HOW FORESTS GROW

INTRODUCTION TO WOODLAND MANAGEMENT

Oregon State University

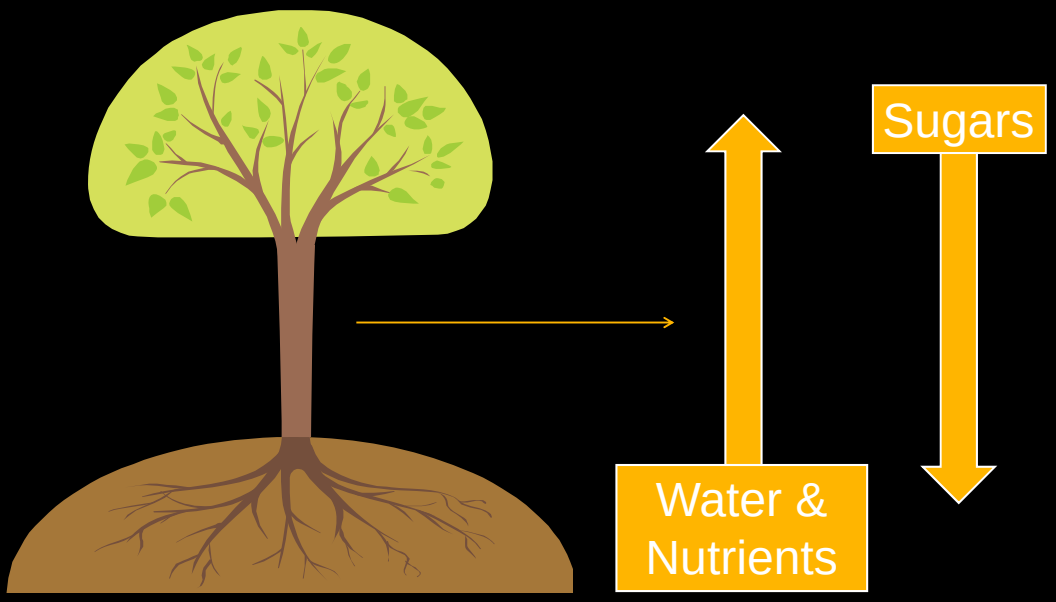
Forests are solar-powered

+ CO_2 +

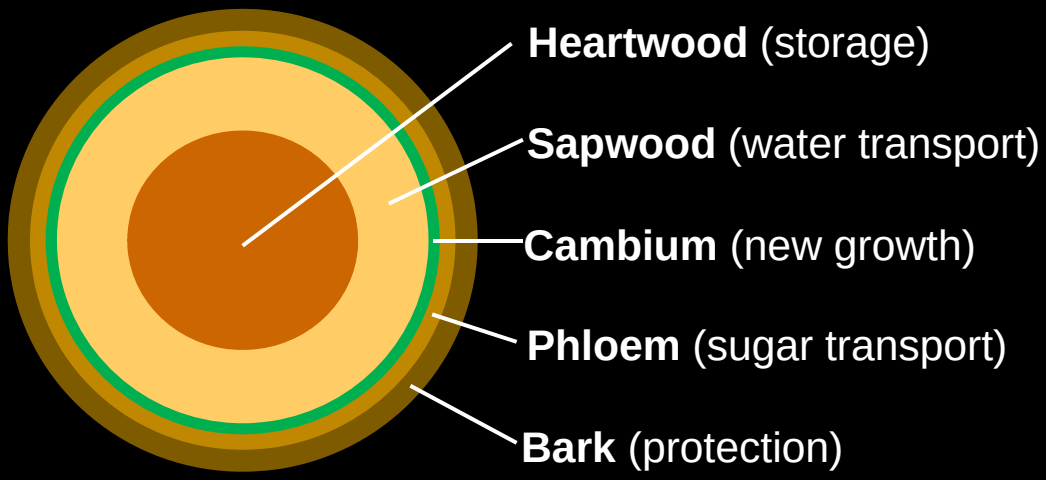
= Sugar + O_2

(carbohydrates)

Tree's transport system.



Tree stems have multiple functions.



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All trees need sunlight, water, and nutrients.

Forest communities vary in space and time based on competitive advantage.

Poll

Which of these are an example of competitive advantage?

