

Name: _____

Date: _____

Period: _____

AP Environmental Science

Rocky Mountain National Park Elk & Vegetation Management Plan Case Study

Reading Questions- Answer in complete sentences on loose-leaf paper, title assignment as above.

→Refer to the glossary of terms in the appendix handout for vocabulary help.

1. Describe the characteristics of the Rocky Mountain National Park/Estes Valley elk population.
2. What habitats do the elk population use heavily? Describe these habitats (refer to the glossary of terms in the appendix handout for vocabulary help).
3. What other populations of biological species are impacted by the high concentrations of elk herbivory?
4. What do national park service policies strive to maintain?
5. How does the national park service describe natural conditions?
6. What would control the elk population size and distribution under natural conditions?
7. How would a less sedentary and more wary elk population affect the montane riparian willow and aspen communities?
8. How would natural conditions with suitable levels of montane riparian willow habitat affect beaver populations, water level, and in turn, growth of willows?
9. What is the purpose of the Environmental Impact Statement (EIS) Plan?
10. What is the key reason for the elk population size, density, and behavior?
11. What two top consumers/predators were extirpated from the park area before it was established?
12. What are two other factors that contributed to lower elk populations in the park?
13. What vegetation communities do an overabundant or over-concentrated elk population impact?
14. What is the food-limited carrying capacity?
15. What factors affected by humans can have a large influence on habitat conditions even though carrying capacity may be adequate to support elk population?
16. Which areas of the park have the highest elk densities? Locate these areas in the appendix handout. These areas are collectively known as the core winter range.
17. What do elk use the lower density areas for, and what do elk use the higher density areas for?
18. An over-concentrated elk population increases the risk of what disease? Describe this disease (refer to the appendix glossary of terms)? Is this density independent or density dependent population regulation?
19. Describe the changes in elk migratory behavior over the years. What increases the risk of human-elk conflict?
20. What would likely be the result of the continuation of the high elk densities in Rocky Mountain National Park?
21. Describe how elk are impacting aspen trees and aspen stands.
22. Describe the impacts that elk are having on montane riparian willow.
23. What is another factor contributing to the decline of montane riparian willow and what has caused this?
24. What is a trophic cascade? (Refer to the glossary of terms in the appendix handout.) Is this elk and vegetation case study an example of a trophic cascade? Explain.
25. Analyze the food web in the appendix handout. Considering what you have learned in this case study, how can biodiversity help balance ecosystem function? Explain.
26. What is adaptive management? (Refer to the glossary of terms in the appendix handout.)