

Analyzing how Age and Height of Engelmann Spruce Change with Increasing Distance from Wheelers Lakes

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BACKGROUND

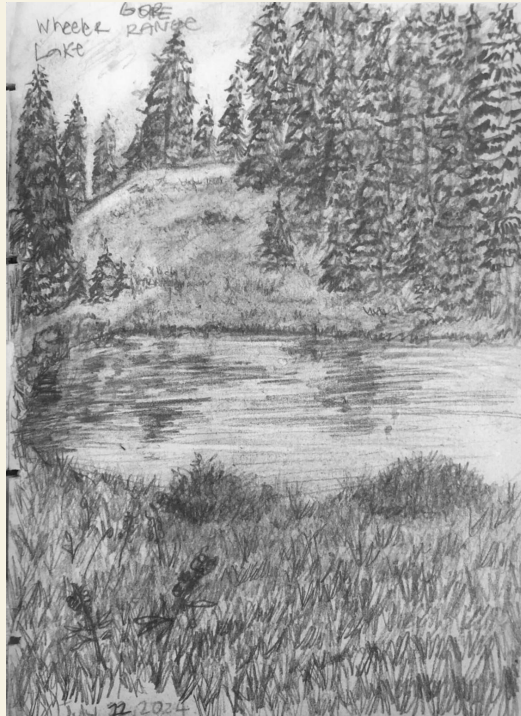


← Learning to core trees with Jenn





BACKGROUND



We also noticed that there is a greater number of dead trees surrounding the edge of the lake

Background:

HOW DID WE GET TO OUR QUESTION?

- We experienced many environments with varying elevations and weather conditions
- One consistent factor: tree's: Engelmann Spruce





**Does Proximity to Wheeler Lake
Impact the Age and Height of
the Engelmann Spruce?**

HYPOTHESIS

Greater proximity from Wheeler Lake will lead to older and taller Engelmann Spruce



Where did we Work?





METHODS

Identification

Increment Borer

Ratio

Clustered
Trees

Slope



IDENTIFICATION



We utilized previous lesson on tree identification to spot the Engelmann Spruce.



Increment borers were used to obtain tree cores and find age of trees.

INCREMENT BORER



RATIO

Our ratio of 17.26 was multiplied with circumference to find height of the spruce trees

$$\frac{h}{d} = \frac{110}{167} = \frac{x}{2830} \quad H =$$
$$\downarrow$$
$$2830 \cdot \text{Ratio} = \frac{x}{2830} \cdot 2830$$
$$2830 \cdot \left(\frac{110}{167}\right) = x$$

Height
circumference = Ratio of Height & circumference for Englemann spruce

Circum: 96 cm



We tried our best to get cores from trees that were within or under 18m of one another

CLUSTERS



SLOPE

We collected cores from the downward slope side of the trees as well as a core parallel to the slope for clear and easy to read cores.





Data:

