

FOR 274 Assignment 13: Basal Area, Trees Per Acre, and Density

This assignment should be completed and handed in at the start of the next tutorial.

Credit: This Assignment is worth 20 points

1. Use what you have learned in class and the information from the following table of data collected on a 1/5 acre plot to answer the following questions [5 points]:

DBH (in)	Count
6	10
8	3
10	4
12	2
16	1
18	1

i. Calculate the basal area and number of trees per acre:

ii. An even-aged stand has an average dominant height of 68 feet and 350 trees per acre. Calculate the relative spacing and if this stand was thinning to a relative spacing of 0.4 how many stems per acre would remain after thinning?

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2. Consider the following data collected for two plots in the same stand:

	Plot 1	Plot 2
Trees per acre	2640	190
Basal Area per Acre	230	141
Mean Basal Area	0.089	0.74
Quadratic Mean Diameter	3.99	11.67
Stand Density Index	992.29	224

a. Based on what you have learned in class describe what you would expect to see at each plot [2 points]?

b. For each of Redwoods, Douglas Fir, or Longleaf Pine describe the level of stocking present at each site and what actions you may do if you were managing that stand.

Redwoods [1 point]:

Douglas Fir [1 point]:

Longleaf Pine [1 point]:

Tip: Maximum SDI by Species in natural stands:

Redwood = 1000

Douglas Fir = 595

Longleaf Pine = 400

3. Explain under what circumstances you would use cluster sampling [2 points]?

4. Assume you want to estimate the average height of trees in a plantation. You are told that the plantation is divided into 200 row segments from which you select 10 randomly. You then measure each tree in each of the 10 rows to produce this table:

Number of Trees (m_i)	Sum of tree heights (y_i)	Average Height (ft)
4	164	41
3	117	39
5	230	46
2	82	41
4	156	39
6	264	44
3	120	40
3	120	40
5	175	35
4	144	36

i. By assuming simple random sampling, estimate the population mean of the tree height [4 points]:

ii. Assuming cluster sampling, calculate the population mean of the tree height [4 points]: