

# Research Aims to Save Desert Tortoise Habitat from Non-native Grasses and Wildfire



**T**hough protected as a federally threatened species since 1989, the desert tortoise still fights to survive in the Mojave Desert. Population densities in parts of its range have declined up to 96 percent since the late 1970s. This decline has many causes, one of which is the effect of non-native grass species on desert tortoise habitat.

## Challenge:

Non-native annual grass species such as red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*) and Mediterranean grass (*Schismus barbatus*) compete with native forage plants that the desert tortoise depends on. In addition, the fuels that these plants create have led to increased fires in parts of the Mojave Desert where fires were historically rare.

Unlike native forbs and grasses, non-native annual grasses remain rooted in the ground throughout the fire season and for years to come, and provide highly flammable fuel, accelerating fire occurrence and spread throughout the desert. High temperatures and oxygen depletion caused by these fires can kill individual tortoises, but it is habitat alteration that appears to have the most wide-ranging impact.

The desert tortoises that do survive wildfire often find little to eat other than non-native grasses, which do not have the nutritional value found in the native vegetation the tortoise prefers.



*Non-native grasses have impacted the natural fire regime in the Mojave Desert.*



*Increased wildfires in recent years threaten desert tortoise habitat.*

In addition, the loss of cover from perennial shrubs, which burn quickly amidst flammable grasses, leaves little shade for tortoises to escape the desert sun.

## Solution:

Researchers from the United States Geological Survey Western Ecological Research Center (WERC) have collaborated in Arizona, California, Nevada and Utah to investigate the processes by which plants invade the Mojave Desert and impact this ecosystem. This research has focused on providing the Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM) and National Park Service (NPS) with information and recommendations they can use to improve recovery efforts for the desert tortoise, specifically related to the management of non-native plants and the altered fire regimes that they create.

## Result:

WERC studies examining the tie between invasive plant/fire regime cycles and desert tortoise habitat are presented in many different formats and venues to reach the widest range of land managers and scientists. One such venue is the annual Desert Tortoise Council Symposium. More information on these studies can be found at [www.werc.usgs.gov](http://www.werc.usgs.gov).



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