


Ecology & Management Principles for Small Acreage Forests

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Definitions

Woodland - Land covered with woods and trees. A forest.

Natural Area - self-sustaining areas with native vegetation, water, or natural features

Forest Succession - Predictable changes in plant communities as the competing organisms respond to and modify the environment.



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Part III - Ecological Principles

Ecology: the study of natural communities and how they function and interact

- ☺ Principles of succession
- ☺ Principles of forestry
- ☺ Principles of wildlife ecology
- Water resources and your natural area




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The Dynamic Natural Area: Principles of Succession

1. Natural areas change over time, whether or not you do anything to them.





Stage 1 - Herbaceous Stage 2 - Shrub/Seedling



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Stages of Succession (cont'd)





Stage 3 - Sapling/Pole Stage 4 - Mature



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The first vegetation to grow is that which like full sunlight



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**The Dynamic Natural Area:
Principles of Succession**

2. You can alter the process of succession by using select land management practices.
HOW?

- a) By Cutting the vegetation in some way
- b) By planting vegetation
- c) By doing nothing at all



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Range of Options to Establish Natural Areas

- **Maintain early succession cover**



Mow every 2-4 years



Mow once a year



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**Mow every 3 years in strips
Habitat for turkeys, quail, etc**








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Establish Trees



By planting



Allow natural succession



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**Forest Harvesting:
Push succession back**

**Tree Planting:
Push succession ahead**







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Cutting to Maintain Existing Old Field Succession

- Many existing old fields can be maintained by killing hardwoods that establish themselves. Provides unique habitat





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Garrett Co
Early Successional Species Vary by Region

Eastern Shore
Early Successional Species Vary by Region

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The Dynamic Natural Area: Principles of Succession

3. Tree vary in their requirement for sunlight.

Plants that need full sunlight and cannot grow under the shade of other trees are called **shade-intolerant**

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Tolerant or Intolerant?

Loblolly Pine

American Dogwood

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Shade Tolerance of Some Common Eastern Trees (pg 32)

| Shade-tolerant | Intermediate | Shade-intolerant |
|-----------------------|---------------------|--------------------|
| Beech, American | Ash | Aspen, quaking |
| Blackgum | Birch, sweet | Birch, gray |
| Cedar, Atlantic white | Birch, yellow | Birch, paper |
| Dogwood, flowering | Cherry, black | Cedar, eastern red |
| Hemlock, eastern | Hackberry | Larch |
| Hickories | Magnolia, cucumber | Oak, pin |
| Maple, red | Oak, northern red | Pine, red |
| Maple, sugar | Oak, white | Pine, shortleaf |
| Sourwood | Pine, eastern white | Pine, Virginia |

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Stand Development

- A function primarily of
 - site quality
 - Past history
 - current practices (grazing, for example)
 - species composition

A photographic history from the Allegheny Plateau in Pennsylvania (1927-1998)

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1927

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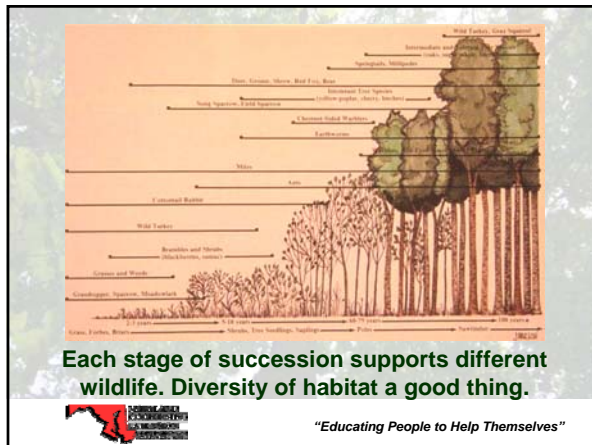
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The Dynamic Natural Area: Principles of Succession

4. Different successional stages provide different wildlife habitat, aesthetics, and recreation.

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The Dynamic Natural Area: Principles of Succession

5. Every small wooded lot may not contain every stage of succession

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Need a Landscape Perspective

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Consider the landscape perspective

Start by Getting to Know Your Property and Your Neighbors Work together!