20 METERS FROM LAKE

C.	H	Age
96	1,657	180
128	2,209	254
80	1,484	175
180	-	-
110	1,899	160
114	627	128
Avg.	1,575	179

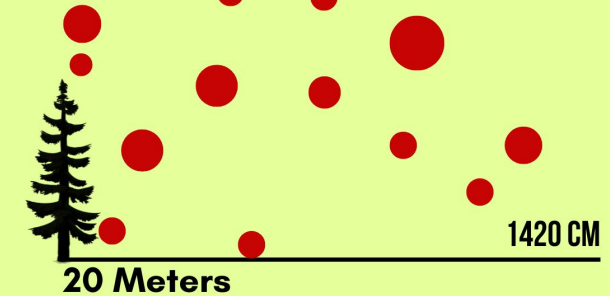
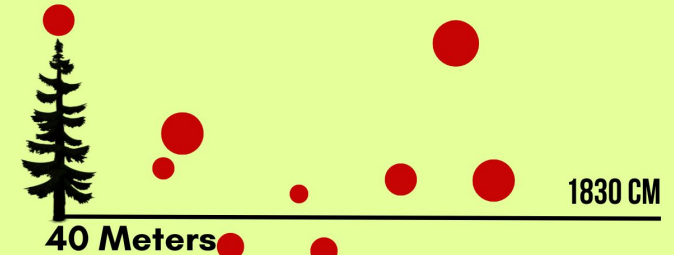
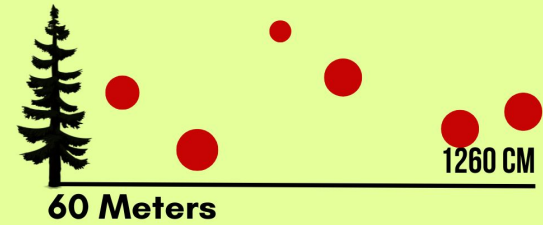
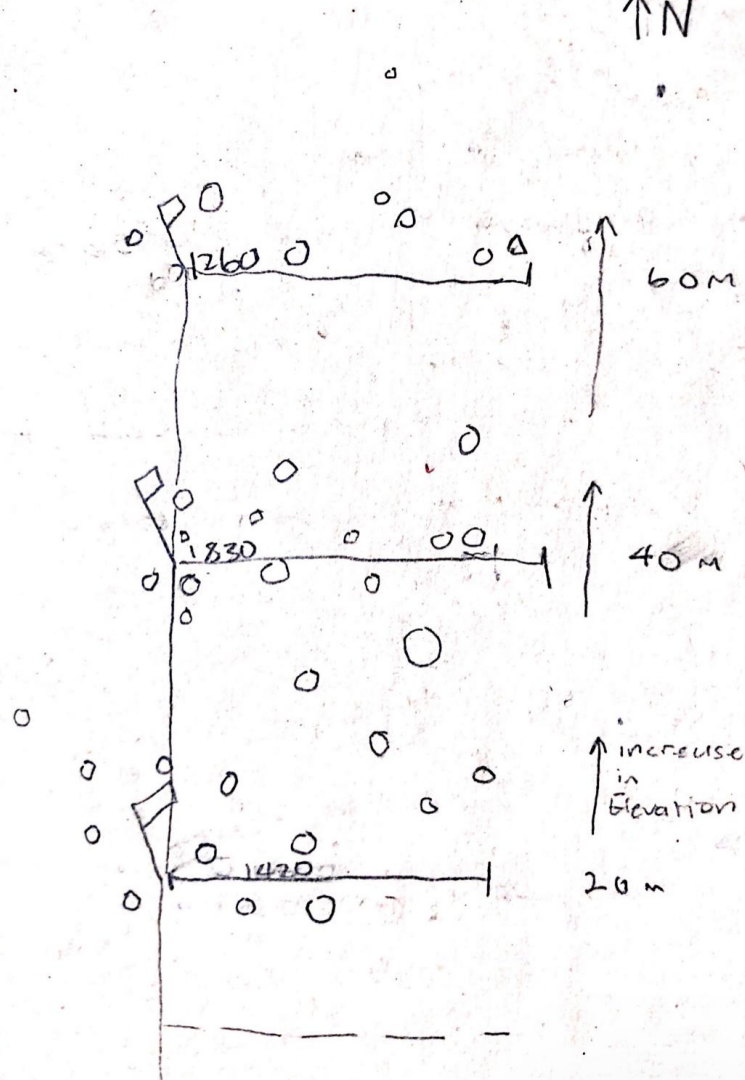
40 METERS FROM LAKE

