees will not grow in areas where frost occurs. Desert species transpire very little, can withstand prolonged drought, and are poorly adapted to growth on wet sites. Northern boreal species are able to withstand long periods of freezing without damage and will produce foliage and flowers within the frost free period of the year. Tropical species cannot tolerate freezing of their tissues, and, therefore, will not live through the first winter if transplanted to northern latitudes.

A *tree* is defined as "a living, woody plant having one well-defined stem and a more or less definitely formed crown, usually attaining a height of at least 8 feet."

There are many species with greatly varying characteristics, each a product of its environment. Trees also exert great influence on the environ-



The tree, an outside air conditioner, produces oxygen, water and sugars from carbon dioxide and sunlight through the process of photosynthesis, filters dust particles from the air, reduces noise, acts as a windbreak and cools the air by shading.

ment and yield many products useful to themselves, wildlife and mankind.

Over 5,000 different products come from trees. Some of the more common are: pulpwood, lumber, fuel wood, maple syrup, Christmas trees, fruits, nuts, flowers, posts, poles, railroad ties, veneer, charcoal, and piling. Trees also provide chemical by-products such as: turpentine, tar, pitch, lignin, flavoring, alcohol, and others.

In growing, a tree uses carbon dioxide and water to produce great quantities of oxygen through photosynthesis. It also transpires moisture into the air thus increasing the relative humidity and cooling the air. Tree leaves serve many functions—they manufacture food for the tree, shade the area, serve as baffles to harsh noises and other sounds, provide settling surfaces for dust particles, intercept surfaces for rain and snow, and when dead, furnish nutrients and organic matter to the soil.

Trees add greatly to the aesthetics of an area, helping to soothe the soul of all mankind. They also furnish food, shelter and a favorable habitat for many kinds of birds, insects, and other animals. In winter, they tend to make the area warmer by reducing wind velocity. They tend to cool the area around them in the summer through shade and transpiration.

Tree roots penetrate to great depths in the soil to obtain nutrients and moisture needed for growth. In so doing, they create many tiny channels in the soil so that rainfall can percolate down into the earth and recharge the underground water supply. By aiding in this percolation, by binding the soil with their roots, and by the interception of precipitation provided by their leaves, trees aid materially in reducing water run-off and soil erosion. The forest litter formed by fallen leaves and twigs decomposes furnishing food and a home for many important soil organisms including worms, bacteria, and fungi. Eventually this litter returns to the soil in the form of chemical nutrients that will again be available to new plants. By serving as a barrier to winds, trees reduce wind velocities, thus reducing the likelihood of wind erosion to the soil, while enhancing the environment for wild and domestic animals in windswept locations.

Whether a tree is growing in your backyard, along your street, in a park, or is only one of many in the forest, it is a major element in your environment and will make major contributions to the quality of your life.

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