

Vegetation and soil sampling

Vegetation sampling

- 99% of time vegetation is sampled:
 - Can't take all the vegetation
 - Can't say you looked at it all
- Sampling either done by count, measurement, or by percentage – differs depending on type (not species) of vegetation

Types of studies with vegetation sampling

- Inventory the species in the area
- Determine the species distribution
- Determine the health of an area



Before we sample

- Development of specific objectives
 - Time consuming
 - Need to understand the area first
- General aspects of vegetation:
 - Species composition: trees, grasses, herbs
 - Spatial distribution, either vertical or horizontal
 - Temporal variation in structure: different ages

Techniques for sampling vegetation: species frequency

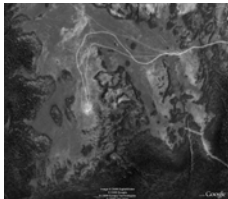
- Percentage of sample units in which a species occurs. Describes the distribution and abundance of plants, can be done along with species presence/absence

Techniques for sampling vegetation: species density

- How much of the species is within a certain area or the percentage of one species compared to others in a region
- Total number of plants per area

Techniques for sampling vegetation: species distribution/pattern

- Describes the distribution of plants
- Pattern of plant growth (i.e. where it is growing not how it is growing) may be desired because of environmental conditions
 - For instance, measuring treeline advance



Techniques for sampling vegetation: species cover

- How much of the sample area is covered/shaded by the target plants
 - Use most methods
 - Ocular estimates – visual estimate

Techniques for sampling vegetation: species presence

- How many species occupy the sample area; species richness
- Provides a record of all species that are encountered in the study area
- Especially valuable when studying plant disturbance
- Done using: a site survey using plots or transects lists all species encountered.

Techniques for sampling vegetation: Estimates of population size

- Record how many species are within a given area then extrapolate the number, given the typical distribution of a particular species
 - Single species

Techniques for sampling vegetation: Estimates of population condition

- More detailed and long term – detail overall health of area
 - Need typical vegetation cover, density, species types
 - Can be either condition of single species or condition of area

Biased versus unbiased sampling

- Biased sampling may be desired if you are only taking measurements from a specific species
- Always prefer unbiased sampling
 - Easy to preferentially pick a certain species
 - Over estimate



Sampling methods: Transects

- Point intersect: presence/absence, frequency
- Line intersect: estimate cover, presence/absence
- Belt transect: cover, frequency
- Point belt transect: density/cover, frequency



The boot-tip method

- Instead of laying out a line we will walk along a transect and record what plant is at the tip of our toe at each step. Data converted to %.
- For simplicity, take 100 steps along transect. The number of steps that "hit" each plant type or open ground converts directly to %.
- This only works for ground cover in fairly open habitats. For canopy cover of shrubs and trees use the regular line method.

Sampling methods

- Line transect: density, presence/absence
- Point count: density
- Quadrant: presence/absence, frequency, density, cover



Quadrat methods

- Plot size varies with different forms of vegetation.
 - Grasses – 1m by 1m
 - Shrubs – 4 to 10m
 - Trees – 0.01 to 0.1 ha
 - Range finder
- Circular plots are more effective points of interest
- Rectangular plots have advantages over square and circular plots in aggregated communities.



Quadrat methods

- Requires 3 characteristics to be considered:
- Plant distribution
 - Spatial relationships
 - Clumped
- Number of samples
 - Depends on variation in plant community
 - Plants not randomly distributed
- Size and shape of quadrat

Sampling Hints

- Trees: count, species, measure DBH, age, distribution, height, distance from each other, position in area
- Shrubs: count, height, condition, species, distribution, distance from each other, position in area
- Grasses: percent cover, species, distribution, position

Soil sampling

- Several reasons for taking a soil sample
- Typical to look at both vegetation and soil at same time