

# Selecting an Appropriate Sampling Unit

Range 357

## Terminology

Quadrat = Plot = Sampling Unit

## Quadrat Size?

- Variability is the key

- Small plots are -

But

- Small plots tend to have -

- The greater the variability among plots = the more plots you need to read to capture the character and variability of the site.

- **Trade-off between number of plots needed and plot size**

## Rules of thumb ....

- Quadrat too large if the two most abundant species are found in every plot
- Plot too small if the most abundant species are not found in a majority of the plots

## As variability increases. . .

- Plot size should -
- Number of plots examined should -
- Need for stratification also -
- Effectiveness of double sampling techniques -  
(to be discussed later)

## Distribution in community. . .

- Large plots have lower variance, but may be more –

*It would be easier to place 100 plots evenly across a landscape study area than if you just placed 20 plots.*

- For rare species, may need large plots and stratified sampling

## Plant size. . .

- Larger the average-sized plant the -

### Rules of Thumb:

- Plot should be larger than average-sized plant, and –

- Plot is too small if >10% of plot do not contain the plants of interest

### **Bottom line**

- Sparse vegetation requires larger plots or transects than dense vegetation
- Uniform vegetation requires -

### **Sampling different life forms**

- Difficult to sample different life forms (moss, grass, forbs, shrubs, trees, etc.)
- One size does not fit all
- Consider “stratified scheme”
- Or, select size of plot based on species of greatest interest

### **Perimeter to Area Concerns**

- Perimeter to area ratio decreases as plot size increases
- If borderline decisions (*deciding if plant in or out*) are difficult to make, then select a plot size that reduces perimeter:area ratio.

### **Shape of Sample Unit**

**Number** and **size** of sample units are the first and **most important** considerations

- However, shape of quadrat or frame is also important and can –

### **Circle**

- Less perimeter per area than square or rectangle
- Perimeter decisions are difficult to make when clipping vegetation, so circles are often used
- Reduced perimeter: area ratio is also good in communities with large clonal plants

### **Square**

- Greater perimeter:area ratio than circles, but less than rectangles.
- Most frequently used to estimate frequency because presence/absence is easy to estimate.
- Squares are easier to estimate % cover, than circles but not as easy as rectangles.

### **Rectangles**

- More likely to cut across plants rather than be completely occupied by plant
- Rarely completely occupied by bare spaces
- Often has lower variance than square or circles
- Can reduce variability in sparsely vegetated communities
- Easier to estimate % cover than circles or squares

### ***Take Home Message***

- Plot **Size** and **Number** of Plots are **Most Important**
- Plot **Shape** is “fine tuning”