- Ponderosa pine growing on the south aspect of a hill.
- Hemlock growing under the canopy of Douglas-fir
- A Sitka spruce growing on the edge of a river where its roots are flooded for half of the year.
- All of the above

Forest development begins

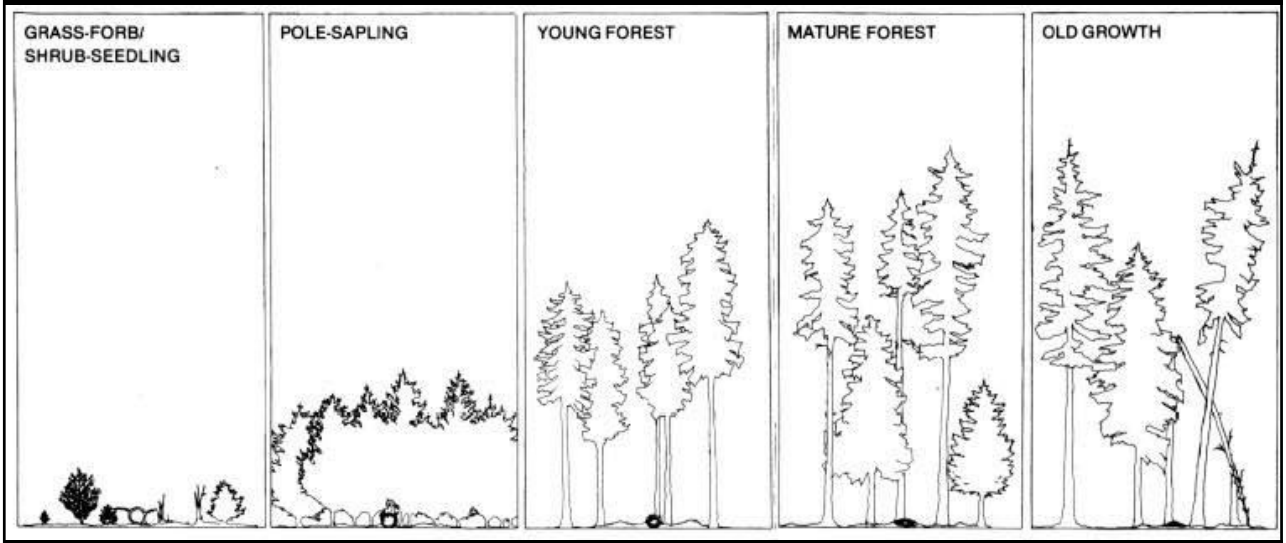
and ends

with disturbance.

