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FOREST MANAGEMENT BY COMPARTMENTS

The first step toward managing a small woodland or large forest area is to divide the land into suitable management units or compartments. To facilitate management, the biophysical characteristics within a compartment should be somewhat homogeneous. Thus compartments should be based on tree associations, soils, topography, and the productivity of the site. Management objectives are far easier to determine and management prescriptions are more easily made when the forest cover contains species with common growth characteristics, like size or age classes, and similar value potential. Also, similar soil and site potentials should characterize a compartment.

Compartments should be easily identifiable for mapping and location. Natural boundaries such as streams, ridges, roads, fences, and fields are especially helpful. Differences in forest type or size class may be useful. Sometimes it may be necessary to paint boundary trees to mark compartments.

The size of compartments should vary with the owner's objectives, total forest area, and the diversity of forests, topography, and soils. Small woodlands in northeastern United States may have compartments varying in size from one to ten acres, while industrial forests may have larger sizes. In southeastern United States, where gentle topography, sandy soil, and pine species are predominant in much of the coastal plain, compartments as large as 100 or more acres may sometimes be appropriate.

Advantages of Compartments

Priorities. No forest is uniform. There are differences in species, soils, growth, value, and potential value. After dividing the forest into compartments, the second step in management is to evaluate, for each compartment, the standing trees and the forest potential to provide goods and services. This assessment of forest value and potential permits the

manager to choose the best areas to concentrate his labor and capital for the best returns. For example, those compartments with the more valuable species and productive sites will yield the most return on timber investment. The forest manager doubtless will make more intensive thinning prescriptions to increase the growth on the better individual trees in these compartments.

Multiple use. Northeastern forests yield wildlife, recreation, and cleaner water as well as timber, pulpwood, and fuelwood. These goods and services are often compatible or complementary, and can be produced together. For example, a continuous program of thinning to make bigger timber trees is beneficial for most other forest uses. Cutting of both small and mature trees is necessary to provide additional food and "edge effect" for wildlife. Indeed forest preservation without cutting leads to "biological deserts" for numerous, but not all, wildlife species. Thinning also temporarily reduces the water loss through transpiration and thus increases available water for stream flow. It produces larger trees which are esthetically pleasing, and associated access roads are useful for hikers, hunters, and other outdoor enthusiasts.

Yet multiple use cannot mean all things to all people on the same acre. There are some competing uses, especially between timber harvest and esthetic viewing. But the use of compartments allows the assignment of priority uses in varying parts of the forest to better accomplish multiple use. Thus the steepest compartments may have protection of water and soil as the top priority, and careful timber harvest can be permitted on a cautious basis or excluded entirely, depending on soil erosiveness. Other compartments may be especially scenic or suitably located to encourage particular kinds of outdoor recreation activity. Timber management may be reduced, excluded, or altered to accommodate recreation uses. Still other compartments may have wildlife priorities, and could feature favoring mast-producing species such as oak and beech, leaving culls as den trees, or even special cuttings to increase the food supply or change the habitat. Wildlife range and territoriality characteristics should govern the size and dispersal of such compartments.

Work planning. With objectives and priorities established, compartments become a tool for scheduling work, record-keeping, and measuring accomplishment. This is particularly important on small woodlands, where the owner usually has other time-demanding interests and priorities and the work needed in his 40-acre woodlot appears endless. With no clear place to begin, he seldom starts.

A simple division of the forest into compartments allows the owner to select a few of the better areas in which to work. By scheduling work in only one compartment each year, he can visualize the end as well as the beginning of the job. Thus he is psychologically prepared.

Since a new weeding, thinning, timber stand improvement, or other activity is needed about every 5 to 10 years in most woodlots, the number of

compartments is limited. In a typical forty acres, the owner might select the best 20 acres and divide them into eight compartments of some two or three acres each. Thus he has a small area to work in each year and, after an eight-year cycle, the first compartment will be ready for more work.

While harvest of mature timber on a small woodlot may involve more than one compartment in order to have a larger operable cut and yield a better price, it is best for other management activities to proceed annually by compartments.

For larger industrial forests, compartments can be the basis for planning rotations and establishing cutting cycles.

Diversity. Use of compartments, based on tree cover, topography, and site takes advantage of the natural diversity of forests. This is particularly true in northeastern United States where forest cover changes with topography, soils and past history. Management by compartments, through cuttings and other activities, creates additional diversity. When the range of management varies from the most intensive silviculture on the best compartment to preservation of all trees for protection on others, the diversity of future stands is increased.

Where compartments are small, all silvicultural methods can be used in the Northeast. Patch clearcutting, acknowledged as very useful both for reproducing intolerant species and improving wildlife habitat, is acceptable along with shelterwood and selection methods. But small compartments automatically eliminate large clearcuts and their negative visual impacts.

Summary

Management of forests, based on relatively small compartments as described, encourages the development of priorities, integration of multiple uses, work planning and motivation, more diversity, and more efficient production of forest products and services.

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