SPINOFFS

Spinoffs are relatively short learning modules inspired by the LTAs. They can be easily implemented to support student learning in courses ranging from prealgebra through calculus. The Spinoffs typically give students an opportunity to use mathematics in a real world context.

LTA - SPINOFF 15A	The Capture-Recapture Method
LTA - SPINOFF 15B	Florida Scrub-Jay Populations and Habitat
LTA - SPINOFF 15C	Population Models with Recursive Equations

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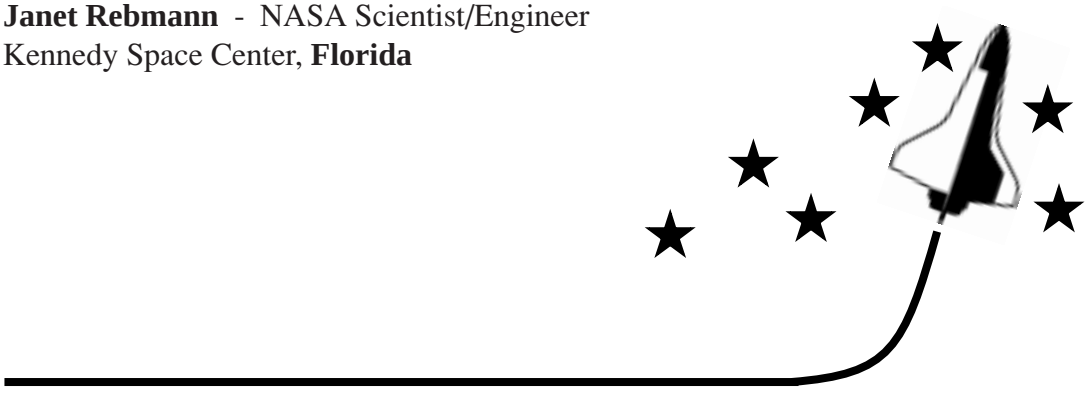

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SPINOFF 15A

The Capture-Recapture Method

The capture-recapture method is often used to determine the size of a population. This method involves capturing a sample of a species, marking each captured member, and then returning each marked member to its general population. Then a second sample is captured, and the percent of marked subjects provides an estimate of the percent of the entire population that is marked. We can use this percent to set up an equation and solve for the unknown population size.

For example, suppose 20 mice are captured in Sherman live traps, marked, and then set free. Assume that later, a sample of 10 mice is captured, and 5 of them have marks. This later sample suggests that 50% of the population of mice have been marked. Thus, we can write the equation, $0.5x = 20$, where x represents the number of mice in the population. Solving this equation yields $x = 40$ as a reasonable estimate of the population size.

Due to changing coastal dunes and construction of homes and businesses, the Southeastern Beach Mouse (with a central/southern Florida habitat) has undergone a large reduction in population size and has been declared a threatened species. Consequently, there is an interest in monitoring the size of its population. This is an ideal application of the capture-recapture method.

Exercises

1) In the Treasure Shores Park region of Florida's Indian River County, traps are set and 191 mice are captured and marked. Later, a second sample of 140 mice is captured and it is found that 88 of them have been marked. Estimate the population size.

2) In one tract of the Archie Carr region, 8 mice are captured and marked. Later, another 8 mice are captured and all of them are found to have been marked. Estimate the population size.