

Summary Article: **forestry**

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the management of forest lands for wood, water, wildlife, forage, and recreation. Because the major economic importance of the forest lies in wood and wood products, forestry has been chiefly concerned with timber management, especially reforestation, maintenance of the extant forest stands at prime condition, and fire control. Silviculture is the name usually given to this manipulation of the forest for human purposes.

### **The Goal of Forestry**

It is the chief goal of forestry to devise methods for felling trees that provide for the growth of a new forest crop and to ensure that adequate seed of desirable species is shed onto the ground and that conditions are optimal for seed germination and the survival of saplings. The basic rule of timber management is sustained yield; that is, to cut each year a volume of timber no greater than the volume of wood that grew during that year on standing trees.

Desirable timber species are usually those of the native climax vegetation (see ecology) that can perpetuate themselves by natural succession, although at times (intentionally or unintentionally) a forest may not represent the climax vegetation—such as the pine of the SE United States, which grows faster than, and has replaced, the hardwoods destroyed by fire and logging. The Douglas fir of Western forests is encouraged because it is more valuable than the climax vegetation of mixed conifers that tends to establish itself in the absence of human intervention. Planting trees of different sizes (either because of species or of age) prevents crowding and insures maximal growth for the given area. Extermination of diseases and insect pests is standard forestry practice.

### **Forest Fires**

The control of forest fires has developed into an independent and complex science costing approximately \$100 million annually in the United States. Because of the extremely rapid spreading and customary inaccessibility of fires once started, the chief aim of this work is prevention. However, despite the use of modern techniques (e.g., radio communications, rapid helicopter transport, and new types of chemical firefighting apparatus) more than 10 million acres of forest are still burned annually. Of these fires, about two thirds are started accidentally by people, almost one quarter are of incendiary origin, and more than 10% are due to lightning.

Modern firefighting practice now recognizes that fires caused by lightning are an important tool of nature. Such fires do away with dead underbrush and diseased areas of growth, leaving clear areas for new growth of grass and new generations of trees. Some trees, it has been found, cannot grow without the aid of fire. The cones of the jack pine, for example, need exposure to intense heat to release seed. Other species, such as the Douglas fir and the sequoia, cannot flourish in shaded areas but need the open sunlit space cleared by fire. For such reasons lightning-caused fires in many cases—especially in wilderness areas far from habitation—are now permitted to burn but are carefully monitored and kept under control.

The potential commercial value of the land lost to human-caused fire cannot be calculated: aside from the loss of timber, the damage is inestimable in terms of land rendered useless by ensuing soil erosion,

elimination of wildlife cover and forage, and the loss of water reserves collected by a healthy forest. The increasing demand for water to supply growing metropolitan areas and for agricultural irrigation has stimulated the study of the essential role of forests in water conservation.

## **The Forest Service and Environmental Debate**

In 1960 the Forest Service was charged by law with management of the national forests according to a philosophy of sustained yield and multiple use: production of timber, preservation of fish and wildlife habitat, watershed maintenance, mining, grazing, and recreation. In 1964, however, demand for timber led the Forest Service to adopt the practice of clearcutting used also by the commercial timber industry. Vast forest tracts are stripped of all trees, leaving an unsightly bald area. Environmentalists claim that clearcut areas are liable to insect infestation, landslides, and erosion, and that runoff causes siltation of neighboring streams and spoils fish spawning grounds. Environmentalists have also decried the ecologically disruptive effects of strip mining and overgrazing in the national forests and have urged restoration of blighted areas and more equitable multiple-use management in the future. In particular, emphasis has been placed on managing the forests in terms of broad concepts of land use and environmental quality. Like other federal agencies, the Forest Service must now assess the environmental impact of proposed actions, such as building new roads through the forests or granting rights to drill for oil or mine for coal and other minerals (see environmental impact statement; environmentalism).

## **History**

Forests are vast and valuable expanses; the necessity for government supervision has long been recognized and is today employed virtually throughout the world. The earliest known instance of organized reforestation was in Germany in 1368, and by the mid-18th cent. the practice was well established also in neighboring Austria, Switzerland, and France. German immigrants to the United States (notably Carl Schurz, the first Secretary of the Interior) were instrumental in conserving the new forest lands. After the Timber Culture Act (1873), extensive planting began, although at first mostly in an attempt to forest the plains and prairies. Under President Theodore Roosevelt the first public forests were set aside (see National Forest System). The Civilian Conservation Corps, instituted by President Franklin D. Roosevelt, planted about 2.25 billion trees in the decade from 1933 to 1942, and efforts in forestry have increased significantly in recent years. Today about 27% of U.S. forest is under public ownership, 17% as national forests administered by the Forest Service of the Dept. of Agriculture.

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