

St. Mathew's Island Carrying Capacity Investigation

Name: _____

Background: You have been investigating the ecological concept of "Carrying Capacity". You understand that population size, limiting factors of the environment, and many other influences affect the carrying capacity of an area for organisms.

Task: Your task is to read and reflect upon the "St. Matthew Island" comic. Be sure to provide thorough answers to the prompts as you pause and reflect. Be sure to also provide quality responses to the conclusion questions at the end of the activity.

Pause and Reflect Prompts:

Cover: What does the word "remote" mean? What do you know about "remote" islands? How do you think St. Matthew Island may be different if it were NOT so remote? _____

Page 2: Summarize what has happened so far. Using your current ecology knowledge, predict what MAY happen next. _____

Page 3: Describe the connection between the concepts of "carrying capacity", "limiting factors", and what has occurred so far. _____

Page 4: Describe how, scientifically, the reindeer herd was able to "balloon" from a population of 29 to 1,350. _____

Page 5: The deer herd population has now increased from 29 to 1,350 to 6000! Predict what will happen to the deer population now that their "body weight had dropped". How would this population growth be represented mathematically? What type of graph would result? Defend your answer! _____

Page 6: The deer herd population has dropped from 6000 to 42! Was your prediction for the last prompt supported? Why are why not? Why, scientifically, did the population fall so dramatically? _____

Page 7: Was your graph prediction to the Page 5 question supported? What could the scientists have done differently to avoid overshooting the carrying capacity of the island? _____

Conclusion Prompts:

1. Summarize what happened to the reindeer on St. Matthew Island. _____

2. Between 1944 and 1963, the deer population grew tremendously. Was it linear or exponential growth? Explain. _____

3. Why did the reindeer switched from eating lichen to eating sedge-grass by 1963? _____

4. What limiting factors caused the reindeer population to plummet by 1966? _____

5. Why didn't the reindeer population of St. Matthew Island disappear completely? _____

Why didn't it level off at the island's reindeer carrying capacity? _____

6. Why should we, as humans, be concerned about the author's final question: "How big is our island?" _____

7. Draw and color your own three frame comic strip retelling this story in your own words.

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