MORONGO BASIN ALTERNATIVE FUTURES

Desert Tortoise

Gopherus agassizii

About the Species:

The Mojave population of the Desert Tortoise is found to the north and west of the Colorado River and is an iconic desert species currently listed by federal and state governments as threatened. Tortoise populations have decreased with development and fragmentation of their habitat, and remaining populations are actively studied and protected by programs in Joshua Tree National Park and at the Marine Corps Air Ground Combat Center. The Desert Tortoise serves as an umbrella species for the protection of core habitat for other desert species.

Threats:

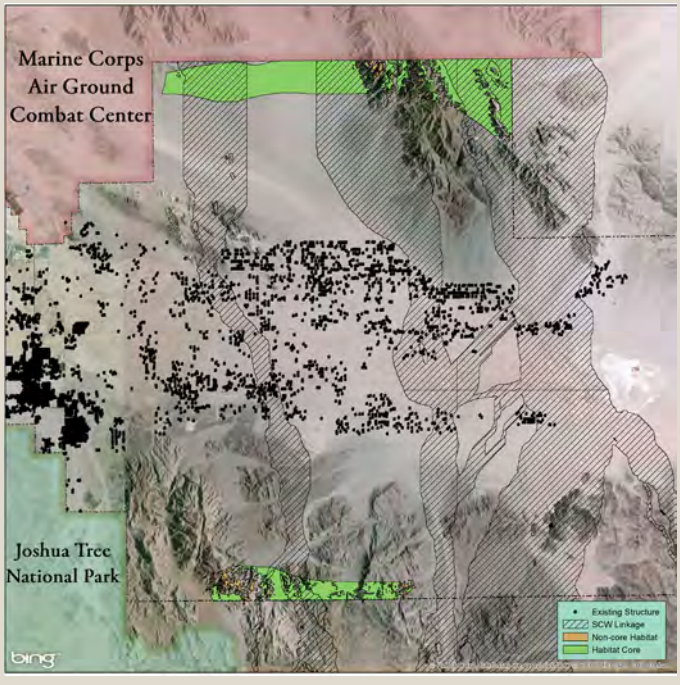
Listing the desert tortoise as a threatened species occurred due to the loss and fragmentation of habitat associated with residential and energy development, increased predation, including predation by ravens of young tortoise, off highway vehicles, disease, and collection. Roads pose a particular threat; movement across roads is difficult and the slow moving animals are subject to road kill or improper handling by humans. Tortoise can navigate in some very low density development, but are sensitive to fragmentation and domestic pets, which may inhibit movement and thereby decrease the opportunities for genetic diversity.

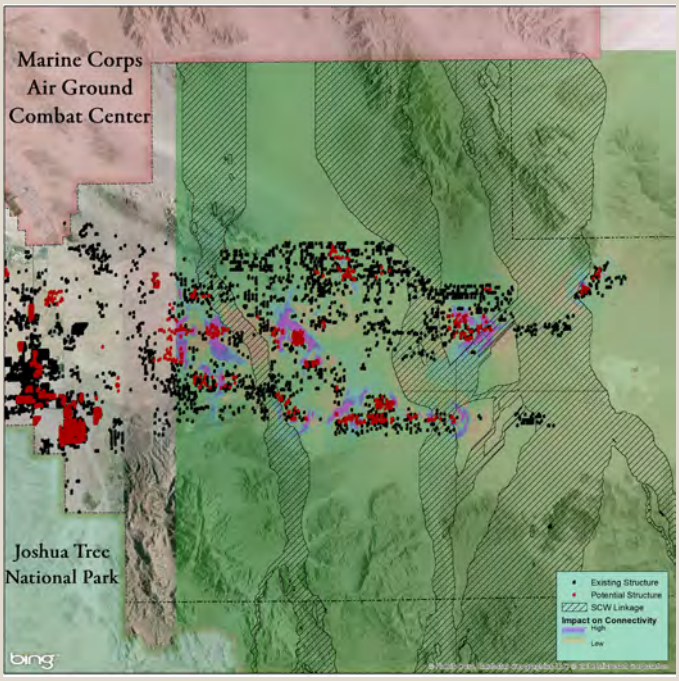
Habitat:

Tortoises require sandy or gravelly soils in which to dig their burrows. This type of soil can be found on a diversity of settings including washes, rocky slopes, alluvial fans, hills, and bajadas at elevations between 1000 and 5000 feet. Creosote and other scrub type vegetation communities on slopes less than 20 percent are commonly preferred.

