**Structured Data Analysis Practice Question #4 (Topic: Ecology)**

The Kluane boreal forest ecosystem project was a large scale ten year experimental manipulation of food and predators on arctic ground squirrel population (*Spermophilus parryii plesius*).

Three areas were set up:

 a food addition area  
 a predator exclusion area  
 a food addition area enclosed within a predator exclusion area.

The areas were monitored from 1986 to 1996. In spring 1996 all fences were dismantled and food addition was stopped.

As a further experiment, spring and summer mark-recapture population estimates of the squirrels were conducted from spring 1996 to spring 1998. The results for these two years are shown below. The areas are labelled according to the conditions imposed during the previous ten years.



[Source: Karels *et al., Nature*, (2000), **408**, Pages 460–463)]

(a) State the squirrel population in the food addition plus predator exclusion area in spring 1996.

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**(1)**

(b) Describe the effect of ending food addition on the squirrel population.

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**(2)**

(c) Scientists believed that the number of ground squirrels in the boreal forests was limited by an interaction between food and predators that acted primarily through changes in reproduction. Using the data, discuss this hypothesis.

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**(3)**

**(Total 6 marks)**