

# Introduction to Woodland Management: **FOREST HEALTH**

We will cover:

- Differences between tree health and forest health
- Characteristics of a resilient forest
- Four key factors that damage trees
- How to recognize and manage damage





*Poll*


**Is this a healthy forest?**



# Douglas-fir plantation

***Poll: Is this a  
healthy forest?***



A photograph of a forest with many tall, thin, vertical tree trunks. The trees have sparse, thin branches, some with small green leaves. The ground is covered in dark brown soil and some green plants. A white oval is overlaid on the right side of the image, containing the text "Poll: Is this a healthy forest?".

***Poll: Is this a healthy forest?***



**“Healthy forests  
have a healthy  
amount of disease”**



**Is this a healthy forest?**







**Healthy forests have a healthy amount of disturbance**

*Should I be  
worried about  
this dead tree?*



A low-angle photograph looking up into a dense forest. The image is dominated by thick, gnarled tree trunks and branches, many of which are covered in a thick layer of green moss. The canopy above is a vibrant, lush green, with sunlight filtering through the leaves, creating a dappled light effect. The overall atmosphere is one of a healthy, mature forest.

# Healthy tree vs. healthy forest





# Poll ?

Which stand  
will be  
more successful  
defending  
against  
bark beetle  
attack?





# Trees prioritize how they use limited resources (carbohydrates).

Priorities for tree growth:

1. Support living tissue
2. Then...



# Adding fine root and leaves





# Reproduction (flowers and seeds)





# Grow up and out (height, branch, root growth)





# Diameter growth





# Compounds to resist insects and disease





# Trees prioritize how they use limited resources (carbohydrates).

Priorities for tree growth:

1. Support living Tissue
2. Add fines root and leaves
3. Reproduction (flower and seeds)
4. Grow up and out (Height, branches, roots)
5. Diameter growth and resistance to insects & disease
6. Storage





# 4 key disturbance agents that damage trees

## BIOTIC FACTORS:

1. Insects
2. Disease

## ABIOTIC FACTORS:

3. weather/climate
4. physical damage



A man wearing an orange hard hat with reflective yellow stripes, a blue jacket, and an orange safety vest is using an axe to cut into the trunk of a tree. The tree has a large, jagged hole in its bark. The background is a dense forest of thin, moss-covered trees.

***Why is Dave  
chopping into  
this tree?***



# Insects

## bark beetles



UGA16780045



# Insects

## Wood borers

Flatheaded borers

Longhorn beetles

Typically  
not pests!







# Poll

Which of these trees is being attacked by bark beetles?