Stand initiation

Succession

Early seral late seral

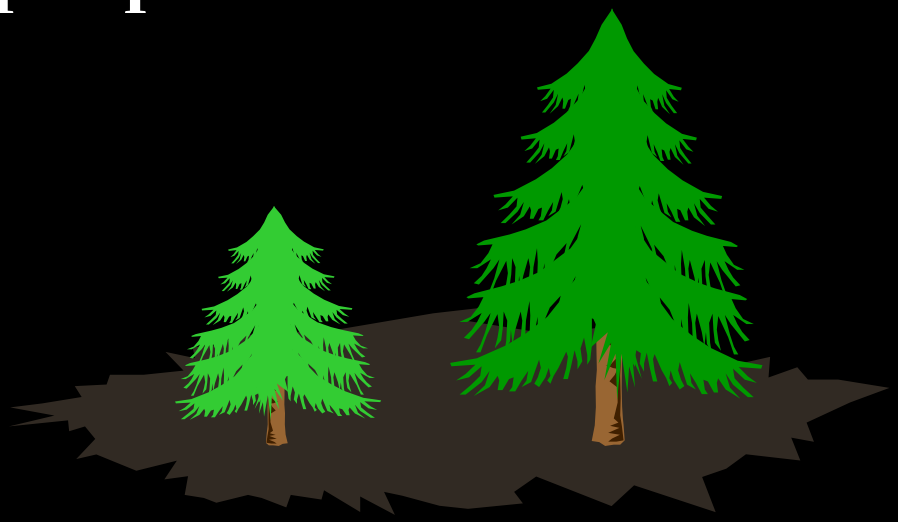


modified from Maser and others 1979

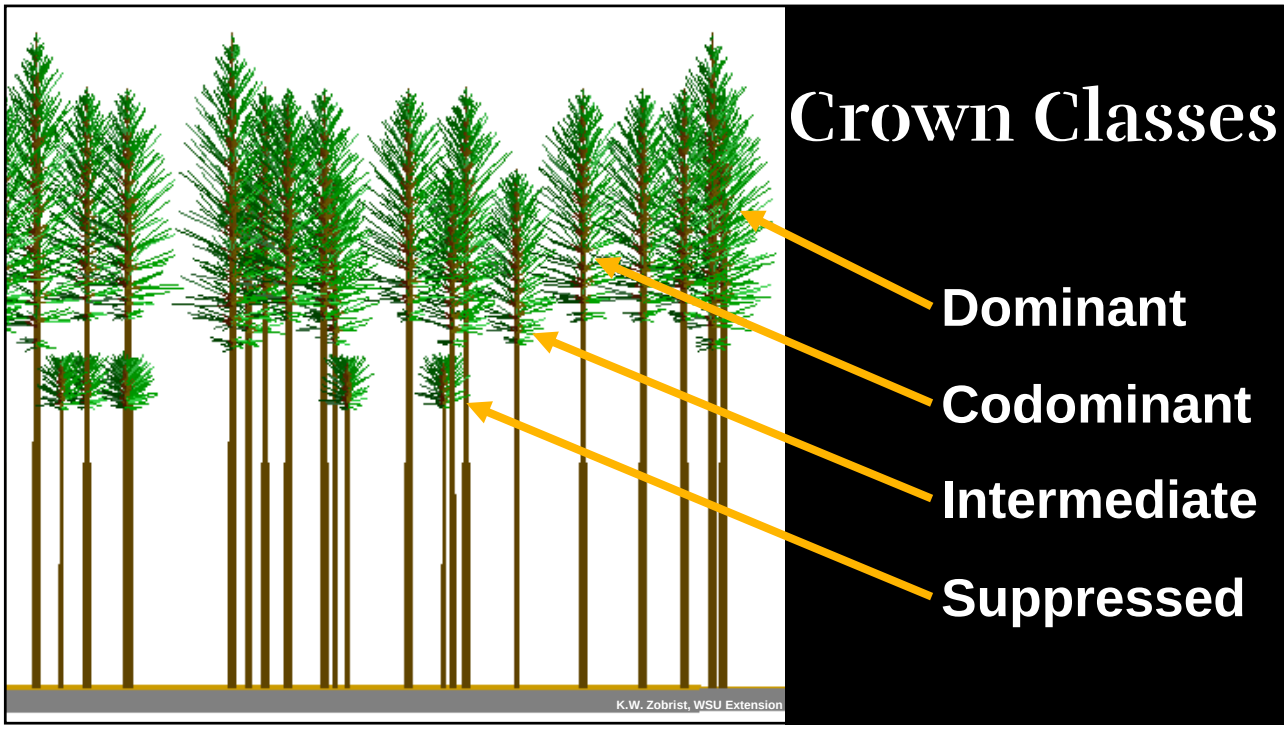
Succession begins with fast-growing, shade-intolerant species.

Stem exclusion

Resources required are proportional to tree size



Many Small = One Large


Crown Classes
Dominant
Codominant
Intermediate
Suppressed
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Understory Reinitiation
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Over time, shade-tolerant species fill in gaps.


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Eventually, shade-tolerant species dominate the overstory.

Poll

What stage of forest growth do you think your forest is in? (click more than one – or stand a, stand b, stand c)

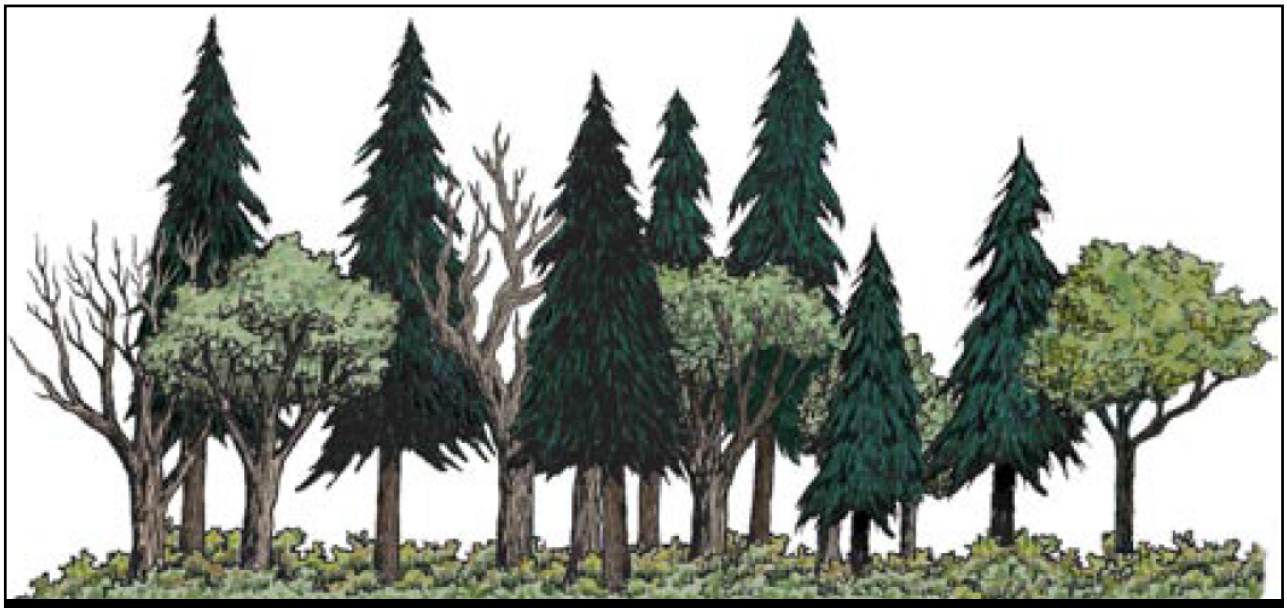
- Stand initiation (early seral; pioneer sun loving species)
- Stem Exclusion (heavy competition; no light or understory)
- Understory initiation (gaps forming with understory and second tree layer)
- Mature multi age stand (both pioneer and shade tolerant species in the canopy)
- Old Growth (shade tolerant species dominate the canopy with large snags and down wood)

