

SILVICULTURAL SYSTEMS AND THEIR APPLICATION
ON LATOUR STATE FOREST

Where forest management must rely upon some natural means of regeneration (i.e. natural seedfall or sprouting), the silvicultural methods applied to the parent stand should be so designed as to establish those ecological conditions which favor regeneration of the desired species.

There is no finite number of silvicultural methods. Rather there is an almost infinite number of possible combinations of cutting methods, aimed at achieving the desired results. Five basic systems, as outlined below, are recognized in this country.

1. Clear Cutting Systems
 - a. Staggered cutting blocks or strips with intervening areas of uncut timber.
 - b. Applied usually to pure even-aged stands where 100 percent of the volume is removed from each cut area.
2. Seed Tree Systems
 - a. Essentially, these are clear cut systems but with good seed producing residuals of the desired species left scattered over the cutting area.
 - b. Usually up to 90 percent of the original stand is removed.
3. Shelterwood Systems
 - a. This involves the gradual extraction of the timber over some portion of the rotation period.
 - b. While all of the original stand is eventually removed, any single cutting may remove only 25 to 40 percent of the original stand.
4. Selection Systems
 - a. This is a continuous cutting process wherein about 10 percent of the stand is removed with each cut.
 - b. The method encourages a mixed species composition that tends eventually toward an all-aged stand condition.
5. Coppice Systems
 - a. Where regeneration is possible by sprouting from stem or root collar. This system of cutting has some application in:
 - (1) Hardwood management
 - (2) Christmas tree management
 - (3) Redwood management
 - b. Effectiveness depends upon
 - (1) Species in question
 - (2) Size and age at time of cut
 - (3) Height and condition of stump
 - (4) Season of the year when cutting is done.

Three of the above named systems have application in the management of Latour's stands.

Pure even-aged fir stands may be clear cut in small blocks or strips depending on the size merchantability and the amount of stand decadence at hand, or the need to convert the area to Christmas tree growth having a short rotation rather than keep it as a dense thicket of unmerchantable poles or carrying an unmerchantable product on inventory until it reaches sawlog size.

Christmas tree stands are managed as coppice forests. The cut stump will regenerate either by branch turn-ups or by sprouting from adventitious buds. The aim here is to recut a given stand approximately every ten to twelve years. Sales are made so the cutting occurs in late October or early November.

Mixed conifer stands are managed under a transition selection system on a cycle having a period of 20 to 30 years. The length of each cycle can be more exactly determined when average annual growth is more definitely known and when this first cutting cycle and all

access development is completed. This system promotes an even distribution of age classes to gain control of the ground by reproduction of desirable or valuable tree species rather than brush or species of inferior quality. The concept of Unit Area Control is applied in marking these stands for cutting.

Unit area control and applied transition selection system silviculture. To convert the unmanaged mixed conifer virgin stand to one that is regulated, it is essential that the stand contain each age class, (through harvest or rotation) age and uniform stocking should be attained. Since they are the most valuable timber species, certain silvical characteristics of sugar and ponderosa pine must be borne in mind: (1) These are intolerant species and grow best in even-aged groups. (2) They germinate best in a mineral soil. (3) Initial growth of pine is fast where competition is minimized.

Fundamental to this concept of Unit Area Control is that as we observe mixed stands by large areas they appear to be all-aged, still on closer observation, we note the trees occur in usually small even-aged groups that are homogenous in stocking, species and other respects. These irregular sized groups we refer to as condition classes.

In marking a given stand we note the natural condition classes and provide for their uniform treatment such as:

1. Harvest cutting
2. Regeneration cutting
3. Stand improvement cutting

While treating each condition class in accordance with its characteristics, we

1. Provide a basis for a cutting plan
2. Establish the cutting budget
3. Regulate the allowable cut
4. Accomplish stand regulation within the stand conversion period.

On a given mixed conifer stand we may apply the following types of treatment in order to achieve stand regulation during the conversion period.

1. Seeding or planting on unit areas of inadequate stocking,
2. Leave seed trees adjacent to unit areas that must be naturally regenerated.
3. Eradicate competing brush where present in the understory.
4. Mark areas of over-mature condition classes. These may be small clear-cut areas with adequate near by seed trees.
5. Where advanced stocking is inadequate and over-mature condition classes form the overstory, the advance growth may be clear-cut along with some of the over-mature trees. The remaining overstory is left for seeding the area. Site preparation on the ground will likely be necessary.
6. Where advance young growth is sufficient the overstory is clear-cut to release young residuals.
7. Improvement cuts are made in units that are essentially composed of young merchantable material. Here the occasional old defective trees are removed to improve stand vigor.
8. Risk cuts may be indicated where the removal of a low per acre volume will reduce the incidence of insect and disease build up within the stand.

REFERENCES

Theory and Practice of Silviculture by F. S. Baker, 1934, McGraw-Hill Book Co., Inc., New York, New York

Unit Area Control by William E. Hallin, 1954, California Forest & Range Experimental Station U.S.D.A.

