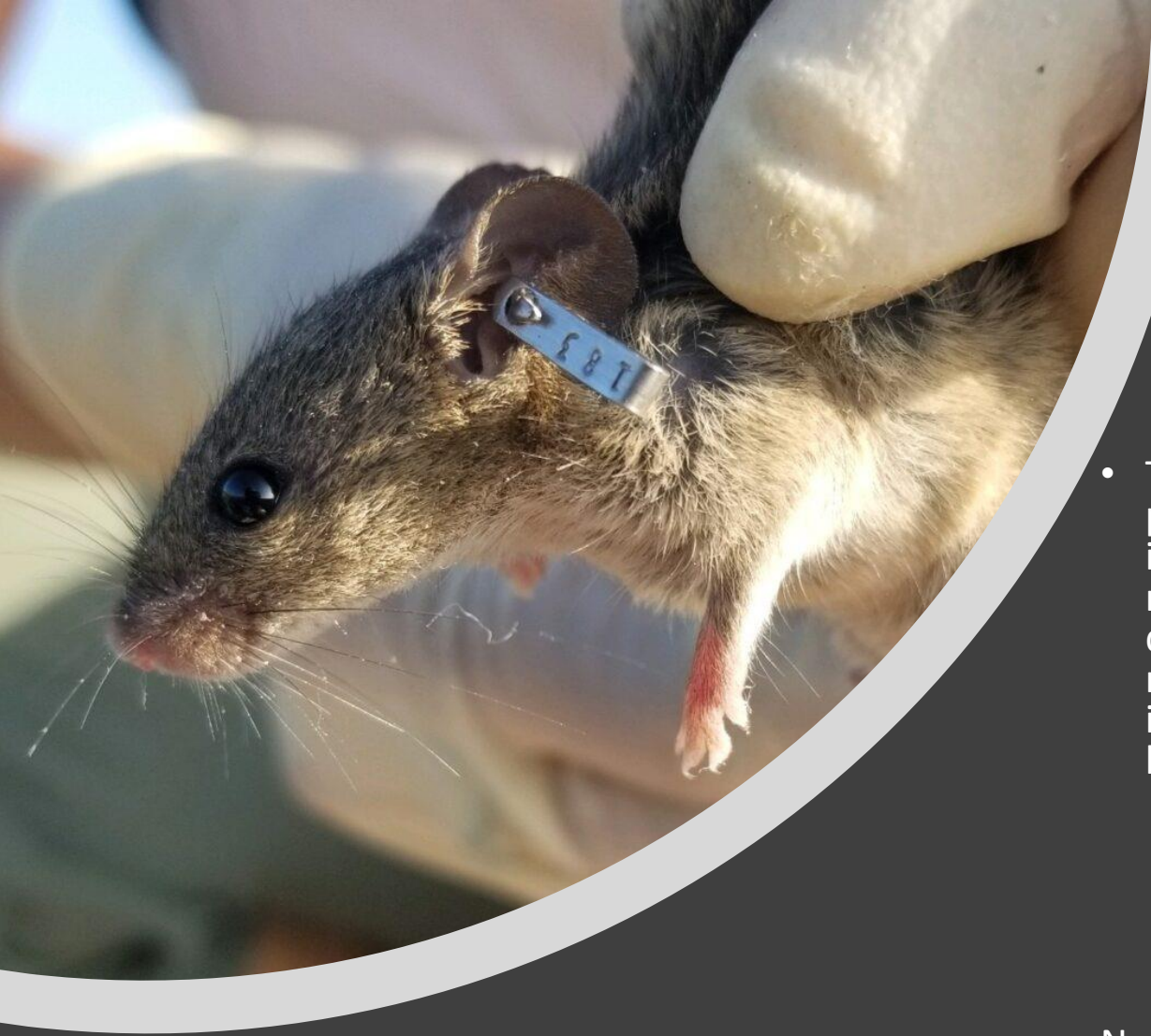# Estimating Population Sizes

Mark and Recapture

- The Mark and Recapture method is used to estimate the size of a population where it is impractical to count every individual. The basic idea is that you capture a small number of individuals, put a harmless mark on them, and release them back into the population. At a later date, you catch another small group, and record how many have a mark. In a small population, you are more likely to recapture marked individuals, whereas in a large population, you are less likely. This can be expressed mathematically using the equation below.
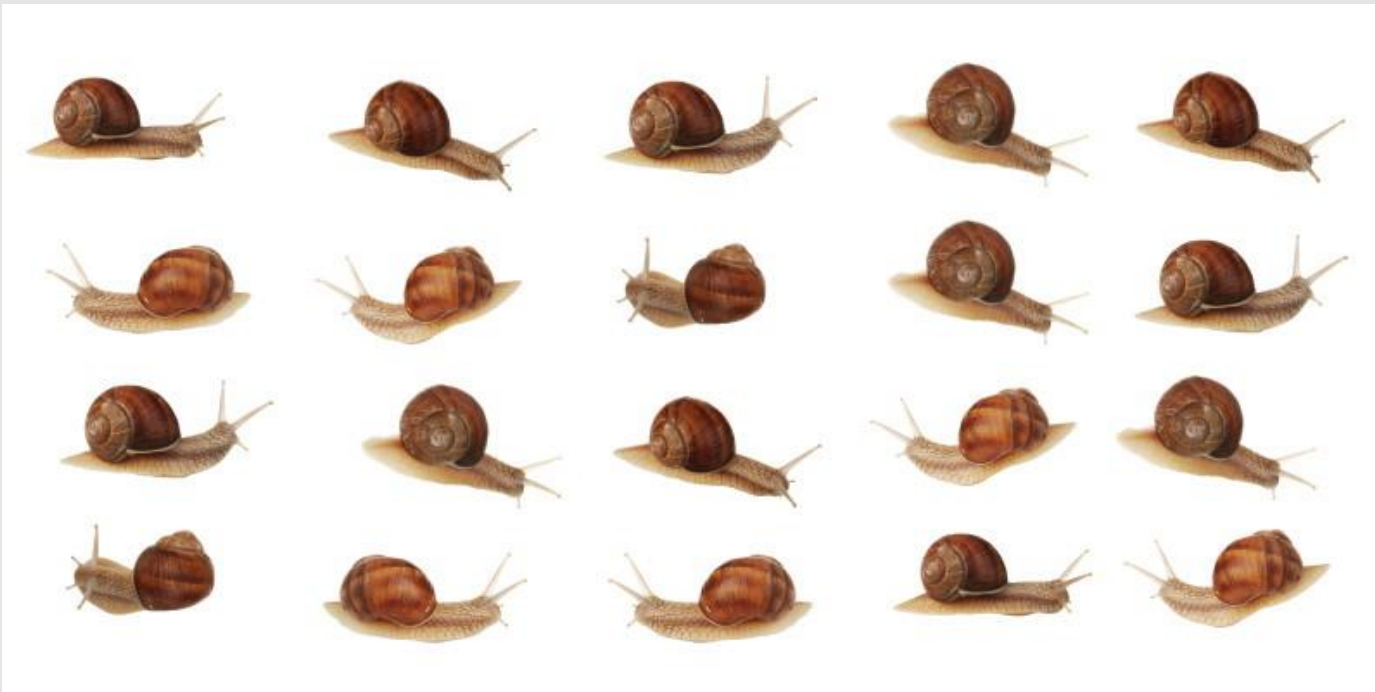
$$N = \frac{M \times C}{R}$$

N = estimated Number of individuals in the population

M = number of individuals captured and Marked

C = total number Captured the second time (with and without a mark)

R= number of individuals Recaptured (those with a mark)

Example:

- Let's say that your neighborhood has a population of snails. One day, you catch 20 snails and mark them. You then wait a week to give them a chance to disperse into the population. At the end of the week, you catch 15 snails; 6 of which have marks on them. What is the estimated size of the population?

$$N = \frac{M \times C}{R}$$

$$N = \frac{20 \times 15}{6}$$

$$N = 50$$