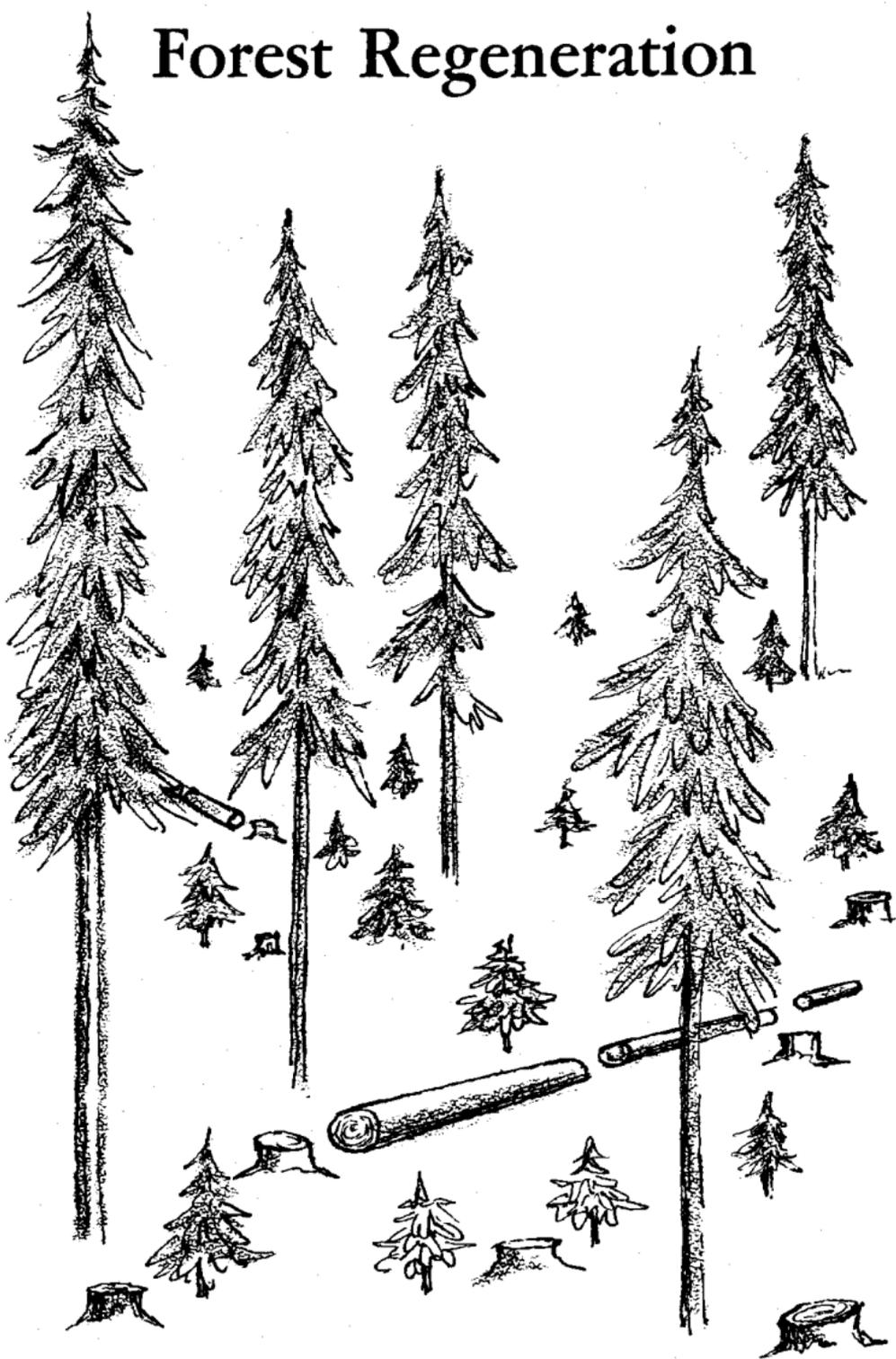


Shelterwood Cutting For Natural Forest Regeneration



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Shelterwood Cutting

Methods

NATURAL REGENERATION of second-growth timber is encouraged by partial cutting, leaving certain trees as a seed source and shelter for new and faster growth. Several partial timber-harvesting methods are well adapted to second growth. One such method is "shelterwood cutting." This system may be especially valuable on sites difficult to regenerate through artificial seeding, planting, or other methods.

Stands may be clearcut and regenerated by artificial methods, but this is costly at best. Woodland owners should take advantage of a natural regeneration, where it will accomplish the desired results.

Shelterwood cutting removes the timber in several cuts. As cutting advances, it leaves an overstory of selected trees, called shelterwood, to seed in the openings. When a new crop of young trees is established, the older shelterwood is removed, encouraging the new stand to develop.

Sites

The shelterwood method can be employed on many sites and on varieties other than second-growth Douglas-fir. It is possible to perpetuate mixed stands or to vary their composition, depending on how the method is applied.

