



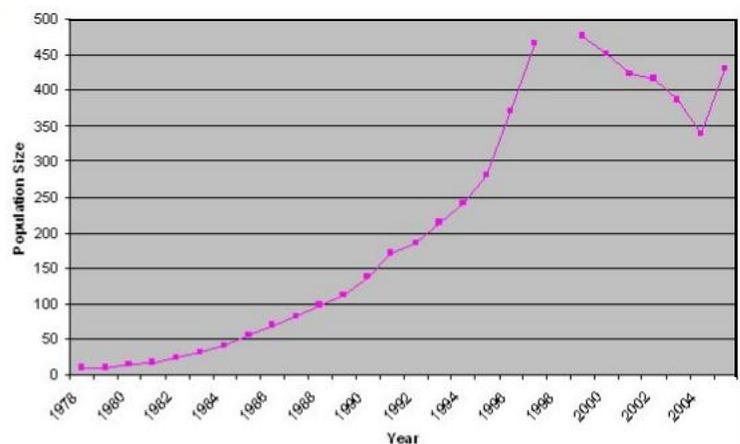
Current Trend in Population Growth of Tule Elk at Point Reyes National Seashore

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*The Question: What is the current trend in population growth of tule elk (*Cervus elaphus nanodes*) at Point Reyes National Seashore, and what environmental factors may be affecting tule elk population growth?*

Numbers of tule elk in Point Reyes National Seashore have increased dramatically since the restoration of the species in 1978 and have remained relatively stable in recent years. At various times since the reintroduction, managers have been concerned that the population could either irrupt to overshoot its ecological carrying capacity (K) with concurrent habitat degradation or, conversely, decline to unsustainable levels. Without further understanding of elk population dynamics, adequate management of this endemic subspecies of elk will be problematic.

The Project: Monitor the survival, natality (ratio of live births in an area to the population of that area), and spatial patterns of tule elk using radio telemetry collars. Examine environmental factors that may be affecting the population dynamics of the elk.



The numbers of tule elk at Point Reyes have varied widely since they were reintroduced in 1978. Note: data for 1998 is excluded since it is believed to be incorrect as the result of a double population count.



Tule elk (*Cervus elaphus nanodes*) is a subspecies of elk native to California. In 1978 tule elk were restored to Point Reyes National Seashore after being absent from the area for over 100 years.

Information on tule elk reproductive and mortality rates is critical to accurately understand the underlying factors influencing the population dynamics of this species. Radio-marking is currently the most effective method of monitoring individual animals in a free-ranging situation to determine population parameters. Radio telemetry collars were fitted onto adult female elk. Blood was taken at capture to determine pregnancy status. Radio collared elk were monitored regularly to determine their locations and survival rates. Fecal samples from collared elk have been biannually tested for Johne's disease, an exotic diarrheal wasting disease previously identified in the elk population. A sample of tule elk calves were fitted with radio telemetry collars and monitored for the first year of their lives to determine neonatal and calf survival rates.

Preliminary Results: The tule elk population is currently increasing in size, although pregnancy rates appear relatively low. We also found low levels of adult and calf mortality.

Collared elk showed fairly low pregnancy rates at the population level (75.7%). Pregnancy rates varied greatly between individual subgroups within the overall population. The cause for this variation in pregnancy rates might be related to difference in range quality, and required further examination. Adult and calf survival appears to be quite high. All radio collared adults and 81% of radio collared calves survived the first year of the study. Collared elk exhibited fairly small home ranges and partial spatial segregation appears to exist between subgroups of sympatric elk (occupying the same or overlapping geographic areas without interbreeding). Preliminary results indicate that Johne's disease prevalence currently appears to be very low. More research is needed to further understand the specific environmental factors affecting the population dynamics of tule elk at Point Reyes.