- Top
- Bottom



# Insects

## Defoliators

Oak Looper



*Silver-spotted tiger moth*





# Insects

Sucking insects



USFS

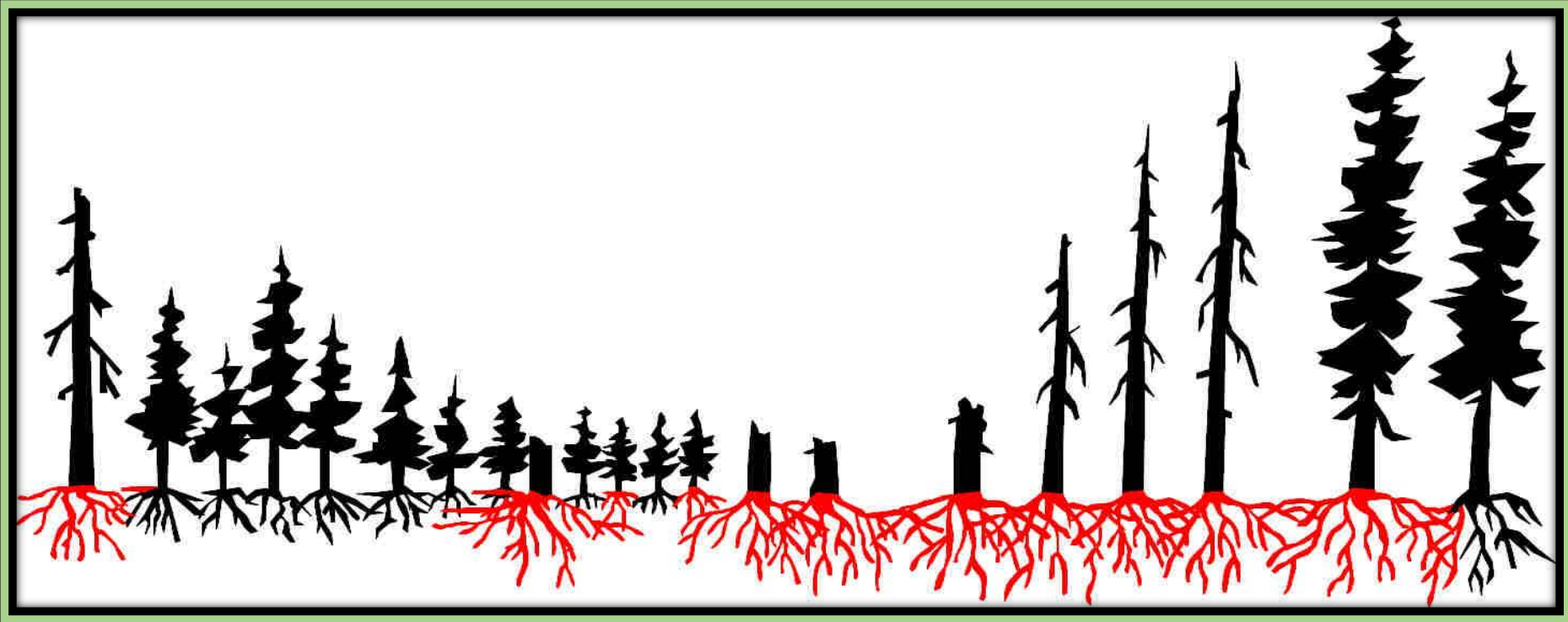
Heavy defoliation  
on the central and  
north coast!

Spruce aphid on Sitka spruce



# Disease

## Root Rots





# Disease

## Laminated root rot





# Disease

## Heart and Butt Rots (wood decay)

Red belt fungus conk on Douglas-fir



Laminated butt rot in western red cedar





# Disease

## Foliage

Swiss needle cast



maple anthracnose





An aerial photograph of a forest landscape. The forest is a mosaic of different tree species. Some areas are dominated by tall, thin, dark green trees, likely pines or spruces. Other areas are filled with shorter, broader-leafed trees in various shades of green, yellow, and brown, indicating a mix of native and invasive species. The terrain is hilly, and there are some buildings and roads visible in the lower-left quadrant. A semi-transparent white banner with the text "Invasive vs native" is overlaid across the middle of the image.

## Invasive vs native

Photo by D. Norlander, OD



# Abiotic

## Weather & Climate





# Abiotic

## Physical Damage





# Abiotic





# Abiotic







Which stand  
will be  
more successful  
defending  
against  
bark beetle  
attack? Root  
rot?





# BOG Discussion

- You will be put into groups of about 4 or 5.
- Have 5? min to talk about forest health issues that you are aware of on your property or neighborhood. If you know cause or not.
- Choose one of those issues. If you know what it is, spend another 5 min talking about how you know. If not, spend the time talking about how you might figure it out. If calling your Extension agent is part of your solution, what information would you need to collect & share with her?
- ID one member of your group as spokesperson.





# 7 STEPS

TO HELP YOU DIAGNOSE AN ISSUE

1

Where is the damage?

2

What is the species?

3

What is the location and pattern of occurrence?

4

Is there an obvious cause?

5

Anything noticeable like a mushroom or canker?  
Can it be from an insect?

6

Maybe it's a root problem?

7

Are there similar problems in your area?



# Plus/Delta Evaluation

- Please use your Chat
- Tell us 1-3 things you liked, though worked about today's class.
- Tell us 1-3 things that you thought did not work so well, and could be improved



# wrap up

- Will get an email with study recommendations from Brad & Lauren. Links to reading and or videos. Recap expectations.
- Please contact us if you have questions.
- Thank and close.



