

FOR 373 – Forest Sampling Methods

Course Project Part 1 [50 points]

Premise:

You are a newly hired forester and you have been tasked to propose a sampling design for three stands of varying structure, age, and composition (**stands 610, 458, 420**). Your boss has said that you can have the sampling crew for 1 week and that you should expect them to complete ~11 plots per day when travel between plots is not too extensive. He is expecting you to allocate the crew's time in a way that will provide the most rigorous data for each of the stands. Below is a list of pre-existing data for the area.

- LiDAR-derived canopy height model
- LiDAR-derived 5 m contours
- 1 m NAIP aerial imagery
- Forest wide stand boundary shapefile

From a preliminary walk through you make the following observations of the stands to help in preparing your sampling strategy:

Stand 610

The stand is an unmanaged mixture of second growth trees that established approximately 75 years ago, following a railroad harvest in the 1930s. It is dominated by western red cedar (*Thuja plicata*) and western larch (*Larix occidentalis*), with remnant grand fir (*Abies grandis*) and western red cedar (>30" DBH) scattered throughout the stand.

Stand 458

The stand is an uneven aged mixture of Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*). The stand appears to be freely growing; however there are pockets within the stand with shallow soils and a thick shrub layer of ninebark (*Physocarpus malvaceus*) and oceanspray (*Holodiscus discolor*) that may make it difficult to regenerate.

Stand 420

This stand is an uneven-aged mixture of grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*), lodgepole pine (*Pinus contorta*), and ponderosa pine (*Pinus ponderosa*), with small pockets containing western red cedar (*Thuja plicata*). Overall the stand appears to be freely growing and clear of disease.

Task:

You need to determine from the provided data the most feasible, rigorous, and statistically viable approach to sampling each of the stands. This should include how many plots each stand will receive and how plots will be located within the stands. You must justify the techniques that you use in terms of both efficiency and statistical rigor. Your report to your boss is **due four days from today by 5:00 pm**.

Essay Instructions:

Your report is to be done as individuals and should be **typed using 1.5 line spacing and Times New Roman 12pt font**. It should be emailed to wtinkham@uidaho.edu by Friday November 15th by 5:00 pm for the Monday section or by Sunday November 17th by 5:00 pm for the Wednesday section.

The report should include the follow sections and address each of the outlined elements:

1. Introduction

- i. This should include a brief 1-2 sentence description of why proper sample allocation is important in forest sampling, including both the statistical and economic benefits it can provide us.
- ii. Followed by 1-2 sentence descriptions of each stand, including species observations, ~aspect, slope, and slope position. Inclusion of and reference to a map as a figure is encouraged.

2. Methodologies

- i. This section should include a brief description of any geospatial processing that you perform and what information you extracted from it.
- ii. There should also be 1-2 sentences describing the statistical approaches you implement, if an equation is include, each of the variables must be described.

3. Sample Allocation and Implementation

- i. This section should include a description of how many plots each stand will receive, how they will be located, and a suggested starting point and orientation for the crew to operate from. The inclusion of a table is suggested.
- ii. This should be supported by your discussion of allocation and description of your methods.

Grading Rubric:

	Available Points	Expectations		
		Below	Fair/Meets	Above
Introduction	10	0-5	5-10	+5 Extra Credit
Methodologies	15	0-8	8-15	+5 Extra Credit
Sample Allocation and Implementation	15	0-8	8-15	+5 Extra Credit
Technical Writing	10	0-5	5-10	+5 Extra Credit

Properly supporting and justifying your methodologies and statistical approaches with literature citations will show your willingness to go **above** expectations.

Code of Conduct:

Do not copy and paste material from these instructions, papers, or books when writing this essay. Attempt to rewrite in your own words the message you want conveyed and then provide proper citations. Doing so will result in a score of **0** and will cause you to be reported to the Dean of Students.