ISB Environmental Science

Population Sampling Techniques Exercise:

Objectives :

Become familiar with the common sampling techniques used to sample ecological populations.

Understand the “on the ground” techniques used to collect each sample and the mathematical calculations used to determine the population estimate.

Compare and contrast the different sampling techniques to identify their strengths and weaknesses.

Choose the most appropriate sampling technique for a given population by using the criteria above.

Process:

1) Follow the link http://www.cquest.utoronto.ca/zoo/bio150y/sampling/park.html to begin the exercise. Stop when you get to the page where you are to choose the organism you wish to sample.

2) Working with your team and assigned organism, first read the background relevant to your particular organism by following the “Read more” link on the moose, trout, sparrow, and maple pages.

Make notes on the relevant background information on your species. Use the following questions

as your guide.

· What are the particular habitat requirements of the species?

· Where are they found in the park?

· What are the main factors identified which determine the abundance and distribution of the species?

· Name the methods employed to census this species and describe them in your own words.

· Identify strengths and limitations of each sampling method used on this species.

3) Go to your organism’s census simulation page by clicking on your species from the http://www.cquest.utoronto.ca/zoo/bio150y/sampling/choose-spp.html link then on the “next” link.

Follow through with your census by choosing where on the map to take samples using each sampling method until your budget runs out. Click on the “stats” button to see the estimated population size and the standard deviation for each method. When all sampling budgets have been exhausted, click the “next” button and see an analysis of your work. Write down a summary of the information presented about the effectiveness of each sampling method for your species. Identify the preferred method for sampling this species and explain why it is preferred over the others. (What makes this one so good? What makes the others less desirable?)

4) Be prepared to run through a summary of this exercise for your particular species in front of the class.

Analysis:

1) Create a Pro/Con table for the sampling techniques presented by each group.

2) For each sampling technique, write a short description along the lines of: The quadrat sampling technique is done by… and is best suited for…

3) Explain why one sampling technique alone is usually not sufficient for determining the true abundance and distribution of a species. Use at least one example from the exercise to support your explanation.