

## ABSTRACT OF THE THESIS

Determining Suitable Wildlife Crossing Locations Across a  
Southern California Interstate

by

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The Santa Ana—Palomar Mountain Linkage (SAPML) represents a wildlife corridor which connects the Palomar mountain range and the Santa Ana mountain range located in southern California. The linkage provides connectivity for a variety of species including mountain lions (*Felis concolor*). Interstate 15 (I-15), running north and south through the linkage, along with urban and agricultural development have created a significant choke-point for wildlife movement in the middle of the corridor. Wildlife crossing structures provide a viable means for wildlife to effectively cross a road barrier. Research contends that wildlife crossing structures should be placed along an animal's natural route of travel. Therefore, the purpose of this research is to determine suitable wildlife crossing locations across I-15 based upon predicted movement routes for mountain lions within the SAPML Choke-Point. Knowledge of wildlife crossing locations will help to enhance the connectivity of the SAPML.

The following three research objectives are examined: (i) the validity of a least-cost path (LCP) analysis to determine potential movement routes and interstate crossing locations for mountain lions, (ii) the identification of suitable wildlife crossing locations along I-15 within the SAPML Choke-Point, and (iii) the influence of future development on the effectiveness of wildlife crossing locations within the choke-point.

The results indicate that an LCP analysis can significantly predict movement routes and interstate crossing locations for mountain lions. Wildlife crossing locations were determined along I-15 within the SAPML Choke-Point. These crossing locations coincide with drainage infrastructure which exist underneath the interstate and may be able to be reconstructed to provide feasible crossing structures for wildlife. Lastly, future development within the choke-point will disturb wildlife movement and diminish the effectiveness of wildlife crossing locations along I-15. Areas critical for connectivity have been identified for conservation.