

The spotted turtle (*Clemmys guttata*) was once common in southern Ontario, but sightings have become less frequent because of urbanization of the province. Deciding whether it is in danger of becoming extinct or whether it is just not seen as much is a job for biologists.

The following data are from a field study done by Dr. Dan Reeves and Dr. Jacqueline Litzgus of Laurentian University in Sudbury. They studied populations of spotted turtles on a small island in Georgian Bay over three years.

Study Date Day/Month/Year	Females Capture d	Females Recapture d	Males Capture d	Males Recapture d	Juveniles Capture d	Juveniles Recapture d	Total Capture d	Total Recapture d
10/06/05	4	0	2	0	4	0	10	0
15/05/06	3	0	0	0	2	1	5	1
20/06/06	14	6	2	0	6	3	22	9
21/06/06	7	2	1	0	3	0	11	3
06/07/06	4	3	0	0	0	0	4	2
22/07/06	9	8	2	2	5	3	16	13
10/09/07	2	1	1	0	1	0	4	1

- 1.) Calculate the populations of males, females, and all turtles found in the study using your mark recapture equation.

$$\text{Total population } (N) = \frac{\text{Total number marked } (M) \times \text{Size of second sample } (n)}{\text{Number of recaptures } (m)}$$

Females (14 captured and tagged, 7 recaptured of which 2 were tagged)	Males (2 captured and tagged, 1 recaptured which had a tag)	All Turtles (22 captured, 11 recaptured of which 3 were tagged)

- 2.) If the island is 0.232 km², what would the population density be? HINT: Use your calculated population from All Turtles above.
- 3.) The sampling of July 22, 2006, found 9 turtles in a 1.04-acre wetland, which is considered prime habitat for these turtles. What was the local population density?
- 4.) What distribution pattern do turtles follow based on your answer in number 3? Why?
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- 5.) What is the ratio of female to male turtles in this study?
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