

Fine-scale Movement Patterns of Coyotes (*Canis latrans*) on the INL Site (2005)

Since the pioneer days, coyotes have been killed regularly throughout the western United States because of their depredations on domestic animals. Millions of coyotes in the western United States have been destroyed, yet the coyote problem still persists today. Studies have shown that not all coyotes kill sheep and social status is a key factor of those that do. This study will track the movements and hunting behavior of alpha (dominant), beta (younger adult offspring) and transient (searching for a mate or territory) animals so that more specific control methods may be employed.

Coyote research conducted previously has contributed significantly to our knowledge of the species. However, our understanding of information specific to the depredation of livestock is lacking. It is known that not all coyotes kill sheep and social status is a key factor of those that do. This fact is supported by several studies from Utah and California, showing alpha coyotes (the dominant breeding pair) to be almost exclusively responsible for killing sheep. Furthermore, evidence from a number of studies show that coyotes of alpha status are more difficult to capture within their home-ranges than either beta or transient coyotes, suggesting unique behavior.



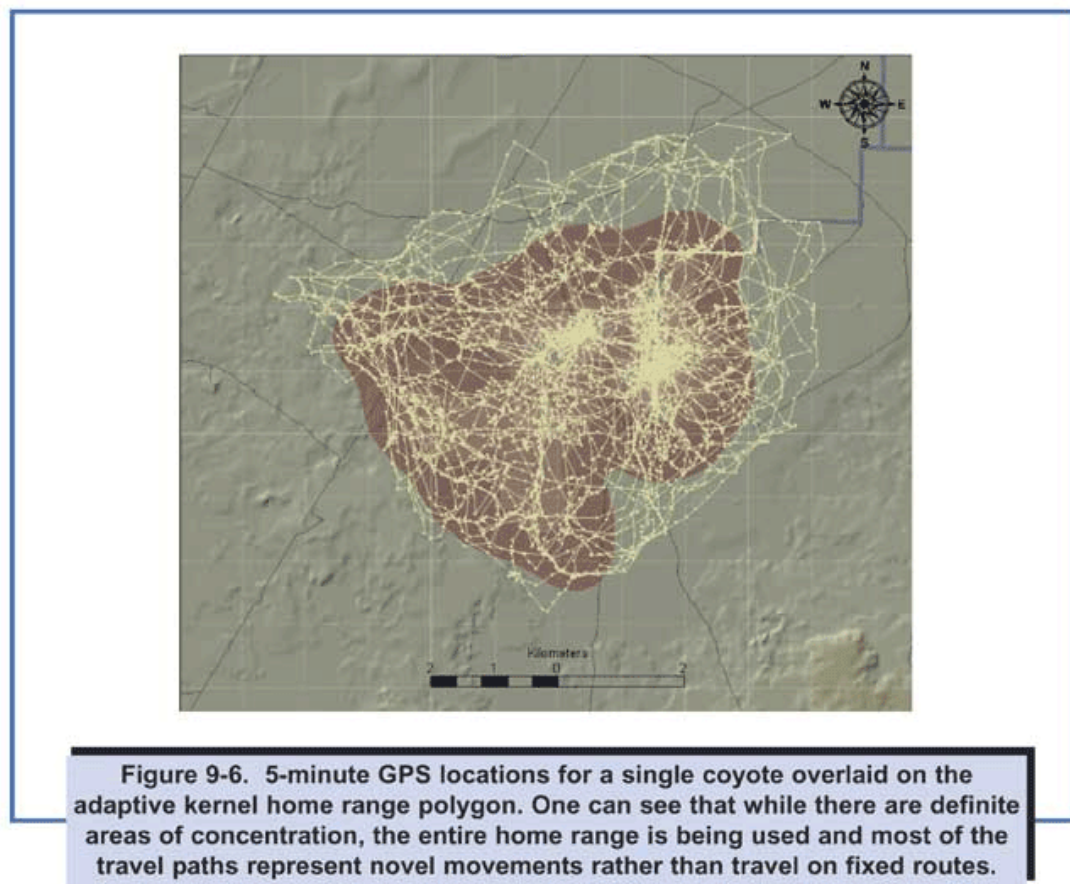
A study conducted on the 890 square mile Idaho National Environmental Research Park (NERP) located on the Idaho National Engineering and Environmental Laboratory had two broad objectives:

- Investigation of the spatial and behavioral differences of alpha animals from others (betas and transients) and the implications these differences have to the depredation of sheep.

- Document the spatial-temporal pattern of coyotes when sheep are killed, including the events leading up to and continuing past the actual predation event. This crucial piece of information of how and when coyotes actually kill sheep has gone unanswered for decades. Until recently, technological restrictions were a justifiable excuse for this knowledge gap. However, the advent of Global Positioning System (GPS) radio-collars now allow for fine-scale spatial-temporal data (every 5 to 15 minutes) to be collected.

The preliminary results:

- Home ranges for coyotes on the INL Site site appear to be relatively large compared to previous studies. While this trend is true for most territories monitored, one pair of elderly coyotes (approximately 10 years old) appear to be an exception with their comparatively small home range.



- Using serial locations to examine coyote movement patterns allows one to visualize how coyotes actually travel within their home ranges. This figure shows the 5-minute GPS data (approximately 12,000 locations) and travel paths superimposed on the home range for a single coyote. A computer algorithm was used to divide locations into either "stationary" or "moving." This allows us to group locations into unique continuous "movement paths" and "resting spots" for further analyses.