

CATHANCE PRESERVE FOREST INVENTORY GROWTH PROJECT

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Purpose: The purpose of this project is to monitor the trees in a 1/10 acre plot in the woods, to measure their DBH (Diameter at breast height), crown damage and bole damage. The measurement will then be compared to previous years that this research has been done and determine which tree species shows the most growth and which shows the most damage.

Hypothesis: Out of the eight species in the 1/10 acre being studied, the white birch trees will show the most damage and death, while the white pine will show the most growth in both the last year and since the measurements in 2007.

Procedure: The Cathance Preserve plot has been studied for ten years. There are fifty trees measured in the plot. Yearly measurements include the diameter of the trunk at 4.5 feet (DBH), the tree's status (whether it is alive dead or damaged) and abiotic factors in the plot (Soil quality, topography, and distance to water). All the data is compiled and entered into a Maine Forestry Service computer program to model what the plot will look like in the future.

Conclusion: Both of the Hypotheses were incorrect. However both of them had large sources of error since the sample size was so small. The beech trees showed the most damage and death because they had a disease. However if not for the disease, the hypothesis would be correct as white birch trees showed the second most amount of damage. The Red Oak showed twice as much growth as the average growth of white pine in the plot. This could be attributed to there being only one red oak in the area that had unusual growth.

Summary Data Tables for Death and Damage, as well as DBH Growth for Tree Species

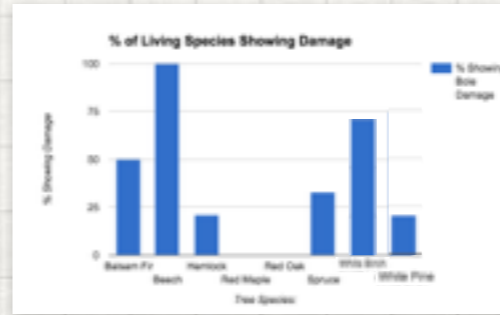
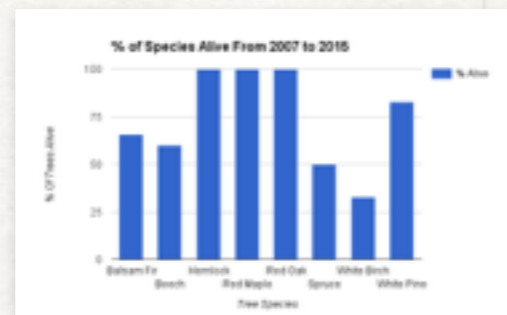
Tree Species	#2007	#Alive 2015	% Alive	# Of Living Trees Showing Bole Damage	% Showing Bole Damage
Balsam Fir	3	2	66	1	50
Beech	5	3	60	3	100
Hemlock	14	14	100	3	21
Red Maple	1	1	100	0	0
Red Oak	1	1	100	0	0
Spruce	6	3	50	1	33
White Birch	12	4	33	3	75
White Pine	6	5	83	1	20

Tree Species:	2007 AVG DBH	2015 AVG DBH	Avg. Change in DBH
Balsam Fir	2.3	2.8	0.5
Beech	5.4	5.88	0.44
Hemlock	7.62	8.7	1.08
Red Maple	5.8	6.5	0.7
Red Oak	5.4	7.6	2.2
Spruce	5.7	5.8	0.1
White Birch	7.5	7.725	0.225
White Pine	8.2	9.3	1.1

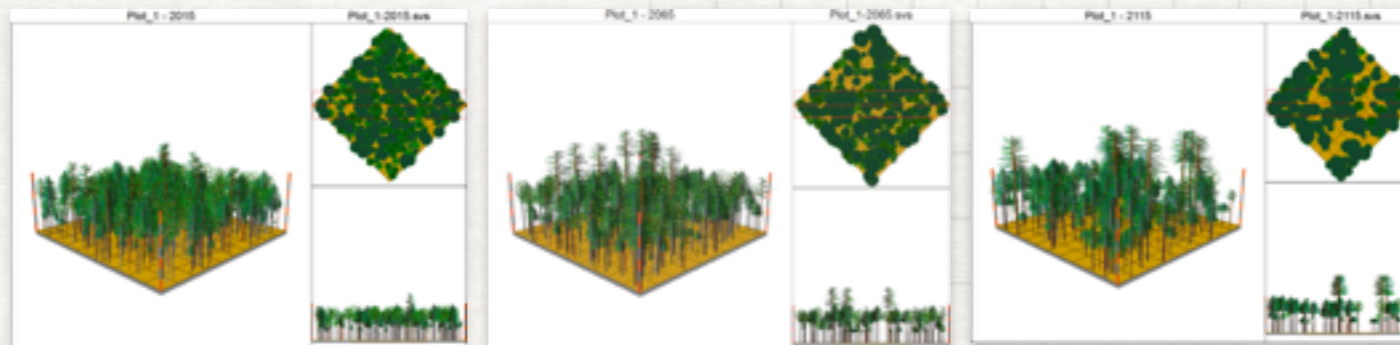
Measuring the Soil Sample



Summary Graphs of Death, Damage, and Growth by Tree Species



The Plot in 2015 Compared to a Potential Model of the Plot in 2065 and 2115 (Note that there are Fewer and Larger Trees Predicted in the Future.)



A 360° panorama of the Cathance Reserve Plot

Temple Measuring the DBH of a Hemlock



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