



Wildlife Field Notes

Making Roadways Safe for Wildlife in Southern Arizona

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Introduction

Throughout Arizona, thousands, perhaps millions, of wild animals are killed each year on roadways. This problem has plagued wildlife conservationists for decades: How can we foster growth and progress yet reduce vehicle-wildlife collisions that threaten Arizona's native species?

Wildlife researchers and city and state planners and engineers have worked together to help alleviate this problem. Low-cost efforts have included warning signs for motorists in areas of increased wildlife activity or reflective lights to discourage wildlife from crossing. Higher cost efforts have included constructing underpasses and overpasses with funnel fencing to allow safe wildlife passage across roadways that divide habitat patches.

Regardless of the final price tag, the ultimate success of such projects depends on thorough and intensive pre- and post-construction research to define local wildlife movements. Then it is up to the researchers to recommend appropriate designs and placements of constructed features which reduce would wildlife-motorist conflicts, while allowing wildlife to safely traverse roadways and the adjacent landscapes.

Examples of roadways that have increased wildlife mortalities are Twin Peaks Road and Tangerine Road near Marana, Arizona. Located north of Tucson, Marana has experienced massive growth in recent decades, resulting in added pressures to wildlife within the surrounding Son-

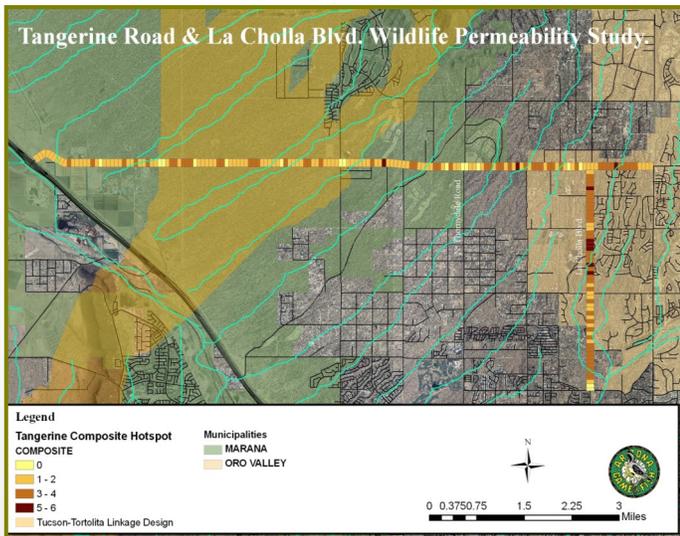


The design and placement of wildlife crossing structures can improve habitat permeability for a variety of taxa. The result is safer roadways for wildlife and motorists alike.

oran Desert. In response to these changes, the Arizona Game and Fish Department's Wildlife Contracts Branch partnered with the Town of Marana to conduct a study that identified improvements to be made when the new four-lane road was constructed. The recommendations, once implemented, would reduce wildlife-vehicle conflicts while increasing roadway capacity .

Study Methods

The first goal of this study was to identify wildlife activity "hotspots" along Twin Peaks and



Roadkill surveys produced a “hotspot” analysis which highlighted areas with increased wildlife activity (darker areas).

Tangerine roads. To do this, researchers performed two types of surveys within the study area: 1) walking surveys to determine road kill locations, and 2) track and scat surveys at culverts and areas immediately adjacent to the roadways. These data were used to create a model which identified hotspots of wildlife activity along the roadways.

Results

Wildlife detected through the survey methods included more than 5,000 individual mortalities representing 88 species from a variety of wildlife guilds. More than 39% of all mortalities detected were reptiles and amphibians, primarily Couch’s spadefoot toad and the Western diamondback rattlesnake. Small mammals accounted for 34% of total mortality followed by birds, representing 26%. In addition, track and scat surveys detected coyote, javelina, mule deer, domestic dog, bobcat, and kit fox.

Researchers used these data to create a multi-guild additive model of the roadway that identified multiple areas of wildlife activity on both

road segments. These hotspots were located in lowland areas where reptiles, amphibians, and small mammals comprised the majority of roadway mortalities as well as upland areas comprising a different suite of species. Surveys also revealed that mule deer and desert tortoises stayed in the upland areas around the roadway.

Management Implications

These studies resulted in mitigation recommendations that would reduce wildlife losses in biologically sensitive areas, such as those found near Twin Peaks and Tangerine roads. Researchers provided the Town of Marana with specific recommendations that helped reduce wildlife-motorist conflicts and wildlife mortality on both road segments.

Researchers concluded that lowland mitigation strategies – to help protect herpetofauna and small mammals – should include increasing road elevation above natural grades, placing culverts under roadways to facilitate movements, developing barrier fences/walls to direct small wildlife to these culverts, reducing nearby artificial light, and minimizing human disturbance near wildlife crossings.

Recommended mitigation strategies in upland areas – to help protect larger fauna like mule deer – included installing motorist alert systems, constructing under-road culverts, installing land bridges, and implementing fencing that would direct wildlife towards crossings.

Solutions like these are neither simple nor inexpensive, but ultimately they help make Arizona’s roadways safer for humans and secure the well-being of Arizona’s wildlife resources.

Special thanks to the Town of Marana and Pima County Regional Transportation Authority’s Wildlife Linkages Working Group who ensured this project’s success.