Forestry

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Forestry is the science and craft of creating, managing, playing, using, conserving and repairing forests, woodlands, and associated resources for human and environmental benefits. Forestry is practiced in plantations and natural stands.

Modern forestry generally embraces a broad range of concerns, in what is known as multiple-use management, including:

- The provision of timber
- Fuel wood
- Wildlife habitat
- Natural water quality management
- Recreation
- Landscape and community protection
- Employment
- Aesthetically appealing landscapes
- Biodiversity management
- Watershed management
- Erosion control
- Preserving forests as "sinks" for atmospheric carbon dioxide

Forestry in 21st Century

Today a strong body of research exists regarding the management of forest ecosystems and the genetic improvement of tree species and varieties. Forestry studies also include the development of better methods for the planting, protecting, thinning, controlled burning, felling, extracting, and processing of timber. One of the applications of modern forestry is reforestation, in which trees are planted and tended in a given area.

Trees provide numerous environmental, social and economic benefits for people. In many regions, the forest industry is of major ecological, economic, and social importance, with the United States producing more timber than any other country in the world. Third-party certification systems that provide independent verification of sound forest stewardship and sustainable forestry have become commonplace in many areas since the 1990s. These certification systems developed as a response to criticism of some forestry practices, particularly deforestation in less-developed regions along with concerns over resource management in the developed world.

In topographically severe forested terrain, proper forestry is important for the prevention or minimization of serious soil erosion or even landslides. In areas with a high potential for landslides, forests can stabilize soils and prevent property damage or loss, human injury, or loss of life.

Foresters

Foresters work for the timber industry, government agencies, conservation groups, local authorities, urban parks boards, citizens' associations, and private landowners. The forestry profession includes a wide diversity of jobs, with educational requirements ranging from college bachelor's degrees to PhDs for highly specialized work. Industrial foresters plan forest regeneration starting with careful harvesting. Urban foresters manage trees in urban green spaces. Foresters work in tree nurseries growing seedlings for woodland creation or regeneration projects. Foresters improve tree genetics. Forest engineers develop new building systems. Professional foresters measure and model the growth of forests with tools like geographic information systems. Foresters may combat insect infestation, disease, forest and grassland wildfire, but increasingly allow these natural aspects of forest ecosystems to run their course when the likelihood of epidemics or risk of life or property are low. Increasingly, foresters participate in wildlife conservation planning and watershed protection. Foresters have been mainly concerned with timber management, especially reforestation, maintaining forests at prime conditions, and fire control.

Forestry Plans

Foresters develop and implement forest management plans relying on mapped resource inventories showing an area's topographical features as well as its distribution of trees (by species) and other plant cover. Plans also include landowner objectives, roads, culverts, proximity to human habitation, water features and hydrological conditions, and soils information. Forest management plans typically include recommended silvicultural treatments and a timetable for their implementation. Application of digital maps in Geographic Informations systems (GIS) that extracts and integrates different information about forest terrains, soil type and tree covers, etc. using, e.g. laser scanning, enhances forest management plans in modern systems.

Forest management plans include recommendations to achieve the landowner's objectives and desired future condition for the property subject to ecological, financial, logistical (e.g. access to resources), and other constraints. On some properties, plans focus on producing quality wood products for processing or sale. Hence, tree species, quantity, and form, all central to the value of harvested products quality and quantity, tend to be important components of silvicultural plans.

Good management plans include consideration of future conditions of the stand after any recommended harvests treatments, including future treatments (particularly in intermediate stand treatments), and plans for natural or artificial regeneration after final harvests.

The objectives of landowners and leaseholders influence plans for harvest and subsequent site treatment. In Britain, plans featuring "good forestry practice" must always consider the needs of other stakeholders such as nearby communities or rural residents living within or adjacent to woodland areas. Foresters consider tree felling and environmental legislation when developing plans. Plans instruct the sustainable harvesting and replacement of trees. They indicate whether road building or other forest engineering operations are required.

Agriculture and forest leaders are also trying to understand how the climate change legislation will affect what they do. The information gathered will provide the data that will determine the role of agriculture and forestry in a new climate change regulatory system.

Agroforestry is a land use management system in which trees or shrubs are grown around or among crops or pastureland. This diversification of the farming system initiates an agroecological succession, like that in natural ecosystems, and so starts a chain of events that enhance the functionality and sustainability of the farming system. Trees also produce a wide range of useful and marketable products from fruits/nuts, medicines, wood products, etc. This intentional combination of agriculture and forestry has multiple benefits, such as greatly enhanced yields from staple food crops, enhanced farmer livelihoods from income generation, increased biodiversity, improved soil structure and health, reduced erosion, and carbon sequestration. Agroforestry practices are highly beneficial in the tropics, especially in subsistence smallholdings in sub-Saharan Africa and have been found to be beneficial in Europe and the United States.

Arboriculture is the cultivation, management, and study of individual trees, shrubs, vines, and other perennial woody plants. The science of arboriculture studies how these plants grow and respond to cultural practices and to their environment. The practice of arboriculture includes cultural techniques such as selection, planting, training, fertilization, pest and pathogen control, pruning, shaping, and removal.

A person who practices or studies arboriculture can be termed an 'arborist' or an 'arboriculturist'. A 'tree surgeon' is more typically someone who is trained in the physical maintenance and manipulation of trees and therefore more a part of the arboriculture process rather than an arborist. Risk management, legal issues, and aesthetic considerations have come to play prominent roles in the practice of arboriculture. Businesses often need to hire arboriculturists to complete "tree hazard surveys" and generally manage the trees on-site to fulfill occupational safety and health obligations

Arboriculture is primarily focused on individual woody plants and trees maintained for permanent landscape and amenity purposes, usually in gardens, parks or other populated settings, by arborists, for the enjoyment, protection, and benefit of people.

Arboricultural matters are also considered to be within the practice of urban forestry yet the clear and separate divisions are not distinct or discreet.

Community forestry is an evolving branch of forestry whereby the local community plays a significant role in forest management and land use decision making by themselves in the facilitating support of government as well as change agents. It involves the participation and collaboration of various stakeholders including community, government and non-governmental organisations (NGOs). The level of involvement of each of these groups is dependent on the specific community forest project, the management system in use and the region. It gained prominence in the mid-1970s and examples of community forestry can now be seen in many countries including Nepal, Indonesia, Korea, Brazil, India and North America.

Silviculture is the practice of controlling the growth, composition/structure, and quality of forests to meet values and needs, specifically timber production.

The name comes from the Latin *silvi-* ("forest") and *culture* ("growing"). The study of forests and woods is termed silvology. Silviculture also focuses on making sure that the treatment(s) of forest stands are used to conserve and improve their productivity.

Generally, silviculture is the science and art of growing and cultivating forest crops, based on a knowledge of silvics (the study of the life-history and general characteristics of forest trees and stands, with particular reference to local/regional factors). In specific, silviculture is the practice of controlling the establishment and management of forest stands.

The distinction between forestry and silviculture is that silviculture is applied at the stand-level, while forestry is a broader concept. Adaptive management is common in silviculture, while forestry can include natural/conserved land without stand-level management and treatments being applied.

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