What is Silviculture?

• Principles vs Practices

• Theory & Practice of controlling forest establishment, composition and growth - (Smith)

• Cultural treatments involved in controlling establishment, growth, composition & quality of forest stands for one or more objectives — timber, wildlife, recreation, watershed, aesthetics, soil stabilization, etc.
What is Silviculture?

• The art of producing and tending forest stands by applying scientifically acquired knowledge to control forest establishment, growth, quality and health

• Applying different treatments to make forests more productive or useful to landowners and society on a sustainable basis

What is Silviculture?

• Integrating biologic and economic concepts to devise and carryout treatments most appropriate in satisfying the objectives of an owner

• Silviculture is growing trees!

• Application of ecological principles to grow a forest ... the biological basis for manipulating a forest to produce benefits to the landowner

Purpose

• Make forests permanent useful to mankind

• Create & maintain a forest that will best fulfill the objectives of the landowner

• To improve or modify on nature or to restore ecosystems — controlling growth and structure of stands. How do we do this ???
Purpose

• Why necessary? ---- time & money ----
  Avg. rate of production of US forests is 39 cubic feet/acre/yr ---- includes poorly-
  stocked, degraded and slow producers

• Contrast with a southern pine plantation - 200 to 250 ft³/acre/yr

• Through silviculture we could easily double the rate of production to 75 ft³/acre/yr

Purpose

• How accomplished?

  1. Control of stand composition
  2. Control of stand density
  3. Intensive cultural practices

Silviculture and Other Aspects of Resource Management

• Silviculture & its relation to biology, harvesting, management & economics

• What you do in one area will influence all other areas of management

• Relationship of Forests to Stands to Individual trees
Management Terminology

• Stands --- biological unit, contiguous group of trees sufficiently uniform in species composition, age classes & conditions to be a homogeneous & distinguishable unit. Any silvicultural treatment is likely to affect all trees in the same manner.

Management Terminology

• Forest --- management unit, a collection of stands. From a sustainability standpoint, we are talking about the forest and not the area the size of a stand --- whole stands may be used in obtaining a sustained yield cut from the forest.

Economics

• Main reason why you cannot make a silvicultural decision based solely on biological grounds.

• Economics will (should) influence your silvicultural decision. Will often limit or determine them.

• Long term investments ---- risk?

• Usually several silvicultural operations will accomplish the objectives, but economics of that operation will probably determine which one is used.
In Silviculture

We are managing:

- Sunlight
- Stand Density and Spacing
- Utilizing Site Productivity

Silviculture

- Is not cookbook
- Infinite variation
- Must be able to think & assess situation and be able to improvise, apply the basic knowledge that I hope you obtain from this course to more complicated situations in the field

Silviculture

- More than fiber production
- In many cases, other uses may be the more valuable product of the forest
- We can not under-emphasize any product of the forest on social or economic grounds
- Total resource management, not just vegetation management
Subject Matter of Silviculture

1. Stand Establishment
2. Intermediate Operations
3. Harvest Cutting
4. Protection

Silvicultural Systems and Methods of Regeneration

- System vs Method
- Regeneration vs Reproduction
- Classification of Regeneration Methods: origin, form, and size/geometry of cut

Silvicultural Systems and Methods of Regeneration

- Even-aged system
  - Clearcut
  - Seed Tree
  - Shelterwood
- Two-aged system
- Uneven-aged system
  - Group Selection
  - Single-Tree Selection
Silvicultural Systems and Methods of Regeneration

• What determines even-aged vs uneven-form?

  1. Height Differences (crown class)
  2. Competition
  3. Diameter Distributions (graphs)
  4. Geometry & Size of Cut

Choosing a Regeneration Method

• With most species, we have choices as to the method that we use

• Factors
  1. Desires of the owner
  2. Biological Considerations
  3. Economics

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