

Date of Issuance: July 27, 2022

**DESERT CONSERVATION PROGRAM PROJECT COMPLETION SUMMARY:
CONNECTIVITY MOVEMENT SIMULATION
2015-ALTA-1580K**

The work for the above reference project has been completed. Below is a summary of project related information.

The purpose of the above referenced project was:

Maintaining connectivity for Mojave Desert tortoises is critical to allow for maintaining genetic diversity and to allow physical movement and demographic rescue by individual tortoises among subpopulations. The purpose of this project was to perform a connectivity simulation in order to establish better movement corridors for tortoises.

The major accomplishments or findings of this project include:

This connectivity simulation project used movement data from local GPS-tagged desert tortoises to populate multistate random walk models to approximate the movements of local desert tortoises. We then allowed simulated desert tortoises to move around the landscape in response to a heterogeneous surface reflecting landform connectivity for desert tortoises and monitored the rates at which simulated desert tortoises used culverts to cross the highway. A key novel component of the simulation was the inclusion of an impermeable barrier, the fenced highway. This meant that although simulated desert tortoises could approach the highway, they could only walk alongside it until they reached a culvert. We also varied the density and width of culverts in the simulated landscape to evaluate whether an increased culvert density or size would more effectively ensure functional connectivity of desert tortoise populations across the highway. Our results indicate that when planning for infrastructure and conservation of desert tortoise populations, transportation planners and wildlife managers should consider the densities and widths of culverts used in road improvement projects. The implications are that connectivity across highways for desert tortoises would benefit from increasing the density and/or width of under-highway culverts.

For more information about this project and/or for other Project Reports or Symposium Reports, please visit our [website](#)

If you have any questions about this project please contact DCP Project Manager Scott Cambrin at (702) 455-3859.