

# Natural Resource Biometrics

## Sample Size Determination

### To calculate the number of samples needed

To calculate the number of samples needed for a given error level use:

$$n = \left( \frac{t_{\alpha(2)df} S}{d} \right)^2$$

where **d** = the desired absolute error in plus or minus of the units of measure, **s** = the standard deviation, **t<sub>α</sub>** = Student's **t** value for **n - 1** degrees of freedom for the **1 - α** level of confidence, and **n** = the sample size.

### To calculate the error for a given number of samples

If you have a set number of samples and want to know the absolute error use:

$$d = \frac{t_{\alpha(2)df} S}{\sqrt{n}}$$

where the variables are the same as above.

### To calculate the number of plots in relative terms

To calculate the number of plots in relative terms use the following formula:

$$n = \left( \frac{t_{\alpha(2)df} cv}{\%E} \right)^2$$

where the **t** and **n** variables are the same as above. **c** is the coefficient of variation in the percent form and **E%** is the desired error as a percent.



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### Also See:

Chapter 5 - Sample Size Determination pages 173-178 in:

**Krebs, C. J.** 1998. Ecological Methodology. Harper and Row, Publishers. New York. 620 pp.

Chapter 8 - One-Sample Hypotheses pages 108-112 in:

**Zar, J. H.** 2007. Biostatistical Analysis. Prentice-Hall, Inc. Englewood Cliffs, New Jersey. 718 pp.



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Created: October 6, 2013  
Last Updated: August 18, 2014