Two ecological processes are at work during development and succession.

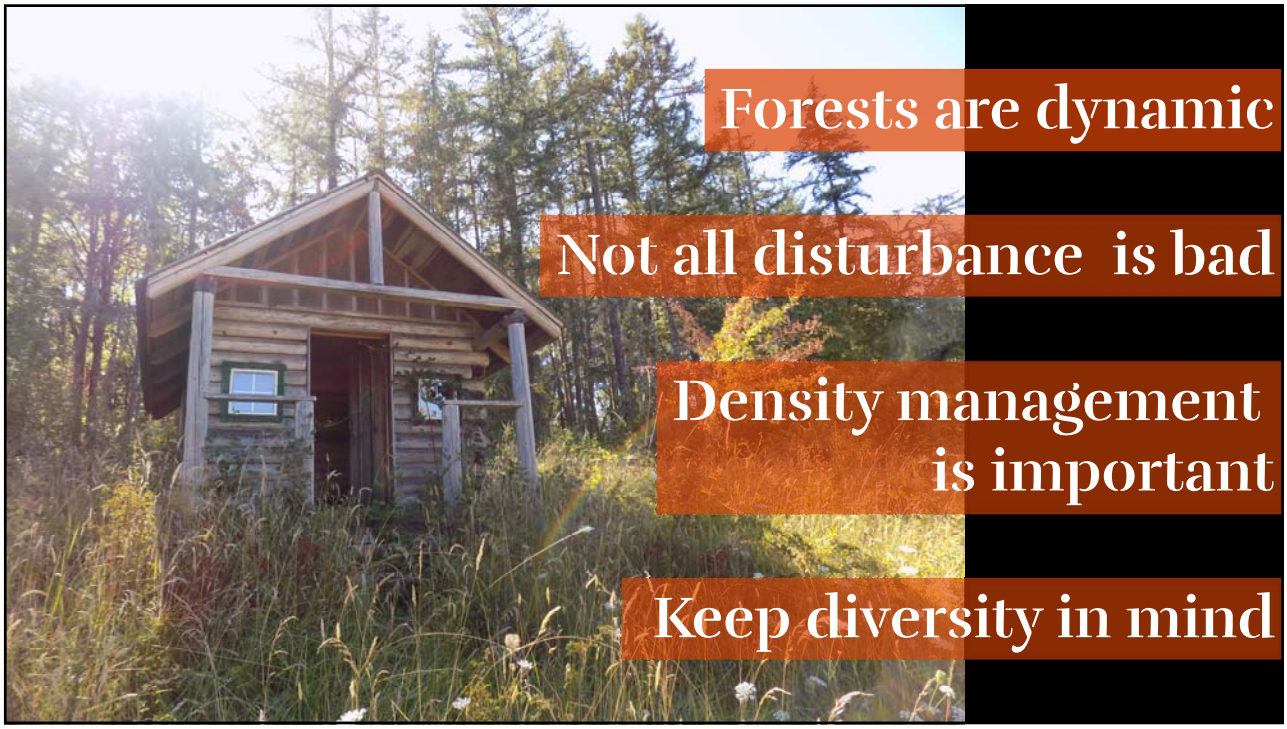
Competition-based mortality

Gap Formation

Oak Woodlands & Savannas



Oak in the absence of fire.




YAY
FORESTS!
Oregon State
University
Oregon Forest Resources Institute