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Patch Characteristics Affect Habitat Value

Figure 2 – Page 18

- Patch size and proximity affect wildlife habitat
- Larger, closer, and connected habitat is more useful to wildlife
- Figure D above is best for wildlife; Figure A is worst

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Forestry Principles: Getting Down to Basics

1.

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The trees that are most successful in the competition for light outgrow and overtop the others

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Plants Compete for:

- Light
- Water
- Nutrients

Light is usually most important

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Forestry Principles: Getting Down to Basics

2. Tree species require different conditions to thrive

Referred to as the "SITE QUALITY"

The system supporting a forest. It influences the trees and plants growing there. The sum of Soil, Topography, Climate, Plants, and Animals

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The types of forest change with region

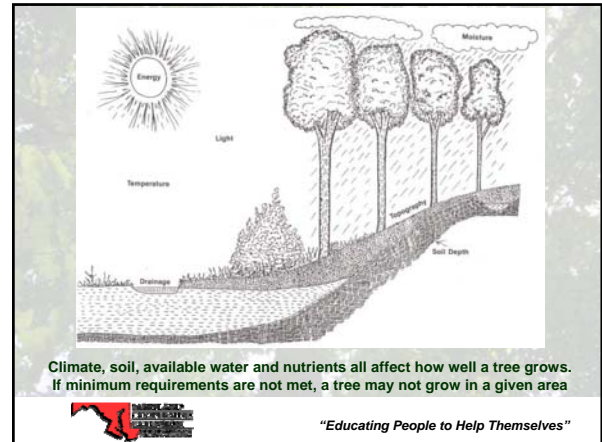
West MD

East Shore

Central MD

Southern MD


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Forestry Principles: Getting Down to Basics

3. Trees grow at different rates because of the differences in species and the quality of the site where they grow.

Intense competition for light, nutrients, and water will slow growth rates and reduce vigor. Thinning reduces competition among trees, reallocates resources, and produces more vigorous trees.



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Tree is a factory ...

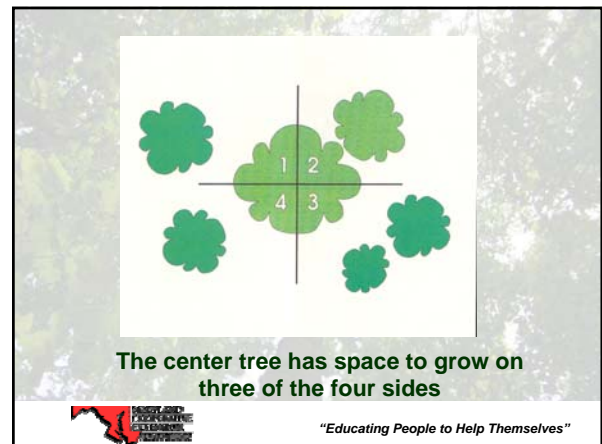
Leaves use sun and water to produce food...



More leaves...
More food...
More diameter growth...




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**Forestry Principles:
Getting Down to Basics**

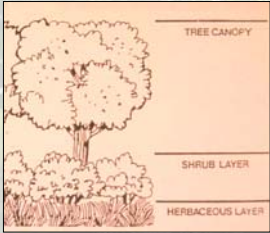

4. Healthy forests are three-dimensional.

Vegetation is arranged in different layer in the forest





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**Forestry Principles:
Getting Down to Basics**

Development of vertical stratification as trees die, holes are filled, others seed in



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Deer have a major negative impact on vertical development.




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**Forestry Principles:
Getting Down to Basics**

5. Trees reproduce either from seeds or sprouts





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Some species need bare soil to germinate, some germinate from nuts, hardwood trees resprout when cut.



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**Forestry Principles:
Getting Down to Basics**

6. Trees don't live forever; dead trees are valuable for wildlife and add nutrients to the soil







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**Forestry Principles:
Getting Down to Basics**

7. **No matter how you manage your land, but especially if you practice passive management, invasive and exotic species will inhabit it.**



Ailanthus



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Honeysuckle



Grapevine

Invasive and natural species can take over. Especially in early succession



Kudzu




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Common Invasive & Exotic Species
Do you recognize them? **Page 43**




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Learn to Identify Exotic Insects & Diseases




mature larva



Summer woods



Emerald Ash Borer



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Questions?

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