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# FACTORS INFLUENCING THE MOVEMENT, SPATIAL PATTERNS, AND WILDLIFE UNDERPASS USE OF COYOTES AND BOBCATS ALONG STATE ROUTE 71 IN SOUTHERN CALIFORNIA

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## Abstract

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Mammalian carnivores may be sensitive to habitat fragmentation due to roadway construction. As a solution, roadway underpasses have received increasing attention; however, relatively little data exist on how carnivores respond to roadways or use the underpasses. We present results from a study of movement patterns and underpass use of coyotes and bobcats along CA 71, a freeway bisecting the eastern end of the Puente-Chino Hills wildlife corridor in urban Los Angeles. Recent reconstruction of a 5-km segment included installation of wildlife fencing, three large wildlife culverts, and 20 smaller water culverts. From February 1998 to February 2000, we captured and radio-tracked 29 coyotes and 4 bobcats and fitted an additional 24 coyotes with dog collars. Telemetry data were augmented by remotely triggered camera surveys at the culverts. Mean home range sizes for 15 coyotes and 3 bobcats were  $13.72 \pm 3.92$  and  $8.89 \pm 3.45$  km<sup>2</sup> while core-use area sizes were  $1.71 \pm 0.48$  and  $1.31 \pm 0.40$  km<sup>2</sup>, respectively; both area sizes differed between age and social classes. Nine individuals maintained core-use areas that overlapped roadways and several had linear home ranges paralleling the roadways. Buffer zones established alongside roadways were not used proportional to their availability by 10 individuals. Telemetry and remotely triggered cameras documented 320 roadway crossings, which included 150 confirmed uses of underpasses by 16 collared individuals. However, hourly traffic volume influenced frequency of culvert use. In addition, surface crossings, particularly in areas where wildlife fencing was absent, accounted for 67 percent of study animal mortality. Mortality patterns for age classes and traffic direction differed. Overall, our study has provided valuable information for the California Department of Transportation on factors influencing underpass use and the effectiveness of roadway design for target species in fragmented landscapes.