

Name: _____

Estimating Population Size using the Capture-Recapture Method

Objectives

Introduction

Problem

Procedures

1. The borders of the box represent the shores of the lake. Place 50 pink Good & Plenty into the box. This represents the original total population.
2. Begin the capture and marking portion of the experiment in an attempt to estimate the number of pink candies in the box. This is done by withdrawing 10 pieces of candy and substituting them with white pieces. In real life, biologists are guided by statistical criteria and time and resource constraints when deciding the number of units to be tagged.
3. After shaking the box in different directions for at least ten seconds, remove ten pieces of candy *one at a time with your eyes closed*. This represents the recapture event. Record the data for each trial.

Results

Record your data below and use the formula outlined in the introduction to calculate the estimated population size.

Trial 1:

T (# of white candies substituted for pink) = _____

n (total # of candies removed during recapture event) = _____

t (# of white candies among those recaptured) = _____

N (use formula to solve for N) = _____

Trial 2: T = _____ n = _____ t = _____ N = _____

Trial 3: T = _____ n = _____ t = _____ N = _____

Average of three trials: _____

Analysis & Conclusions

1. How close or how far did the experiment accurately estimate the size of the population?
2. Why is it important to thoroughly shake the box after the tagged samples have been introduced into the population?
3. Why is it important not to see the sample being recaptured?
4. Why withdraw the recaptured population one at a time rather than in clumps?
5. What are the possible sources of error with the capture-recapture method be used?
6. Why do biologists sample populations and estimate their size?
7. Explain how you would estimate the number of a certain species of tree in an area the size of East Greenwich.
8. Explain in detail how you would capture and estimate the number of White footed mice in Rhode Island.