SILVICULTURAL SYSTEMS
A.K.A. METHODS OF REGENERATION

ESRM 323

Smith, et al. Chpt. 11

CLASSIFICATION

1. High-forest Methods (production of stands originating mainly from seed)
   a. **Clear-cutting Method**: removal of entire stand in one cutting; reproduction is either artificial or from seeds germinating after clearing operation
   b. **Seed-tree Method**: removal of old stand in one cutting, small number of seed trees left singly or in small groups, provides for establishment of advanced regeneration

CLASSIFICATION (cont.)

1. High-forest Methods (production of stands originating mainly from seed)
   c. **Shelterwood Method**: removal of old stand in a series of cuttings, over short portion of the rotation; establishment of one cohort under the partial shelter of seed trees is encouraged
   d. **Selection Method**: continual creation or maintenance of uneven-aged or multi-cohort stands by means of occasional replacement of single trees or small groups of trees with regeneration from any source

CLASSIFICATION (cont.)

2. Coppice-forest methods (production of stands originating primarily from vegetative regeneration)
   a. **Coppice method**: any type of cutting in which dependence is placed on vegetative reproduction
   b. **Coppice with-standards method**: the combination of short-rotation growth with scattered trees in the same area, grown on longer rotations that may be seedling originated

SILVICULTURAL SYSTEM – ELEMENTS

- A planned general program of silvicultural treatments extending throughout the lifetime of a stand

System elements:

- Provision for regeneration
- Harmony with goals & characteristics of ownership
- Efficient use of growing space and site productivity
- Control of damaging agencies
- Protection of soil and water resources
- …

SILVICULTURAL SYSTEM – ELEMENTS

- A planned general program of silvicultural treatments extending throughout the lifetime of a stand

System elements (cont'd):

- …
- Provision for sustained yield
- Optimum use of capital and growing stock
- Efficient arrangement of operations
- Maintenance of desired plant & animal populations
- Execution of policies about landscapes, scenery, aesthetics

SILVICULTURAL SYSTEM – OBJECTIVES

- Systems are designed to fit a specific set of objectives.
  - Relative weight given to each objective decided by owner
    - Lumber company desiring sawtimber
    - Paper company desiring fiber
    - Wildlife habitat for owner's favorite species
    - Old-growth for Marbled murrelet, aesthetics, etc.
- Treatments are best prescribed stand by stand, by foresters, on the ground in light of policies for the forest ownership as a whole

SILVICULTURAL SYSTEM – EVOLUTION

- A silvicultural system evolves over time as circumstances change and knowledge is accumulated.
  - ✓ Red pine in MN
    - Two major pests; seedlings & saplings hit hardest
      - *Diplodia* shoot blight & canker – prefers hot, dry conditions
      - *Sirococcus* shoot blight – prefers cool, moist conditions

SILVICULTURAL SYSTEM – EVOLUTION

- Red pine in MN - Seed Tree method

SILVICULTURAL SYSTEM – EVOLUTION

- Red pine in MN - Shelterwood method

SILVICULTURAL SYSTEM – EVOLUTION

- Red pine in MN - Clearcut method (site prep)

SILVICULTURAL SYSTEM – EVOLUTION

- Red pine in MN - Clearcut method (planted stand)

SILVICULTURAL SYSTEMS – SUMMARY

- A silvicultural system is a working hypothesis
  - Terminology describes treatment, does not dictate
  - A mixture of proven fact and best possible analysis of unproven observations
  - Silviculturist is able to admit an earlier decision was incorrect and correct procedures accordingly
    - Must monitor results as objectively as possible – adaptively manage
- System should be built where it is used, not brought from some other type of forest

SILVICULTURAL SYSTEMS – SUMMARY

- Silvicultural systems should not become ‘ruling doctrines’ in any place or situation
  - Existing procedures should be periodically examined against new information
  - None are ‘schedules’ or ‘routines’ needing only to be copied for guaranteed success
- No single method can be safely applied in any kind of forest just because it is a “recognized standard”