

**VEGETATION DESCRIPTION AND ANALYSIS
LABORATORY 1
NESTED PLOT TECHNIQUE FOR DETERMINING MINIMAL SAMPLE AREA**

Objective

The primary objectives of Lab 1 are to (1) learn some of the key species in the lower Alaska alpine ecosystem near tree line on Murphy Dome, (2) examine some common plant communities, and (3) use the nested plot technique to determine the minimal sampling area required to sample two alpine plant communities.

Materials

Field data sheets and pencil	Plastic collecting bag
Field Notebook	meter stick and 100-m tape
Scotch tape	4 wire pin flags
Hultén, Vitt, Broder floras	graph paper

Methods

Plant community familiarization, plant collections

During the first portion of the lab, we will review the common species in the alpine communities. You should take notes regarding the species discussed and collect a small specimen of each plant to paste into your notebook for reference.

Minimal area sampling

We will then break into two groups. Each group will focus on one plant community to determine the minimal sample area (= relevé size) that contains all of the species in the community.

Field work.

1. Select a large relatively homogeneous stand of your assigned community type.
2. Place pin flags in the corner of a 10 x 10-cm area in the center part of the stand.
3. Record the names of all the plant species within the area of the quadrat. Make a table with three columns. The first column is the area of the plot (0.01 m²); the second column is a list of all the species in the plot. Next to each species, The third column denotes whether the species is predominantly in the moss layer (mosses, lichens), or in the herb layer (forbs, graminoids, dwarf shrubs). Draw a horizontal line across the table at the bottom of the plant list. (See Table 5.1 in Mueller-Dombois and Ellenberg as an example).
4. Scotch tape a specimen of each new plant species into your collection for future reference. If the name of a plant is unknown, give it an easily remembered name so that you will be able to recognize it again. Collect key parts of the plant (roots, flowers, fruits leaves, stems) so that you will be able to identify it in the herbarium with a plant key. (Note for this exercise, it would be nice, but not essential to have Latin names on all your species. The key thing is to be able to recognize all distinct species again. Sounds easy, but it is not.)
5. Double the size of your sample area, and move two of the flags to the new corners of the sample area.
6. Note the new area of your sample in your table (0.02 m²), and then list the names of any new species not recorded in Step 3.
7. Repeat Steps 3 through 5 until no new species are encountered, or you are encountering only 1 or 2 new species with a doubling of the sample area, or until your quadrat becomes so large it is no longer sampling your original community.

Note: Be particularly aware that you are continuing to sample the same community as in your original plot. Avoid crossing ecotones into adjacent communities.

Analysis.

8. Graph the number of species encountered vs. quadrat area. Do this for the moss layer, the herb layer and the total number of species.
9. Find the points on the curve that represents the area that contain 95% and 99% of the total number of species in the community.

Lab Report # 1 - Due September 13

Please turn in the data sheet with correct plant names and the minimal-area graphs, for the moss-lichen layer, the herb-dwarf-shrub layer, and the total species. Your graph should have 3 lines on it..