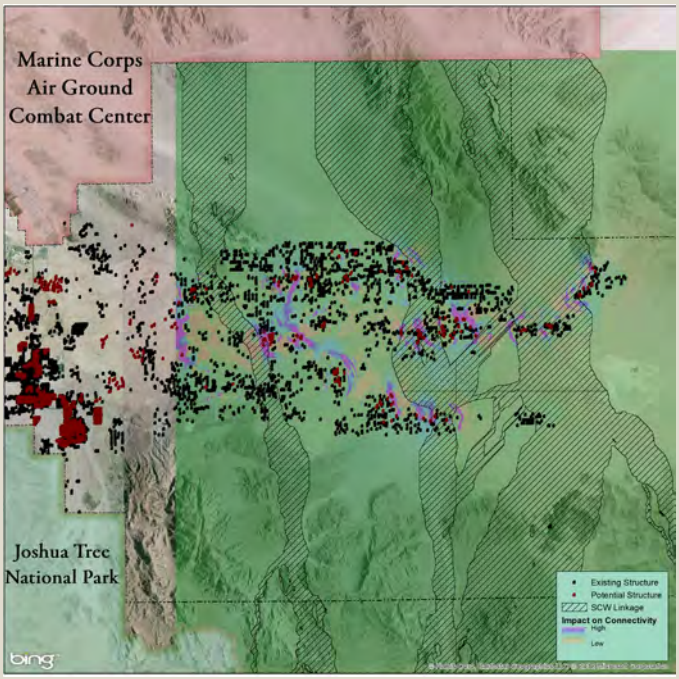
Potential Development Impacts:

Although it appears most available habitat for desert tortoise in the study area is compromised, extrapolation from the modeling results indicates that the situation could improve (see Strategies for Protection). The uncompromised habitat is distributed in two strips along the northern and southern boundaries of the study area (see below). Therefore, the expansion of development north or south of the current development footprint is likely to result in deterioration of habitat quality of the remaining cores.





Scenario 4 results in greater increase in landscape resistance than Scenario 1.



Scenario 1 results in greater impact on the best available linkage area (westernmost).

The best and most secure habitat connectivity is along the easternmost linkage identified by SC Wildlands (previous page). Among the alternative development scenarios it would appear that Scenario 4 (top left) would have the greatest impact, with an increase in landscape resistance of 2.2 percent, followed by Scenario 1 (bottom left) with a modest 0.9 percent increase in resistance. However, despite a greater overall impact on landscape resistance, the impact of Scenario 4 occurs mainly within some of the most developed areas of the study area where resistance to movement is already substantial, but the easternmost linkage that is currently the least impacted remains relatively unchanged (see top left). In contrast, the impact of Scenario 1 extends across the easternmost linkage, thus Scenario 1 is more likely to impair the best currently available linkage for desert tortoise.

Strategies for Protection:

If efforts to reduce raven populations near development in the Morongo Basin were successful, the estimated disturbance zone around structures would decrease from 8 km to 200 m, eliminating a substantial amount of compromised area and moving much of that area into the core habitat category. Successful mitigation of raven predation would shift the most wide ranging threat to predation and harassment of domestic dogs which, assuming they are pets, would have a smaller foraging radius. If residents in the study area confined their pets, the disturbance zone around structure might be essentially eliminated leaving any potential habitat patch beyond 800 m from a road in a relatively uncompromised state. Effective mitigation and improved stewardship could theoretically restore substantial areas of formerly compromised habitat. In addition, tortoise crossing improvements along State Highway 62, including fencing and crossing structures, could improve the possibility of survival for tortoise, as could the acquisition of lands and inholdings that provide habitat and connectivity for the species.

Species information from SC Wildlands reports; see www.scwildlands.org.

Photo Credit: Sonoran Institute.

Map Credit: Brent Brock, Craighead Institute.

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