**How Big is My Population?**

**Go to:** <http://mathbench.umd.edu/modules/env-science_sampling/page01.htm>

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1: **Counting Big Populations:** How do scientists estimate the size of a large population?

They take a random sample of the population.

2: **Sampling on a grid:** To count the dandelions, we'll first create a grid, then use the computer's random number generator to tell us which grid squares to count. We'll do this 10 times, because, as you'll see, the counts in the different grid squares will vary a lot. After you count 10 squares, you'll use the average number per square to estimate the population of the entire lawn.

Est. 87.5

**How many dandelions are there on the grid? 91**

3: **Scaling it Up:** What does it mean that we scaled it up?

Scaling it up means multiplying the sample size to predict the population in the whole area.

4: **Keeping it Random:** Why is it important to ***randomly*** select segments to count?

Because if experimenter’s bias is present in the experiment, such as picking the smallest patch, the results will be inaccurate.

5: **When Size Matters:** What is the simplest way to determine the appropriate sample size?

The simplest way is to graph a running average from the samples.

6: **Bare Bones Sampling:** What is the difference between measuring abundance versus

Presence/absence?

Abundance is measuring the actual number of individuals in the area, whereas measuring in presence/ absence measures in small points in the area in order to determine whether or not the organisms were observed.

7: **Collecting P/A Data:** *Counting Moss.*. How do we estimate sample size?

We could estimate sample size by estimating the growth over time and the growth area.

8: **Impervious Surface:** How do we estimate impervious surface? Explain.

We can estimate impervious services by using P/A measurements – selecting random areas on a map and using a graph to determine a suitable sample count.

9: **Getting Fancy:** What are the *steps* for conducting a simple transect?

First, randomly select an area as a starting point. Next, randomly choose a direction from the starting point. Layout the transect in the direction you chose and determine where along the transect you will collect your data. Layout sampling frames on where you chose and begin sampling.

10: **Try a Transect:**

Ok.

**Summary:** *Explain what you learned by doing this activity*

I learned that acquiring samples in order to estimate an area’s population could be very accurate despite using small sample areas. The two main methods of measuring, presence/absence and abundance, both tend to different situations that vary from being impossible to keep count to being easily counted. Transect sampling also prevents selection bias and provides an easy way to predict populations.