C.	H	Age
232	4,004	146
174	3,003	220
101	1,743	146
106	1,830	117
90	1,553	114
123	2,123	100
Avg.	2,376	140

60 METERS FROM LAKE

C.	H	Age
143	2,468	190
152	2,624	230
148	2,554	193
169	2,916	220
175	3,020	267
138	2,382	249
Avg.	2,661	225

DEAD TREE PLOT





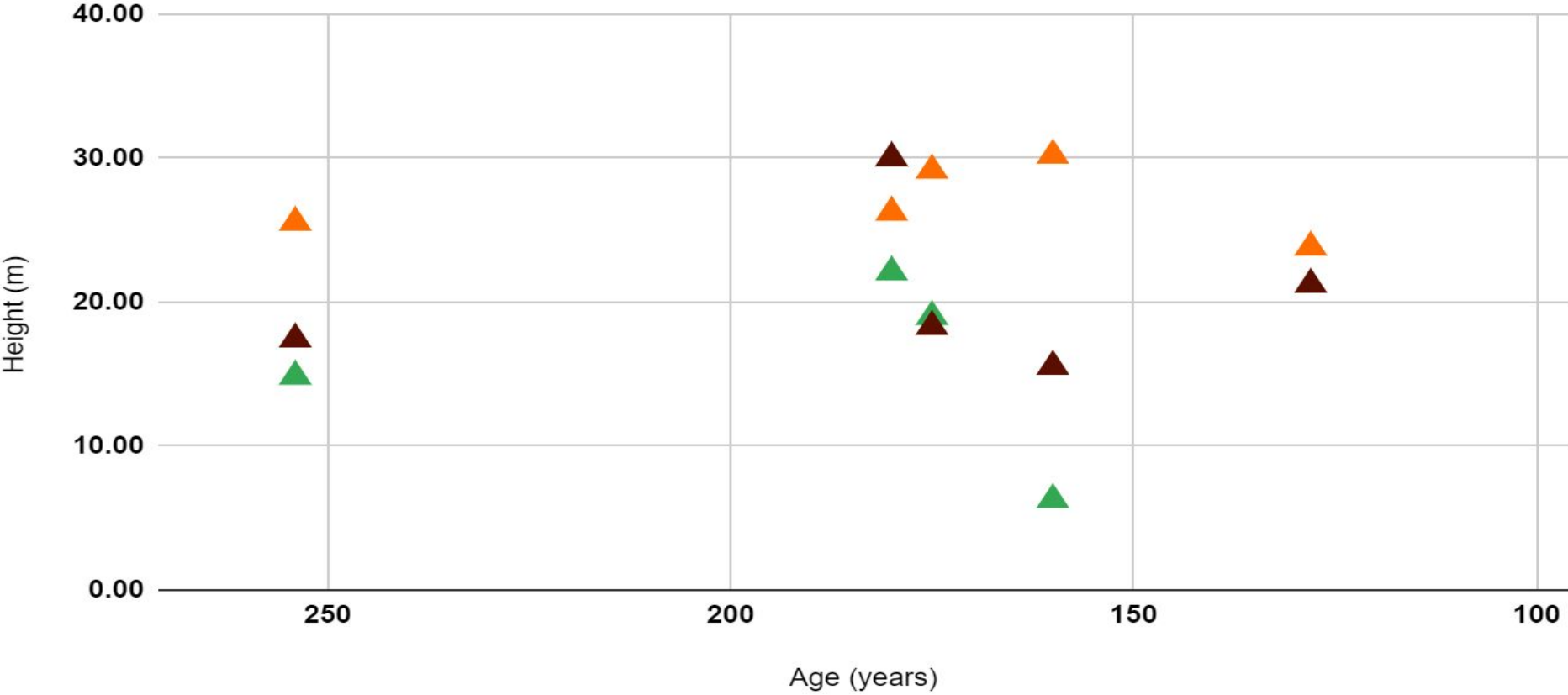
Additional Observations:

- Side of tree facing lake, appears to be grey and lacks branches
- There was an abundance of sap on the dead trees near the lake



Tree Height vs. Age at Different Distances from Wheeler Lake

▲ 20m ▲ 40m ▲ 60m





Age Vs. Height



- Although ages are varied, the size of tree rings remain consistent for trees within the same level



20 meters



40 meters



60 meters



Conclusions

Although the age is not noticeably affected by the proximity to the lake the height increases as we move further away from the lake.

Next Steps

- Additional sample data needed to further analyze the differences as we move further from the lake
- Determine the effects of slope and water runoff on the trees as you move further from the lake



Any Questions?



(Ground Squirrel
with Mature Lupine
for Scale)



Thank You!

