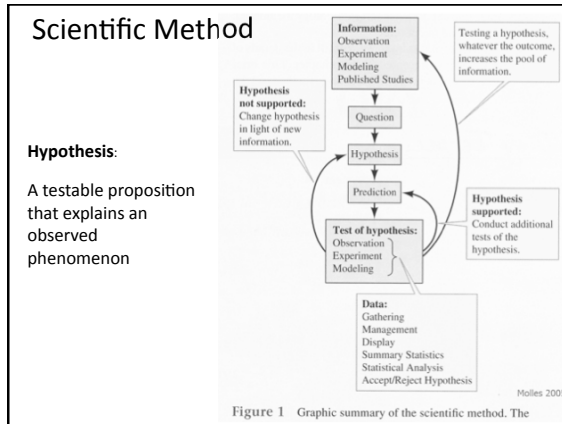



Sampling Sedentary Organisms

Stuart R. Borrett
BIOL 366, Fall 2009



Why Sample?

- Ecology is a quantitative science.
- Counting everything is not always possible.
- Multiple observations lets us describe or characterize the population



Sampling in the News: Its not just for Ecology

The Weekly Newsmagazine of Science
Volume 155, Number 10 (March 6, 1999)

Census Sampling Confusion

Controversy dogs the use of statistical methods to adjust U.S. population figures
By Ivars Peterson

Counting the number of people in the United States is a massive, costly enterprise, done once every 10 years.

For the year 2000 enumeration, the Bureau of the Census plans to mail out more than 90 million questionnaires and deliver millions more by hand to households across the nation before Census Day, April 1. An army of census takers will next fan out across the country aiming to track down the significant number of people who fail to return forms.

Past experience suggests that, despite such a huge effort, the population count will still be incomplete. In 1990, the Census Bureau officially recorded 248,709,873 people. Evidence from other surveys and demographic analyses indicated that the population was closer to 253 million and those not counted were mostly children, people from racial and ethnic minorities, and poor residents of both rural and urban areas.

http://www.sciencenews.org/sn_arc99/3_6_99/bob1.htm

What Sampling Issues to Consider?

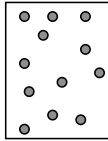
- What sampling method could/should be used?
- How do we select sampling locations?
- How to maximize accuracy while minimizing the number of samples (cost in terms of time and effort)

Sampling Sedentary Organisms

- Goals may include characterizing the
 - population density
 - Population variation or dispersion
- Methods
 - Plot sampling
 - Quadrat
 - Belt transect
 - Plotless sampling
 - Point-Quarter
 - Line Transect

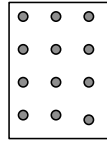
Random dispersion

Individuals are equally likely to be found at any point in space.



Regular dispersion

Individuals are more evenly spaced than would be expected by chance

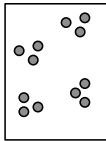


Creosote Bush (*Larrea tridentata*) in NM

What processes might cause this pattern?

Aggregated dispersion

Individuals are closer together than would be expected by chance

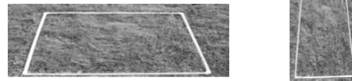


Plot Sampling

A. What size should the plot be?



B. What shape should the plot be?



C. How many plots should be sampled