Shelterwood is especially recommended, however, in many stands of mature second-growth, where experience indicates a problem in obtaining natural regeneration by other methods. Trees to be left must be stable enough to withstand windthrow and vigorous enough to produce the seed needed. Some trees may be young enough to increase noticeably in growth rate as a result of shelterwood methods, although this is not the primary purpose.

The timber usually is removed in two or three cuts. The *preparatory* cut comes first; second, the *seed* cut; and third, the *removal* cut. In some cases, the preparatory cut may be eliminated as unnecessary or impractical. Where the shelterwood stand is heavy, it may be better to divide the final or removal cut into two or three separate operations, spaced over a period of several years. Since situations vary greatly, the following is merely a guide and should be supplemented by the advice and assistance of a professional forester.

Preparatory cut

This is a light cut, resembling a heavy low thinning to remove the weaker trees, to open up around the selected shelterwood trees. It allows the residuals to develop full crowns and windfirmness before the seed cut. The best dominants should be favored as potential shelterwood seed trees. Not more than one third of the stocking should be removed, so as not to encourage reproduction, which would be lost at the time of seed cutting. Slash disposal usually is unnecessary following this cut. Late commercial thinnings may already have accomplished the purpose of the preparatory cut.

Seed cut

Five to ten years after the preparatory cut, the seed cutting removes all but the best seed trees. They are full-crowned, windfirm trees exhibiting superior parent-tree characteristics and efficient reproductive growth potential.

In addition to serving as a selected seed source, the remaining trees provide partial shade during the reproduction period, and the stand is more attractive. Stocking of the shelterwood stand may vary widely. It may be af-

ected by considerations such as soil depth, drainage, and exposure. For example, spacing between shelterwood trees may range from 30 to 40 feet. Lower rates of stocking may be required on favorable sites, north slopes, and in northern portions of the Douglas-fir region than on south slopes, frosty flats, or in southern Oregon.

Following logging in old-growth stands, slash, debris, and brush are usually piled away from seed trees and burned to expose mineral soil for seed germination. In second-growth, this practice usually is unnecessary. If sufficient exposure of mineral soil has not been accomplished in logging, however, further scarification may be necessary at this time.

If the seed cut has not been made in a fair to good seed year, baiting for rodent control may be needed. If artificial seeding is anticipated, genetically suited seed should be used, preferably treated to repel rodents. Fertilizing seed trees around the drip line (edge of crown) may encourage a good seed crop.

Removal cut

This is the timely removal of the seed trees, usually done when the new stand is at least waist high. Careful logging will avoid excessive damage to the young trees. Newly established stands often are overstocked, in patches at least, and can "afford" the loss from careful logging. If the final removal cut is delayed, excessive damage to large saplings and small poles can be expected. Disposal of slash from this cut usually is unnecessary or impractical.

Modifications

Shelterwood cutting may be applied to patches or strips within a stand, instead of to the entire stand. As reproduction becomes established in these areas, the shelterwood cutting can be extended to remaining uncut areas, until the entire stand has become reproduced.

Advantages

Since shelterwood is a more intensive method than other regeneration methods, it requires more planning, higher layout costs, and greater skill in application. Greater care in logging also is required, especially with the final or removal cut. Furthermore, it is not well suited to steep slopes.

In spite of certain disadvantages, shelterwood has some distinct advantages. Basically, it is a good natural regeneration method because: (1) it is silviculturally suited to thrifty, even-aged, second-growth stands; and (2) there is a high degree of certainty that desirable, adequate, natural reproduction will be obtained if the method is used correctly. Specifically, here are some of its advantages:

- Shelterwood cutting provides an abundant source of seed of trees well suited to the particular site, from the best trees in the stand, and offering the best chance of perpetuating trees of the same kind and quality.

- With an abundant source of seed, chances for obtaining at least adequate regeneration are very good. This in turn provides more seedlings for a natural selection of the strongest trees.

- The shelterwood provides an optimum climatic environment for the young trees during the regeneration period.

- No special treatment of the seedbed is needed, as logging normally will expose enough mineral soil for adequate regeneration.

- Topography and weather vary within the Douglas-fir region. This may prove the only practical regeneration method for south slopes, frosty flats, and other severe sites.

- It usually eliminates all need of slash disposal and planting.

- It is well suited to tractor logging.

- It is adaptable to either owner operations or contract logging.

- It gives an attractive appearance where aesthetic and recreational values are important.

- A program of commercial thinnings has a tendency to produce a stand which can be reproduced by this method. In some cases, as with hemlock, advanced regeneration may even make a one-cut shelterwood cutting possible.



This circular was prepared by Robert Bradley, county extension agent for forestry, formerly in Oregon, now in Pierce County, Washington, in cooperation with the Pacific Northwest Woodland Publications Committee.

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